BTM8106-8 Quantitative Research Design
(3 credits)

WELCOME TO QUANTITATIVE RESEARCH DESIGN

Your Course Faculty: Thomas Boucher

COURSE DESCRIPTION:
This course provides students with the skills essential for designing experimental, quasi-experiment, and survey studies; analyzing the data collected in these studies, and interpreting the results of data analyses. Students will explore designs and statistical techniques to use with their envisioned dissertation research.

Number Of Activities: 8

COURSE LEARNING OUTCOMES:
Upon completion of this course you will be able to:
1. Evaluate the purpose of quantitative designs.
2. Critique quantitative designs.
3. Analyze the advantages, disadvantages, and alternatives to null hypothesis significance testing.
4. Develop experimental designs with multiple levels of an independent variable and associated statistical analyses.
5. Compare and contrast aspects of experimental designs.
6. Evaluate experimental designs with multiple independent variables and associated statistical analyses.
7. Evaluate the advantages and disadvantages of quasi-experimental designs.
8. Critique quasi-experimental designs.
9. Investigate how exploring mediator, moderator, and independent variables can contribute to theory.
10. Compare and contrast the roles of sampling technique, convenience samples, and selection bias in quantitative designs.
11. Determine the appropriate sample size based on an a priori power analysis.
12. Design a research study that uses a quantitative design.

COURSE CONCEPTS:
1. Quantitative research design
2. Variables
3. Experimental designs
4. Surveys
5. Matching statistical analyses and designs
6. Theory
7. Sample vs. Population
8. Power Analysis
9. Integration and application of appropriate quantitative tools

PRIMARY RESOURCES:
These resources are required to complete the course.

Book
American Psychological Association. (2010). *Publication manual of the American Psychological Association.* Washington, DC Author.
ISBN: 9781433805615

Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches.* 4th ed. Thousand Oaks, CA Sage Publications.
9781452226101

Jackson, S. L. (2012). *Research methods and statistics: A critical thinking approach.* Belmont, CA Wadsworth Cengage Learning.
ISBN: 9781111346553

Trochim, W. M. K., & Donnelly, J. P. (2008). *The research methods knowledge base.* Mason, OH Thomson Custom.
ISBN: 9781592602919

ADDITIONAL RESOURCES:
These resources must be used to complete the assignments

Week One
Brown, J. S. (2010). Variable. *Encyclopedia of Research Design.*
http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n490.xml

Fan, S. (2010). Independent variable. *Encyclopedia of Research Design.*
http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n184.xml

Kovera, M. B. (2010). Confounding. *Encyclopedia of Research Design.*
http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n70.xml

Pole, J. D., & Bondy, J. S. (2010). Control variables. *Encyclopedia of Research Design.*
http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n77.xml

Salkind, N. J. (2010). Dependent variable. *Encyclopedia of Research Design.*
http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n109.xml

Week Two
Carver, R. (1978). The case against statistical significance testing. *Harvard Educational Review,* 48(3), 378-399.
http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.120.780&rep=rep1&type=pdf

Kirk, R. (2003). Chapter 5: The importance of effect magnitude. *Blackwell Handbook of Research Methods in Experimental Psychology.*
http://search.credoreference.com.proxy1.ncu.edu/content/entry/bkhrmep/chapter_5_the_importance_of_effect_magnitude/0

Schmidt, F. (2010). Detecting and correcting the lies that data tell. *Perspectives on Psychological Science,* 52(3), 23-24.
http://pps.sagepub.com.proxy1.ncu.edu/content/5/3/233.full.pdf+html

Week Four
Greenhoot, A. F. (2003). Chapter 6: Design and analysis of experimental and quasi-experimental investigations. Blackwell Handbook of Research Methods in Clinical Psychology.

http://search.credoreference.com.proxy1.ncu.edu/content/entry/bkhrmcp/chapter_6_design_and_analysis_of_experimental_and_quasi_experimental_investigations/0

Wiley, R. (2009). Trade-offs in the design of experiments. *Journal of Comparative Psychology,* 12(4), 447-449.
http://proxy1.ncu.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=pdh&AN=com-123-4-447&site=ehost-live

Week Five
Goldberg, N. (1990). A quasi-experiment assessing the effectiveness of TV advertising directed to children. *Journal of Marketing Research, 27*, 445-454.
http://search.proquest.com.proxy1.ncu.edu/docview/235231913?accountid=28180

Week Six
Bauman, A. E., Sallis, J. F., Dzewaltowski, D. A., & Owen, N. (2002). Toward a better understanding of the influences on physical activity. *American Journal of Preventative Medicine*, 22, 5 -14.
http://www.sciencedirect.com.proxy1.ncu.edu/science/article/pii/S0749379702004695

Petty, R. (2006). Research as a script: One researchers view. *The Psychology Research Handbook.*
http://sk.sagepub.com.proxy1.ncu.edu/reference/hdbk_psychrsch/n1.xml

Week Seven
Acheson, A. (2010). Sample size. *Encyclopedia of Research Design.*
http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n396.xml

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(2),* 175-191.
http://search.proquest.com.proxy1.ncu.edu/docview/204305161/138F82745CE2C6F1DF6/5?accountid=28180

Fritz, A. E., & Morgan, G. A. (2010). Sampling. *Encyclopedia of Research Design.*
http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n398.xml

Houser, J. (2007). How many are enough? Statistical power analysis and sample size estimation in clinical research. *Journal of Clinical Research Best Practices,* 3(3), 1-5.
http://firstclinical.com/journal/2007/0703_Power.pdf

Mayr, S., Erdfelder, E., Buchner, A. & Faul, F. (2007). A short tutorial of Gpower [2]. *Tutorials in Quantitative Methods for Psychology,* 3(2), 51-59.
http://www.tqmp.org/Content/vol03-2/p051/p051.pdf

McCready, W. (2006). Applying sampling procedures. *The Psychology Research Handbook.*
http://sk.sagepub.com.proxy1.ncu.edu/reference/hdbk_psychrsch/n10.xml

Piasta, S. B., & Justice, L. M. (2010). Cohen's d Statistic. *Encyclopedia of Research Design.*
http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n58.xml

The G*Power 3. Heinrich Univeristat.
http://www.psycho.uni-duesseldorf.de/abteilungen/aap/gpower3/

Week Eight
NCU Template PhD Degree CP 2013
Attachment: NCU_Template_PhD_Degree_CP_2013.docx.docx

SUPPLEMENTAL REFERENCES AND READINGS:
No Supplemental Resources.

COURSE ESSENTIALS:

COURSE RESOURCES
The Books and Resources area for this course contains a variety of reference materials that you will need to complete the course assignments. It is suggested that you become familiar with these resources before you begin the assignments.

LIBRARY
Information literacy is a set of skills that help you to find and appropriately apply information. The Northcentral University Library has developed a tutorial based on the ACRL (Association of College and Research Libraries) Information Literacy Standards and is intended to raise awareness on how one effectively interacts with information. Review the Information Literacy Tutorial to become familiar with information literacy at Northcentral.

References used for research might need to be peer-reviewed/scholarly journals, which can be found by searching the Northcentral University Library databases. These journals typically have the following characteristics:

- Articles are reviewed by a panel of experts before they are accepted for publication.
- Articles are written by a scholar or specialist in the field.
- Articles report on original research or experimentation.
- Articles are often published by professional associations.
- Articles utilize terminology associated with the discipline.

ACADEMIC SUCCESS CENTER
Northcentral values your progress and success as a scholarly writer. Please access the Academic Success Center (ASC) from your student home page to view see a wide variety of writing tips and examples to help you as you compose written submissions for this and other Northcentral courses.

The Academic Success Center (ASC) offers Academic Coaching Services, an online tutoring service that offers assistance in the mechanics of good writing and in mathematics, statistics, finance, You can contact the Academic Coaches from the home page of the Academic Success Center and follow the link to Academic Coaching Services.

Before you begin your course, let's review some important policies and procedures designed to ensure you are well informed about how to complete this course.

PLANNING YOUR TIME:
With the faculty-mentored approach at Northcentral University, credit hours are amassed in a course through your interaction with your faculty member, contact with course-specific content, assignments, and other asynchronous activities. At Northcentral, you can expect to devote between 120-144 hours for each 3-credit course. Make sure you give yourself plenty of time each week to complete the necessary work involved in this course.

COURSE PARTICIPATION:
Federal Financial Aid regulations, which Northcentral observes for all students, require that students regularly participate in courses in which they are enrolled. Students must be in contact with faculty regarding academic activities on a weekly basis. If you are unable to participate in your course, contact your Academic Advisor regarding advice about consequences of withdrawing from your course.

PRE-COURSE SURVEY:
You should also complete the Pre-Course Survey. The Survey goes directly to your faculty and gives the faculty information about new students entering the course.

ASSIGNMENT SUBMISSIONS:

The assignment header should include your last name, first initial, course code, dash, and assignment number (DoeJXXX0000-1) justified to the left and the page number justified to the right. Faculty may request students to submit an assignment cover sheet, located under **University Resources > University Documents** on the left navigation. Assignments that do not include cover sheets should have a title page. Page length indications refer to the body of a paper. Please do not include these in your page count: assignment or cover sheet page, title page, abstract, or reference page(s).

The file submittal format includes your last name, first initial, course code, dash, and assignment number (no spaces between characters): DoeJXXX0000-1. Files may be submitted in various formats (Word, Excel, PowerPoint, PDF etc.) or in the program with which the assignment requires. Faculty may request resubmission of an assignment using a different file format or program if they cannot access a submitted assignment. In the event that the student is unable to submit the assignment to the professor on the date due through any of the above referenced methods because of computer problems, the student is required to email the assignment to the faculty on or before the assignment due date. In such cases, the student should also communicate with the professor to inform of the assignment transmission. Where appropriate, assignments should reflect appropriate attribution of information and wording to source materials, as detailed in the NCU Academic Integrity Policy.

Northcentral University has adopted the 6th edition of the APA Publication Manual as the style guide for all coursework. Students are expected to follow the APA manual when completing assignments, unless instructed otherwise. Although the APA manual does not apply to syllabi, NCU attempts to adhere to the manual in its syllabi within technical limitations.

Faculty have the discretion to allow and request resubmission of any assignment, with these stipulations: Comprehensive Exam courses are excluded; graded assignments with objectively correct answers (e.g., statistics assignments) may not be resubmitted; the bulk loading policy may not be violated; the policy that assignments may not be submitted after a course end date may not be violated. Students may decline to resubmit assignments. Faculty cannot request resubmissions in cases of suspected academic integrity violations.

RECOMMENDED SCHEDULE FOR COURSE COMPLETION:
You may submit assignments early, but the required due date must be met. Faculty will not accept bulk assignments except as explained below under "Submittal Turn-Around Schedule." Submitting assignments in the order assigned and reviewing faculty feedback before completing the next assignment ensures progress according to academic standards and follows the design of the course.

ASSIGNMENT SUBMISSION SCHEDULE:
The Academic Week at Northcentral University begins on Monday and ends the following Sunday night at 11:59 p.m. Arizona time. Assignment due dates are mandatory.

Each assignment's due date must be met. Assignments submitted after the original deadline will be considered late, and graded according to your instructor's late grading policy. Assignments submitted 7 or more days beyond the original due date will not be accepted.

Northcentral University has designed programs and courses around best practices in adult and online learning theory. Students will gain maximum benefit from courses when they participate fully in each week's activities and assignments according to the course schedule.

SUBMITTAL TURN-AROUND SCHEDULE:
Faculty have 4 days from the assignment due date to grade and return assignments. If an assignment is submitted early, the faculty may return it before the required return date, but they have 4 days from the assignment due date to return feedback. If an assignment is submitted late, faculty have 4 days from the date of submission to grade and return the assignment. If, for whatever reason, the faculty member does not return the assignment within 4 days, a student can submit the next assignment to maintain the assignment due date requirement. Other than these circumstances, students are not allowed to bulk upload assignments. Some courses may have exceptions. Therefore, it is important to read all course syllabi and assignments carefully.

Note: Turn-around time for courses in the dissertation sequence, excluding CMP courses, range up to 21 calendar days.

ACADEMIC INTEGRITY:
Academic integrity includes the commitment to the values of honesty, trust, fairness, respect, and responsibility. Appropriate credit of others for the scientific work and ideas applies to all forms of scholarship, not just publications. The submission of another person's work represented as that of the student's without properly citing the source of the work will be considered plagiarism and will result in an unsatisfactory grade for the work submitted or for the entire course, and may result in academic dismissal. Assignments will be submitted by the faculty member to TurnItIn.com for originality evaluation.

Self-plagiarism is the act of presenting one's previously used work as an original work. Self-plagiarism is inconsistent with honesty and truthfulness in scholarship. Northcentral University faculty and students should discuss the expectations of each assignment at the beginning of the class. There should be a clear understanding between the faculty member and student regarding the use of previous work in the class. The faculty member must indicate if the student's response must be an original work or if the student may use previous work in their response to a new assignment. For further information on self-plagiarism, review this guide which is also available in the Academic Success Center (ASC).

GRADING SCALE:
The following chart shows the letter grade equivalents of point scores for Undergraduate and Graduate courses.

Undergraduate Scoring		Graduate Scoring	
Numerical Points	Letter Grade	Numerical Points	Letter Grade
100-94	A	100-94	A
93-90	A-	93-90	A-
89-87	B+	89-87	B+
86-83	B	86-83	B
82-80	B-	82-80	B-
79-77	C+	79-77	C+
76-73	C	76-73	C
72-70	C-	72-0	F
69-67	D+		
66-63	D		
62-0	F		

NORTHCENTRAL GRADING GUIDELINES:
Northcentral students earn a grade on an assignment based on the extent to which they complete the assignment, demonstrate understanding of assignment materials, express themselves clearly and effectively, and follow standards of grammar, writing mechanics, and scholarly prose. Excellence on these criteria point students toward becoming autonomous learners who can self-evaluate their work, master program learning outcomes, and develop and hone skills needed for academic, professional, and personal success.

Please visit the NCU Virtual Campus Information section of the Academic Success Center to view the Graduate and Undergraduate Grading Guidelines and a video presentation that will help you use the guidelines to do your best work and succeed in your program.

NORTHCENTRAL POLICIES:
Review the student web site and Course Catalog for all relevant policies and procedures.

NORTHCENTRAL MISSION STATEMENT:
NCU mentors students One-to-One with highly credentialed faculty via advanced delivery modalities. Northcentral commits to helping students achieve academically and become valuable contributors to their communities and within their professions.

If you need technical assistance or want to report problems within a course, please contact the NCU Service Desk at 888-628-1567, or servicedesk@ncu.edu

For students with a documented disability, if you are requesting an accommodation for this course, please contact Student Disability Services 888-628-6911 ext 8018, or

COURSE OUTLINE

Section 1: The Logic of Experimental Design

Week 1:

| Assignment | : | Explore the Logic of Experimental Design | (10 | Points) | Due: 05/08/2016 |

Section 2: Inferential Statistics

Week 2:

| Assignment | : | Exploring Inferential Statistics and Their Discontents | (10 | Points) | Due: 05/15/2016 |

Section 3: Quantitative Designs

Week 3:

| Assignment | : | Answer Questions About Experimental Design | (10 | Points) | Due: 05/22/2016 |

Week 4:

| Assignment | : | Answer Questions About Experimental Designs | (10 | Points) | Due: 05/29/2016 |

Week 5:

| Assignment | : | Discuss Quasi-Experimental Designs | (10 | Points) | Due: 06/05/2016 |

Section 4: Working with Your Tentative Quantitative Research Question

Week 6: Independent, Mediating, Moderating and Dependent Variables

| Assignment | : | Contributing to Theory: Independent, Mediating, Moderating and Dependent Variables | (10 | Points) | Due: 06/12/2016 |

Week 7: Samples, Power Analysis, and Design Sensitivity

| Assignment | : | Analyze Samples, Power Analysis, and Design Sensitivity | (10 | Points) | Due: 06/19/2016 |

Section 5: Signature Assignment

Week 8:

| Assignment | : | Prepare a Mock Concept Paper | (30 | Points) | Due: 06/26/2016 |

Section 1: The Logic of Experimental Design

As a researcher planning a study, you must articulate and defend the logic of your design. That is, you must present an **argument** for how the elements of your design—groups, sample size, interventions, controls, measures, etc.—are organized so that your study, if executed as planned, has a good chance of yielding data that allow you to offer convincing answers to your research questions.

Another way of putting this is that a research design is how a researcher uses selection of participants, control, and measuring and accounting for variability to address human variability so that relationships among variables can be detected.

A third way of putting this is that a research design is how a researcher counters potential threats to validity in order to be able to reduce the number of plausible interpretations of the findings.

A fourth way of putting this is that a research design is how you collect evidence that allows you to make a convincing argument for the meaning and significance of your findings.

When you do the signature assignment in this course (and later your Concept Paper and Dissertation Proposal), you will put this argument in a broader context and demonstrate alignment among your problem, purpose, research questions, and design to show that your study really can meaningfully address the gap identified through your literature review and that the core elements of your Concept Paper (and later, Proposal) hang together logically: that your research problem is well-grounded in empirical literature and addresses a gap in the literature; the purpose of the research addresses the problem; the research questions realize the purpose and can yield findings that will contribute to theory; the methodology has a reasonable chance of meaningfully addressing the questions; the implementation of the research adequately realizes the proposal; the research for a PhD Dissertation extends theoretical knowledge in the field; and so on.

After completing the readings and assignments in this section you should be able to do the following:

Learning Outcomes: 1, 2

1. Evaluate the purpose of quantitative designs.
2. Critique quantitative designs.

Week 1:
Week Introduction:

The Logic of Experimental Design

This week you will demonstrate your understanding of fundamental concepts related to research design and apply them to creating designs and analyzing research.

Review the resources listed in the Books and Resources area below to prepare for this week's assignments.

Books & Resources:
Book
Jackson, S. L. 2012 Research methods and statistics: A critical thinking approach.
Instruction:Read Chapters 8 and 9

Trochim, W. M. K., & Donnelly, J. P. 2008 The research methods knowledge base.
Instruction:Chapter 7 and Pages 186-191

Article/Journal
Brown, J. S. (2010). Variable. http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n490.xml
Instruction:Read Article

Fan, S. (2010). Independent variable. http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n184.xml
Instruction:Read Article

Kovera, M. B. (2010). Confounding. http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n70.xml
Instruction:Read Article

Pole, J. D., & Bondy, J. S. (2010). Control variables. http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n77.xml
Instruction:Read Article

Salkind, N. J. (2010). Dependent variable. http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n109.xml
Instruction:Read Article

Assignment: Explore the Logic of Experimental Design	(10 Points) Due: 05/08/2016

Instructions:

In a paper, answer the following questions:

1. Jackson (2012) even-numbered Chapter Exercises (p. 244).
2. What is the purpose of conducting an experiment? How does an experimental design accomplish its purpose?
3. What are the advantages and disadvantages of an experimental design in a business study?
4. What is more important in an experimental study, designing the study in order to make strong internal validity claims or strong external validity claims? Why?
5. In an experiment, what is a control? What is the purpose of a control group? Of single or multiple comparison groups?
6. What are confounds? Give an example of a design that has three confounds. Describe three ways to alter the design to address these confounds and explain the advantages and disadvantages of each.
7. What does "cause" mean and why is it an important concept in research? How are correlation and causation related?
8. You are a researcher interested in addressing the question: does smiling cause mood to rise (i.e., become more positive)? Sketch between-participants, within-participants, and matched-participants designs that address this question and discuss the advantages and disadvantages of each to yielding data that help you answer the question. Describe and discuss each design in 4-5 sentences.

Support your paper with a minimum of 5 resources. In addition to these specified resources, other appropriate scholarly resources, including older articles, may be included.

Length: 5-7 pages not including title and reference pages
References: Minimum of 5 scholarly resources.

Your paper should demonstrate thoughtful consideration of the ideas and concepts that are presented in the course and provide new thoughts and insights relating directly to this topic. Your paper should reflect scholarly writing and current APA standards. Review APA Form and Style.

Be sure to adhere to Northcentral University's Academic Integrity Policy. View the Northcentral Academic Integrity Tutorial to refresh your knowledge of how to achieve academic integrity.

Upload your assignment using the Upload Assignment button below.

Alignment to Course Learning Outcomes:
1.0   Evaluate the purpose of quantitative designs.
2.0   Critique quantitative designs.

Section 2: Inferential Statistics

Designs yield data, which in most cases (but not all) only have meaning once they are subjected to statistical analysis. Good sense (not to mention the necessity of doing an a priori power analysis to determine sample size, which requires you to specify your method of data analysis) dictates that you plan your design and data analysis together in order to ensure that the data you worked so hard to gather will be able to answer your research questions and address your research problem.

Specific statistical tests are tied to specific designs and alterations in designs can require changes in analyses. Keep this in mind while you are writing your proposal: as you tweak your design, check that your analytical strategy is still appropriate. Knowledge of how a statistical test works can suggest changes to a design that will make the design more powerful. The results of a pilot study, problems in implementing a design, or belated bright ideas may lead you to change or supplement your analysis, but you want to begin with an integrated design/analysis plan.

Indeed, to speak only of the interconnectedness of design and analysis is misleading: design, analysis, research questions, hypotheses, assumptions about or knowledge of sample characteristics, interpretations of findings, and even assumptions about the nature of causation and reality are interwoven! Your design should be an integrated whole in which all the parts make sense in relationship to each other, and you should understand all of the key assumptions you make in doing your study.

Important note:
While pilot studies can be extremely valuable, they must be conducted under the guidance of a faculty mentor. If human participants are involved, an approved Institutional Review Board (IRB) application must be on file before pilot data is collected. It is **NEVER** appropriate to conduct a pilot (or other) study without IRB approval.

After completing the readings and assignments in this section you should be able to do the following:

Learning Outcome: 3

3. Analyze the advantages, disadvantages, and alternatives to null hypothesis significance testing.

Week 2:
Week Introduction:

Inferential Statistics and Their Discontents

This week you will explore the concept of inferential statistics and their discontents.

Review the resources listed in the Books and Resources area below to prepare for this week's assignments.

Books & Resources:
Book
Jackson, S. L. 2012 Research methods and statistics: A critical thinking approach.
Instruction:Read Chapters 8 and 10

Trochim, W. M. K., & Donnelly, J. P. 2008 The research methods knowledge base.
Instruction:Read Pages 293-308

Article/Journal
Carver, R. (1978). The case against statistical significance testing. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.120.780&rep=rep1&type=pdf
Instruction:Read Article

Schmidt, F. (2010). Detecting and correcting the lies that data tell. http://pps.sagepub.com.proxy1.ncu.edu/content/5/3/233.full.pdf+html
Instruction:Read Article

Document/Other
Kirk, R. (2003). Chapter 5: The importance of effect magnitude. http://search.credoreference.com.proxy1.ncu.edu/content/entry/bkhrmep/chapter_5_the_importance_of_effect_mag nitude/0
Instruction:Read Article

Assignment: Exploring Inferential Statistics and Their Discontents	**(10 Points) Due: 05/15/2016**

Instructions:

This is a two part assignment that will be submitted within one document.

Part I
Part I checks your understanding of key concepts from Jackson and Trochim & Donnelly.

Answer the following questions:

1. Jackson even-numbered Chapter exercises (pp. 220-221; 273-275)
2. What are degrees of freedom? How are the calculated?
3. What do inferential statistics allow you to infer?
4. What is the General Linear Model (GLM)? Why does it matter?
5. Compare and contrast parametric and nonparametric statistics. Why and in what types of cases would you use one over the other?
6. Why is it important to pay attention to the assumptions of the statistical test? What are your options if your dependent variable scores are not normally distributed?

Part II
Part II introduces you to a debate in the field of education between those who support Null Hypothesis Significance Testing (NHST) and those who argue that NHST is poorly suited to most of the questions educators are interested in. Jackson (2012) and Trochim and Donnelly (2006) pretty much follow this model. Northcentral follows it. But, as the authors of the readings for Part II argue, using statistical analyses based on this model may yield very misleading results. You may or may not propose a study that uses alternative models of data analysis and presentation of findings (e.g., confidence intervals and effect sizes) or supplements NHST with another model. In any case, by learning about alternatives to NHST, you will better understand it and the culture of the field of education.

Answer the following questions:

1. What does p = .05 mean? What are some misconceptions about the meaning of p =.05? Why are they wrong? Should all research adhere to the p = .05 standard for significance? Why or why not?
2. Compare and contrast the concepts of effect size and statistical significance.
3. What is the difference between a statistically significant result and a clinically or "real world" significant result? Give examples of both.
4. What is NHST? Describe the assumptions of the model.
5. Describe and explain three criticisms of NHST.
6. Describe and explain two alternatives to NHST. What do their proponents consider to be their advantages?

Support your paper with a minimum of 5 resources. In addition to these specified resources, other appropriate scholarly resources, including older articles, may be included.

Length: 5-7 pages not including title and reference pages
References: Minimum of 5 scholarly resources.

Your paper should demonstrate thoughtful consideration of the ideas and concepts that are presented in the course and provide new thoughts and insights relating directly to this topic. Your paper should reflect scholarly writing and current APA standards. Review APA Form and Style.

Be sure to adhere to Northcentral University's Academic Integrity Policy. View the Northcentral Academic Integrity Tutorial to refresh your knowledge of how to achieve academic integrity.

Upload your assignment using the Upload Assignment button below.

Alignment to Course Learning Outcomes:
3.0   Analyze the advantages, disadvantages, and alternatives to null hypothesis significance testing.

Section 3: Quantitative Designs

de Vaus (2001) identified two broad types of quantitative research designs—descriptive and explanatory. Research that contributes to theory, as your dissertation must, will almost definitely be explanatory. It will seek to address a why question. It will test hypotheses that will add to our understanding of how the world works. It will yield findings that cast light on a causal relationship—e.g., does a causal relationship exist between two phenomena? What are the mechanisms through which the cause achieves its effect? Your study will be, in the broad sense of the word, an experiment.

The most common types of quantitative designs are those addressed in this section: (true) experimental designs and quasi-experimental (including cross-sectional) designs. You can read about other types of experimental designs such as non-experimental (see Trochim's socialresearchmethods.net) and longitudinal (which in some category schemes are types of experimental or quasi-experimental designs, but aren't discussed here) on your own.

After completing the readings and assignments in this section you should be able to do the following

Learning Outcomes: 4, 5, 6, 7, 8

4. Develop experimental designs with multiple levels of an independent variable and associated statistical analyses.
5. Compare and contrast aspects of experimental designs.
6. Evaluate experimental designs with multiple independent variables and associated statistical analyses.
7. Evaluate the advantages and disadvantages of quasi-experimental designs.
8. Critique quasi-experimental designs.

Week 3:
Week Introduction:

Experimental Designs I

Previously you were introduced you to the logic of experiments and to simple experimental designs. This week and the next take you deeper into experimental designs. You will explore experimental designs with multiple levels of an independent variable and associated statistical analyses.

Review the resources listed in the Books and Resources area below to prepare for this week's assignments.

Books & Resources:
Book
Jackson, S. L. 2012 Research methods and statistics: A critical thinking approach.
Instruction:Read Chapter 11

Trochim, W. M. K., & Donnelly, J. P. 2008 The research methods knowledge base.
Instruction:Read Pages 185 - 191

Instructions:

Answer the Following Questions

1. Jackson, even-numbered Chapter Exercises, pp. 308-310.
2. What is an F-ratio? Define all the technical terms in your answer.
3. What is error variance and how is it calculated?
4. Why would anyone ever want more than two (2) levels of an independent variable?
5. If you were doing a study to see if a treatment causes a significant effect, what would it mean if within groups variance was higher than between groups variance? If between groups variance was higher than within groups variance? Explain your answer
6. What is the purpose of a post-hoc test with analysis of variance?
7. What is probabilistic equivalence? Why is it important?

Support your paper with a minimum of 5 resources. In addition to these specified resources, other appropriate scholarly resources, including older articles, may be included.

Length: 5-7 pages not including title and reference pages
References: Minimum of 5 scholarly resources.

Your paper should demonstrate thoughtful consideration of the ideas and concepts that are presented in the course and provide new thoughts and insights relating directly to this topic. Your paper should reflect scholarly writing and current APA standards. Review APA Form and Style.

Be sure to adhere to Northcentral University's Academic Integrity Policy. View the Northcentral Academic Integrity Tutorial to refresh your knowledge of how to achieve academic integrity.

Upload your assignment using the Upload Assignment button below.

Alignment to Course Learning Outcomes:
4.0   Develop experimental designs with multiple levels of an independent variable and associated statistical analyses.

Week 4:
Week Introduction:

Experimental Designs II

Almost everything in research involves trade-offs between practical considerations and the likelihood of obtaining convincing results and trade-offs between competing design goals. Good research designs thread a course between avoiding Type I errors—(thinking you've found a difference or relationship that is not there) because you didn't identify and control for confounds, used measures of the wrong constructs, or made one of dozens of other errors, oversights or miscalculations, and avoiding Type II errors—(not finding a relationship or difference that is there) because you didn't have a design of sufficient sensitivity or didn't identify a moderating variable in your sample, or made one of dozens of other errors, oversights or miscalculations!

True experiments are considered by many to be the gold standard of research designs. Their use of random assignment to conditions removes a great source of error and threats to validity. But even experiments involve calculations of costs and benefits, i.e., trade-offs in design, and are not always the best way to answer a research question. You should realize by now that all designs are made to order; none are off the rack! You must individually tailor a design to address your research questions, given your available time and resources. In addition, you must justify all of your decisions!

Review the resources listed in the Books and Resources area below to prepare for this week's assignments.

Books & Resources:
Book
Jackson, S. L. 2012 Research methods and statistics: A critical thinking approach.
Instruction:Read Chapter 12

Trochim, W. M. K., & Donnelly, J. P. 2008 The research methods knowledge base.
Instruction:Read Pages 191- 207

Document/Other
Greenhoot, A. F. (2003). Chapter 6: Design and analysis of experimental and quasi-experimental investigations. http://search.credoreference.com.proxy1.ncu.edu/content/entry/bkhr mcp/chapter_6_design_and_analysis_of_experimental_and_quasi_experimental_investigations/0
Instruction:Read Article

Article/Journal
Wiley, R. (2009). Trade-offs in the design of experiments. http://proxy1.ncu.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=pdh&AN=com-123-4-447&site=e host-live
Instruction:Read Article

Instructions:

Answer the Following Questions:

1. Jackson, even-numbered Chapter Exercises, pp. 335-337.
2. Explain the difference between multiple independent variables and multiple levels of independent variables. Which is better?
3. What is blocking and how does it reduce "noise"? What is a disadvantage of blocking?
4. What is a factor? How can the use of factors benefit a design?
5. Explain main effects and interaction effects.
6. How does a covariate reduce noise?
7. Describe and explain three trade-offs present in experiments.

Support your paper with a minimum of 5 resources. In addition to these specified resources, other appropriate scholarly resources, including older articles, may be included.

Length: 5-7 pages not including title and reference pages
References: Minimum of 5 scholarly resources.

Your paper should demonstrate thoughtful consideration of the ideas and concepts that are presented in the course and provide new thoughts and insights relating directly to this topic. Your paper should reflect scholarly writing and current APA standards. Review APA Form and Style.

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Upload your assignment using the Upload Assignment button below.

Alignment to Course Learning Outcomes:
5.0 Compare and contrast aspects of experimental designs.
6.0 Evaluate experimental designs with multiple independent variables and associated statistical analyses.

Week 5:

Week Introduction:

Quasi-Experimental Designs

For reasons that will be clear after you've completed the readings for this Activity, if you do an experimental study for your dissertation, it will probably be a quasi-experiment. There are very good reasons why quasi-experimental designs are popular and a large literature on how they can be done well.

Review the resources listed in the Books and Resources area below to prepare for this week's assignments.

Books & Resources:
Book
Jackson, S. L. 2012 Research methods and statistics: A critical thinking approach.
Instruction:Read Chapter 13

Trochim, W. M. K., & Donnelly, J. P. 2008 The research methods knowledge base.
Instruction:Read Chapters 7, 10, and Pages 308-330

Article/Journal
Goldberg, N. (1990). A quasi-experiment assessing the effectiveness of TV advertising directed to children. http://search.proquest.com.proxy1.ncu.edu/docview/235231913?accountid=28180
Instruction:Read Article

Assignment: Discuss Quasi-Experimental Designs   **(10 Points) Due: 06/05/2016**

Instructions:

Part I - Answer the following questions:

1. Jackson (2012), even-numbered chapter exercises, p 360.
2. Describe the advantages and disadvantages of quasi-experiments? What is the fundamental weakness of a quasi-experimental design? Why is it a weakness? Does its weakness always matter?
3. If you randomly assign participants to groups, can you assume the groups are equivalent at the beginning of the study? At the end? Why or why not? If you cannot assume equivalence at either end, what can you do? Please explain.
4. Explain and give examples of how the particular outcomes of a study can suggest if a particular threat is likely to have been present.
5. Describe each of the following types of designs, explain its logic, and why the design does or does not address the selection threats discussed in Chapter 7 of Trochim and Donnelly (2006):
    a. Non-equivalent control group pretest only
    b. Non-equivalent control group pretest/posttest
    c. Cross-sectional
    d. Regression-Discontinuity
6. Why are quasi-experimental designs used more often than experimental designs?
7. One conclusion you might reach (hint) after completing the readings for this assignment is that there are no bad designs, only bad design choices (and implementations). State a research question for which a single-group post-test only design can yield relatively unambiguous findings.

Part II - Answer the following questions:

1. What research question(s) does the study address?
2. What is Goldberg's rationale for the study? Was the study designed to contribute to theory? Do the results of the study contribute to theory? For both questions: If so, how? If not, why not?
3. What constructs does the study address? How are they operationalized?
4. What are the independent and dependent variables in the study?
5. Name the type of design the researchers used.
6. What internal and external validity threats did the researchers address in their design? How did they address them? Are there threats they did not address? If so how does the failure to address the threats affect the researchers' interpretations of their findings? Are Goldberg's conclusions convincing? Why or why not?

Support your paper with a minimum of 5 resources. In addition to these specified resources, other appropriate scholarly resources, including older articles, may be included.

Length: 5-7 pages not including title and reference pages
References: Minimum of 5 scholarly resources.

Your paper should demonstrate thoughtful consideration of the ideas and concepts that are presented in the course and provide new thoughts and insights relating directly to this topic. Your paper should reflect scholarly writing and current APA standards. Review APA Form and Style.

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Upload your assignment using the Upload Assignment button below.

Alignment to Course Learning Outcomes:
7.0 Evaluate the advantages and disadvantages of quasi-experimental designs.
8.0 Critique quasi-experimental designs.

Section 4: Working with Your Tentative Quantitative Research Question

This Section has Activities that require you to work with a tentative research question. As you know, you will almost definitely change (or at least refine) your research question(s) when you write your Concept Paper, and you may not even choose to do a quantitative study. These Activities will teach you key concepts in research design that will serve you regardless of your later choices.

After completing the readings and assignments in this section you should be able to do the following:

Learning Outcomes: 9, 10, 11

9. Investigate how exploring mediator, moderator, and independent variables can contribute to theory.

10. Compare and contrast the roles of sampling technique, convenience samples, and selection bias in quantitative designs.
11. Determine the appropriate sample size based on an a priori power analysis.

Week 6: Independent, Mediating, Moderating and Dependent Variables

Week Introduction:

As you know from reading the PhD Dissertation Handbook Research Methods, dissertation research must contribute to theory in a topic area:

A dissertation research problem is a GAP in recent research (usually in the past five years) in a topic area that can be addressed by a study that will contribute to knowledge and theory in the area.

The ways that quantitative research can make a theory contribution are limited only by imagination and knowledge of design, statistics, and literature in a topic area. One very effective strategy for contributing to theory in a quantitative study is to identify variables that the literature on a topic suggests may cause an outcome or mediate or moderate a known relationship between a cause and an effect. A research problem for a quantitative study will usually be a statement describing something we do not know about the relationships among constructs in a topic area.

Here is a fictitious example:

Say your review of the literature shows that we know that smiling causes happiness. It also shows that there is disagreement among researchers and theorists in these areas:

  a. on how smiling causes happiness;
  b. under what conditions and for what type of people smiling causes happiness; and,
  c. what else causes happiness

Your research can contribute to theory on the relationship between smiling and happiness by addressing a) or b). Addressing c) is a completely different matter. c) involves identifying constructs that also cause happiness. You would be unlikely to choose this option, because it is not directly related to the smiling/happiness relationship. It involves you in the huge project of developing a general theory of happiness, which is too ambitious for a dissertation study. If, however, your literature review uncovers a theory of happiness that predicts that smiling causes happiness but no one has done a controlled study to see if it in fact does, then you could conduct a study to see if smiling causes happiness that would contribute to theory.

It is important to understand that a study that looks to see if one variable causes an effect on another does not necessarily contribute to theory. For example, simply looking to see if a treatment works (causes an effect, an improvement, is more effective than a placebo) does not contribute to theory, unless you are specifically testing an untested cause and effect relationship claim made in a theory, as in the happiness theory example. For example, if a theory claims that based on what is known about how Y develops in childhood, treatment or intervention X should produce more Y, you are testing a theory and so contributing to it by providing empirical evidence for or against a theory claim. Without the context of a theory that gives a reason why X causes Y, you would be completing an applied study, which is not acceptable for a PhD dissertation.

Back to studying the smiling/happiness relationship. Here is how your study could add to our understanding of the relationship.

Your study could:

  1. Address phenomena that mediate the smiling/happiness relationship. Our knowledge of human biology tells us smiling cannot directly cause happiness. Smiling must be the beginning of a causal chain of events ending with happiness. Your literature review would identify plausible links, and your study would examine if they are in fact present when people smile and report feeling happy. Your study would contribute to theory on how smiling causes happiness.
  2. Address constructs that moderate the smiling/happiness relationship. Your literature review would show you that smiling only leads to happiness under certain conditions (e.g., when people are in a calm mood and not severely depressed). Your review of the literature would suggest plausible candidates for the conditions under which the relationship holds. Your study would contribute to theory on how smiling causes happiness by telling us something about the conditions under which the smiling/happiness relationship holds.

As you may gather from the readings for this activity, scientists view the world as a vast interconnected network of mediated and moderated cause and effect relationships. These relationships can be extremely complex. A only mediates X and Y under condition P. Under condition Q, B mediates X and Y. B is a moderator in some contexts, a mediator in others. Etc. No one ever said life was simple!

Note: Smiling and happiness are phenomena in the world. They are also constructs in theories that researchers must operationalize in order to measure. Once operationalized, we call a construct a variable. Variables usually have a number associated with them. Constructs do not. It makes sense to speak of having an IQ of 100 as measured by a Weschler test, but no sense to speak of having an intelligence of 100.

Review the resources listed in the Books and Resources area below to prepare for this week's assignments.

Books & Resources:
Book
Creswell, J. W. 2013 Research design: Qualitative, quantitative, and mixed methods approaches.
Instruction:Read Pages 49-61

Trochim, W. M. K., & Donnelly, J. P. 2008 The research methods knowledge base.
Instruction:Read Pages 61-62

Article/Journal
Bauman, A. E., Sallis, J. F., Dzewaltowski, D. A., & Owen, N. (2002). Toward a better understanding of the influences on physical activity. http://www.sciencedirect.com.proxy1.ncu.edu/science/article/pii/S0749379702004695
Instruction:Read Article

Petty, R. (2006). Research as a script: One researchers view. http://sk.sagepub.com.proxy1.ncu.edu/reference/hdbk_psychrsch/n1.xml
Instruction:Read Article

Assignment: Contributing to Theory: Independent, Mediating, Moderating and Dependent Variables   (10 Points) Due: 06/12/2016

Instructions:

Examine the literature in your topic area and identify five articles published within the past five years that investigate mediating, moderating, or independent variables in an attempt to contribute to theory in the topic area. Write a paper in which for each article, you:

  1. Describes the theory the researchers explore. What are the key constructs in the theory? How are they related? Identify which ones are cause, effect, mediating, or moderating constructs. How are the constructs operationalized?
  2. Briefly describe the study, including the number of participants and research methods.
  3. Briefly describe the statistical analyses used
  4. Briefly described the findings and how the researchers interpreted them and their contribution to theory.

Using some or all of the five articles, argue for a gap in the knowledge in the topic area and briefly describe a study involving mediator and or moderator variables that can contribute to theory.

Support your paper with a minimum of 5 resources. In addition to these specified resources, other appropriate scholarly resources, including older articles, may be included.

Length: 5-7 pages not including title and reference pages
References: Minimum of 5 scholarly resources.

Your paper should demonstrate thoughtful consideration of the ideas and concepts that are presented in the course and provide new thoughts and insights relating directly to this topic. Your paper should reflect scholarly writing and current APA standards. Review APA Form and Style.

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Upload your assignment using the Upload Assignment button below.

Alignment to Course Learning Outcomes:
9.0   Investigate how exploring mediator, moderator, and independent variables can contribute to theory.

Week 7: Samples, Power Analysis, and Design Sensitivity
Week Introduction:

Researchers are concerned with who they study—their sample—for two very different basic reasons:

1. in order to be able to say something convincing about a population, i.e. to be able generalize claims about a sample to a population;
2. in order to be able to say something convincing and meaningful about relationships between constructs.

Generalizing
In research that attempts to contribute to theory, as dissertation research must, (1) is not usually of interest. If, for example, your literature review suggests that gender or IQ scores or some other variable moderates a relationship, you will, of course, need to be sure that you include participants with the necessary characteristics (gender, IQ score, etc.) and you will need to ensure that your sample has an identity (e.g., business leaders in New York) but you do not need worry about whether your participants are selected in sufficient numbers in a specific way (e.g., randomly, stratified randomly) from a specific population to allow you to say something about the population from which the sample is drawn.

On the other hand, an inadequate literature review or chance may lead you to select a group in which a moderating variable is at work (so that you may not find a relationship that really does exist, just not for your sample) or a sample that does not meet the assumptions (even relaxed assumptions) of the statistical test you planned to use (oops!). These will be matters to address by using non-parametric statistics or to speculate about in Chapter Five of your dissertation or for future researchers to discover.

As a researcher and a doctoral student, you must, though, know about (1) and understand the concepts involved with it. The first part of this assignment addresses this.

Power
Researchers who attempt to contribute to theory are primarily concerned with exploring relationships among constructs, not with seeing if something that is true of a group is true of a population. They are concerned with (2)—having a sample that allows you to find a relationship among constructs. This is a matter of both the size of your sample and the sensitivity of your design. As you know, sample size and other aspects of design are intimately related, and you must think about them together when developing your research questions and planning your study.

Unless you are lucky enough to be able to obtain all the participants you need in order to do your preferred study, you will have to work back and forth between design and sample size, adding covariates or blocking to reduce error variance or maybe even changing from a between subjects to a within subjects design or making some other serious modification in your design until you arrive at a viable design that has a good chance of answering your research questions.

Unless you design your study adequately and select a sample of sufficient size, your design may be a set-up for a Type II error—failing to find a difference or a relationship that is really there—and your study may be largely a waste of time! You want to have a large enough N to find a relationship among constructs that is really there and to be able to argue that the relationship is meaningful.

Power Analysis
There are four factors involved in calculating sample size:

1. Statistical test - Your sample size is partly a function of the statistical test you use. Some tests (e.g., Chi-squared) require larger sample to detect a difference than others (e.g., ANCOVA).
2. Expected/estimated Effect size - The effect size is potency of your intervention or the strength of the relationship you are investigating. For example, a psychedelic drug has a very potent effect on number and vividness of hallucinations. You may only need a single subject design to detect them. The effect of a traffic safety class taken in 2nd grade on a group of high school students may take a very large sample to detect. In the language of statistics, an effect size is the difference between the mean scores of two groups divided by the pooled standard deviation. This is called Cohen's d. The greater difference between groups on a measure after you factor in how spread out the scores are, the more potent the intervention. You will calculate an effect size as part of the analysis of your data in order to determine that you have found something meaningful (not merely statistically significant), but in advance of doing your study, you must estimate the effect size in your study. Lipsey and Hurley (2009) describe a way to estimate effect size that many Learners will find helpful: Review the literature on the same or similar relationships or interventions to find the range of relevant effect sizes to estimate the effect size for your study.
3. Alpha. The alpha level is the probability of a Type I error—of rejecting the null, no difference, hypothesis when it is true—that you are familiar with. By convention this is set at p=.05. Convention may not be your best guide. The null hypothesis is always false and can always be rejected with a large enough sample, so a .05 level may unnecessarily require you to have a larger sample than you need. Better to use the literature and your judgment to justify an alpha level that makes sense for your study. This justification will involve looking at the danger of a Type I error versus the cost in resources of avoiding it.
4. Beta. The beta level is the probability of a Type II error—of accepting the null, no difference, hypothesis when it is false, in other words, of failing to detect a difference when it is there. The main point of a power analysis is to have enough subjects and no more to detect a difference. As with alpha, you set beta based on a judgment. The convention is .2, which yields a power of .8 (1-beta).

Review the resources listed in the Books and Resources area below to prepare for this week's assignments.

Books & Resources:
Book
Trochim, W. M. K., & Donnelly, J. P. 2008 The research methods knowledge base.
Instruction:Read Chapter 2

Article/Journal
Acheson, A. (2010). Sample size. http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n396.xml
Instruction:Read Article

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. http://search.proquest.com.proxy1.ncu.edu/docview/204305161/138F82745CE2C6F1DF6/5?accountid=28180
Instruction:Read Article

Fritz, A. E., & Morgan, G. A. (2010). Sampling. http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n398.xml
Instruction:Read Article

Houser, J. (2007). How many are enough? Statistical power analysis and sample size estimation in clinical research. http://firstclinical.com/journal/2007/0703_Power.pdf
Instruction:Read Article

Mayr, S., Erdfelder, E., Buchner, A. & Faul, F. (2007). A short tutorial of Gpower [2]. http://www.tqmp.org/Content/vol03-2/p051/p051.pdf
Instruction:Read Article

McCready, W. (2006). Applying sampling procedures. http://sk.sagepub.com.proxy1.ncu.edu/reference/hdbk_psychrsch/n10.xml
Instruction:Read Article

Piasta, S. B., & Justice, L. M. (2010). Cohen's d Statistic. http://sk.sagepub.com.proxy1.ncu.edu/reference/researchdesign/n58.xml

Instruction:Read Article

Document/Other
The G*Power 3. Heinrich Univeristat. http://www.psycho.uni-duesseldorf.de/abteilungen/aap/gpower3/
Instruction:Download and Review Document

<table>
<tr><td>**Assignment: Analyze Samples, Power Analysis, and Design Sensitivity**</td><td>**(10 Points) Due: 06/19/2016**</td></tr>
</table>

Instructions:

Submit the Following
1. Calculate the sample size needed given these factors:

- one-tailed t-test with two independent groups of equal size
- small effect size (see Piasta, S.B., & Justice, L.M., 2010)
- alpha =.05
- beta = .2
- Assume that the result is a sample size beyond what you can obtain. Use the compromise function to compute alpha and beta for a sample half the size. Indicate the resulting alpha and beta. Present an argument that your study is worth doing with the smaller sample (include peer-reviewed journal articles as needed to support your response).

2. Calculate the sample size needed given these factors:

- ANOVA (fixed effects, omnibus, one-way)
- small effect size
- alpha =.05
- beta = .2
- 3 groups
- Assume that the result is a sample size beyond what you can obtain. Use the compromise function to compute alpha and beta for a sample approximately half the size. Give your rationale for your selected beta/alpha ratio. Indicate the resulting alpha and beta. Give an argument that your study is worth doing with the smaller sample.

3. In a few sentences, describe two designs that can address your research question. The designs must involve two different statistical analyses. For each design, specify and justify each of the four factors and calculate the estimated sample size you'll need. Give reasons for any parameters you need to specify for G*Power.

Support your paper with a minimum of 5 resources. In addition to these specified resources, other appropriate scholarly resources, including older articles, may be included.

Length: 5-7 pages not including title and reference pages
References: Minimum of 5 scholarly resources.

Your paper should demonstrate thoughtful consideration of the ideas and concepts that are presented in the course and provide new thoughts and insights relating directly to this topic. Your paper should reflect scholarly writing and current APA standards. Review APA Form and Style.

Be sure to adhere to Northcentral University's Academic Integrity Policy. View the Northcentral Academic Integrity Tutorial to refresh your knowledge of how to achieve academic integrity.

Upload your assignment using the Upload Assignment button below.

Alignment to Course Learning Outcomes:
10.0   Compare and contrast the roles of sampling technique, convenience samples, and selection bias in quantitative designs.
11.0   Determine the appropriate sample size based on an a priori power analysis.

Section 5: Signature Assignment

The Signature Assignment should show how you:

a. demonstrate mastery of the course material, and
b. apply this knowledge to the real world.

After completing the readings and assignments in this section you should be able to do the following:

Learning Outcome: 12

12. Design a research study that uses a quantitative design.

Week 8:
Week Introduction:

Signature Assignment: Concept Paper

This week you will draw on your learning in this course and your work in previous courses (use any relevant material from Research Methods) to create a mock Concept Paper that describes a design that addresses a new, revised provisional quantitative research question. New (or newly gathered) research findings and theoretical developments in a topic area often lead to a new picture of the state of knowledge in the area and so to a new (or at the very least, a refined) problem statement. A new problem statement logically requires you to revise your research questions, hypotheses, purpose, and design accordingly. Remember: Research is an iterative process!

Review the resources listed in the Books and Resources area below to prepare for this week's assignments.

Books & Resources:
Book
Trochim, W. M. K., & Donnelly, J. P. 2008 The research methods knowledge base.
Instruction:Read Chapter 11

Document/Other
NCU Template PhD Degree CP 2013 Attachment: NCU_Template_PhD_Degree_CP_2013.docx.docx
Instruction:Read Document

<table>
<tr><td>**Assignment: Prepare a Mock Concept Paper**</td><td>**(30 Points) Due: 06/26/2016**</td></tr>
</table>

Instructions:

Write your mock Concept Paper using the Concept Paper template found in the Dissertation Center. Follow the template guidelines for each section.

1. Write an Introduction describing your topic.
2. Write the Statement of the Problem section.

3. Describe the Purpose of the Study. Include the results of your power analysis.
4. State your Research Question and your null and alternative hypotheses. Be sure that your question aligns with your purpose.
5. Write a Brief Review of the Literature.
6. Complete the Research Methods section (including the Operational Definition of Variables, Constructs, and Measurement sub sections). Follow the instructions in the CP template. Be sure to:
    a. Identify the strengths and weaknesses of your envisioned design and methods.
    b. Identify threats to validity and how your design will address them.
    c. Justify why your chosen design and methods are more appropriate for your research question than alternatives you have considered.
    d. Define the constructs you will measure and what you will do in order to determine how to operationalize them.
    e. Describe the sample you propose to study and its characteristics; this should include, but is not limited, to: 1) age; 2) gender; 3) ethnicity; 4) additional cultural factors; and 5) education level. Justify your choice of sample.
    f. Describe your method of sampling.
    g. Describe the type of data you need to collect and how you will collect it.
    h. Briefly describe any ethical issues you foresee with your study. Make a preliminary assessment of the level of risk associated with participation in your study that might need to be raised with the Institutional Review Board.
    i. Describe and justify how you will analyze your data and the descriptive statistics you will present.
    j. Explain how you conducted your power analysis.
    k. Describe how you will handle your data, check for accuracy etc.
    l. What problems do you foresee in implementing the design? How might you prevent them?

Support your paper with a minimum of 7 resources. In addition to these specified resources, other appropriate scholarly resources, including older articles, may be included.

Length: 12-15 pages not including title and reference pages
References: Minimum of 7 scholarly resources.

Your paper should demonstrate thoughtful consideration of the ideas and concepts that are presented in the course and provide new thoughts and insights relating directly to this topic. Your paper should reflect scholarly writing and current APA standards. Review APA Form and Style.

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Upload your assignment using the Upload Assignment button below.

Alignment to Course Learning Outcomes:
12.0 Design a research study that uses a quantitative design.