

STATE UNIVERSITY OF NEW YORK AT BUFFALO
School of Management

MGG 700
Research Methods
Fall 2009

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INTRODUCTION TO (DOCTORAL-LEVEL) RESEARCH METHODS

Overview and Purpose

This course is designed to provide doctoral students with an initial understanding of the process of scientific research, particularly within management-related disciplines. Students will examine the topics listed on the next page.

A major purpose of the course is to assist students in putting together a research proposal that could be used subsequently as a basis to develop a first or second year paper, a publishable paper, or a dissertation (see deliverable 1). A second purpose is to give students a chance to teach some of the material to the class and become comfortable teaching a class and presenting their own research (see deliverable 2). A third purpose is to give students exposure to the task of critiquing other research as a faculty member serving as a reviewer (see deliverable 3).

The two overall purposes of the course are (1) to expose students to the basics of scientific research that cut across areas of study in management, and (2) to expose students to the general problems of science with illustrations from different areas of study in the School of Management. As a first doctoral course in research methodology, the seminar focuses on the entire range and breadth of topics/issues in scientific research rather than in depth for any one topic. Upon completion of the course, however, students will have the necessary background information and knowledge to conduct an extensive research project from beginning to end and to review research.

As a doctoral seminar, students will be expected to contribute greatly to the class. Although an overview of key points and issues is provided for each topic by me or your colleagues, students will be responsible for obtaining details, generating questions, doing very extensive readings, and determining the specific direction of the discussions in the seminar. In addition, a list of important supplementary readings, a list of questions for evaluating empirical research, and a summary of statistical analyses are provided at the end of this course outline.

The structure of the course is as follows:

A. Introduction and Basic Issues in Science

Sept. 3 Overview of the course and introduction to issues

Sept. 10 Summary of key points by instructor

Sept. 17 Discussion of topics for creating a proposal including ways to do a literature review (Guest speaker likely)

1. How to Build Theories and Develop Hypotheses

Sept. 24 a. Summary of key points and questions by presentation leader(s)

Oct. 1 b. Presentation and discussion of students' theories and hypotheses (First draft of student paper is due.)

2. How to Assure Validity and Reliability

Oct. 8 a. Summary of key points and questions by presentation leader(s)

Oct. 15 b. Presentation of students' approach to assuring reliability and validity in their study. (First draft of student paper is due.)

3. How to Design a Study

Oct. 22 a. Summary of key points and questions by presentation leader(s).

Oct. 29 b. Presentation of students' study designs. (First draft of student paper is due.)

4. How to Collect Data

Nov. 5 a. Summary of key points and questions by presentation leader(s).

Nov. 12 b. Presentation of students approach to data collection. (First draft of student paper is due.)

5. How to Analyze Data

Nov. 19 a. Summary of key points and questions by presentation leader(s)

Dec. 3 b. Presentation of student approach to data collection and analysis. (First draft of student paper is due.)

6. Dec. 10 Students final in-class presentations

Your final paper and your review of one journal article are due Dec. 17, 2009

Active Learning and Class Conduct

This course uses active learning which studies show results in better short and long term learning. Active learning means that students are actively involved in the class. Examples include the student presentations, the development of your own research project, and reviewing an article of your choice. As potential future professors, you should consider using active learning in your presentation of the concepts (deliverable 2). As a professional, if you have problems in dealing with people who differ from you in terms of age, religion, creed, color, disability, national origin, race, ethnicity, sex, marital status, veteran status, or sexual orientation, it is expected you will not bring your problems to class. New York State law prohibits discrimination based on any of these categories.

Course Requirements

1. **Deliverable 1.** Major Project (120 points)

Purpose: To give students the opportunity to put together a research proposal that could be used subsequently as a basis to develop a first or second year paper, a publishable paper, or a dissertation. To provide students an opportunity to present their own research as they would at a professional conference or on a job interview for a faculty position.

Example: Read journal articles in your field and follow that format (i.e., (1) Theory section, (2) Methods section (includes Sampling and design section) (3) Results section (includes results of data analysis), and (4) Discussion section)

Due dates: See summary of requirements on next page

At the end of the course, each student will present to the class a written research paper. It will contain the students (1) topic, (2) theory and hypotheses, (3) method of assuring reliability and validity, (4) study designs, (5) proposed data collection, (6) proposed data analysis with an illustration of how the results would look if the theory received support.

During the semester on the dates assigned (Oct. 1, 15, 29, Nov. 12, Dec. 3), the student will present first drafts focused on one of the five above sections. Students will be ready to discuss their papers in class on the assigned date. The availability of this material in acceptable form and for submission in written form on the date assigned will generate 5 points for a total of 25 points. These first drafts will be submitted to the instructor who will provide written feedback to each student in the following class. The feedback should be used in crafting the final paper.

At some point in the course of my written feedback to you about your paper, when I think your ideas are settled, I will ask you to get input about your ideas from a faculty member of your choosing in your Department.

The final paper (due Dec. 17) will consist of the rewritten versions of the drafts, based on student comments in class and the instructors written comments. The paper and final presentation will be worth 95 points. (10 points from the students in attendance at the final presentation and 85 points from the instructor for the paper.)

2. **Deliverable 2:** Participation in Topic Coverage (55 points).

Purpose: To give students an opportunity to teach some of the material in a classroom setting and become comfortable teaching a class.

Example: Examples of your presentation in previous years will be provided

Due dates: See Summary of requirements on next page.

Students will select one or two (typically one) of 5 topics to summarize and present in class. In addition, the students who select the topic will develop a list of questions for discussion in the class that covers that topic.

During the 5 classes (Sept. 24, Oct. 8, 22, Nov. 5, 19) a seminar format will be used to cover the topics. Each topic could take an entire semester so all students should bring questions about the topics to class. The topics are: (1) How to Build a Theory, (2) How to Assure Validity and Reliability, (3) How to Design a Study, (4) How to Collect Data, (5) How to Analyze Data.

There are 30 points for the one session in which the student(s) lead(s) the discussion and passes out a copy of the power point slides along with a a brief summary of key points.

There are 25 points for student participation in the sessions in which they are not presenting (i.e., bringing questions to the seminar and participating in the discussion.)

3. **Deliverable 3:** Review of a journal article (55 points).

Purpose: to give students an opportunity to critique other research as one does as a faculty member when serving as a reviewer for a conference or journal.

Example: For a description of the concepts to cover, see the section in this course outline labeled " EVALUATING EMPIRICAL RESEARCH FOR DELIVERABLE 3"

Due date: Dec. 17

A no more than double spaced five page critique, due Dec. 17, of a published article in an area of interest to you is required. In this critique, you need to point out the strengths and

weaknesses of the paper using the content of the course. See the list of points at the end of the course outline. This is similar to writing a review for a journal article. You need to attach a copy of the article that you review to your paper. You can not use an article that you critiqued in another course. The article preferably should be less than one year old.

Summary of Requirements (200 points)

1. Major Paper (Total 120 points)

Distribution of Points:

First Draft Submitted on Time (5 points per draft) Due dates are: <i>Oct. 1, 15, 29 and Nov. 12, and Dec. 3.</i>	25 points
Presentation of paper: Points from class members Due date: <i>Dec. 10</i>	10 points
Points from instructor for final written paper Due date: <i>Dec 17</i>	85 points

2. Participation in course (Total 55 Points)

Distribution of points:

Leadership of one class seminar (Brief written summary and copies of power point slides due on class day of presentation) You can delay the final written summary for two weeks. Points determined by instructor Due dates will vary depending on topics selected: <i>Sept. 24, or Oct. 8, Oct. 22, or Nov. 5, or Nov. 19)</i>	30 points
Participation in class (points determined by instructor at end of course)	25 points

3. Critique of One Article

Points determined by instructor

Write a review after the fashion of a review of an article. See the list at the end of this outline for a list of issues to consider. Due date: Dec. 17	25 points
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Required Texts

1. (K) Kumar, R. (2005). *Research Methodology: A Step by Step Guide for Beginners*, London: Sage Publications. (This is a very, very basic book about research for students who have little background in research or who want a refresher.)
2. (R & R) Rosenthal, R. & Rosnow, R. (2008). Essentials of Behavioral Research: Methods and Data Analysis. (Third Edition) New York: McGraw Hill. (This is an introductory level book that is used at Harvard and Carnegie Mellon (GSIA) for a course like this one.)

Comments about the Reading Assignments

The "textbook" readings for each topic provide the important points for each topic.

The "other or additional readings" are mainly from journal articles and provide depth as well as background for the topic. (The "other or additional readings" are available for check out in 280 Jacobs). The additional readings for all topics are meant to enrich and clarify the materials in the text and are not designed to overwhelm you.

The "other readings" in the first section, which I will cover in class, are sometimes redundant with each other because they cover the same issues from the point of view of different areas of study. I will provide you with a written handout that explains what I think are the key points in the first set of "other readings."

Note that each student presentation will summarize the readings in a way that addresses the question of interest for the week. For example, the question for the first set of readings that I will present is what do the readings mean for selecting a topic for research. The readings provide a set of resources to use in an attempt to address the following key questions in the course that each presentation will attempt to answer:

1. How to Build Theories and Develop Hypotheses: (presentation Sept. 24)
2. How to Assure Validity and Reliability: (presentation Oct. 8)
3. How to Design a Study (presentation Oct. 22)
4. How to Collect Data (presentation Nov. 5)
5. How to Analyze Data (presentation (Nov. 19)

Reading Assignments

Topic A: Overview and how to select a topic

Introduction and Basic Logic of Science (Sept. 3-17)

Instructor will summarize key ideas (Sept. 3 and 10).

Assignment: Due: Sept 17. Present 1 to 3 topics that you would like to do research on and attempt a brief literature review to see if the topic is a feasible one about which to do research. Just list the topics and be prepared to discuss.

All students should come to class on Sept. 10 with a list of questions.

A. Text Readings

K: Chapter 1, Research: A Way of Thinking
Chapter 2, The Research Process: A Quick Glance
Chapter 13, Writing a Research Proposal

R & R: Chapter 1, The Spirit of Behavioral Research
Chapter 3, Ethical Considerations, Dilemmas, and Guidelines

Additional readings to be handed out in class about the institutional review board for those doing research with human subjects. Go to the following site to be certified if need be:

<https://www.citiprogram.org/default.asp>

B. Other readings to be related to How to Select a Research Topic. There is overlap in these readings from different areas of management.

B. 1 General Issues

Boulding, K. E. (1980). Science: Our common heritage. Science, 207, 4433, 831-836.

Root-Bernstein, R. S. (1988). Setting the stage for discovery: Breakthroughs depend on more than luck. The Sciences, 28, 3, 26-35.

Root-Bernstein, R. S. (1989). Breaking faith. The Sciences, 29, 6, 8-11.

Rosser, S. V. (1992). The gender equation. The Sciences, 32, 5 (Sept./Oct.), 42-47.

- Bass, B. M. (1974). The substance and the shadow. American Psychologist, 29, 870-886.
- Campion, M. A. (1993). Article review checklist: A criterion checklist for reviewing research articles in applied psychology. Personnel Psychology, 46, 705-718.
- Argyris, C. (1968). Some unintended consequences of rigorous research. Psychological Bulletin, 70, 185-197.
- Daft, R. L. (1983). Learning the craft of organizational research. Academy of Management Review, 8, 4, 539-546.
- Bartunek, J. M., Bobko, P., & VenKatraman, N. (1993). Toward innovation and diversity in management research methods. Academy of Management Journal, 36, 1362-1373.
- Sackett, P. R., & Larson, J. R. (1990). Research strategies and tactics in industrial and organizational psychology. In M. D. Dunnette & L. M. Hough (Eds.), Handbook of industrial and organizational psychology (Vol. 1) (2nd edition) (pp. 419-489). Palo Alto, CA: Consulting Psychologists Press.
- McCall, M. W., & Bobko, P. (1990). Research methods in the service of discovery. In M. D. Dunnette & L. M. Hough (Eds.) Handbook of industrial and organizational psychology (Vol. 1) (2nd edition) (pp. 381-418). Palo Alto, CA: Consulting Psychologists Press.
- Finholt, T. A. & Olson, G. M. (1997). From laboratories to collaboratories: A new organizational form for scientific collaboration. Psychological Science, 8, 1, 28-36.

B. 1.1. Similar Ideas From Marketing and Operations Research

- Deshpande, R. (1983). AParadigms lost@: On theory and method in research in marketing. Journal of Marketing, 47, 101-110.
- Swamidass, P. M. (1991). Empirical service: new frontier in operations management research. Academy of Management Review, 16, 793-814.

B 1.2.Similar Ideas From Accounting

Kinney, W. R. (1986). Empirical accounting research design for Ph.D. students. The Accounting Review, LXI, 338-349.

Cooper, W. W. & Zoff, S. A. (1992). Kinney=s design for accounting research. Critical Perspectives on Accounting, 3, 87-92.

Kinney, W. R. (1992). Issues in accounting research design education. Critical Perspectives on Accounting, 3, 93-97.

Williams, P. E. (1992). Prediction and control in accounting Ascience@. Critical Perspectives on Accounting, 3, 99-107.

B 1. 3.Economics

Freeman, R. B. (1997). In honor of David Card: Winner of the John Bates Clarke Medal. Journal of Economic Perspectives, 11, 161-178.

Some Ethical and Philosophical Issues (These readings go beyond pure methods but these issues sometimes present problems in selecting or developing a topic.)

Academy of Management (1993). The Academy of Management code of ethical conduct. Academy of Management Journal, 36, 1694-1698.

Rosenthal, R. (1994). Science and ethics in conducting, analyzing, and reporting psychological research. Psychological Science, 5, 127-134

Kurtines, W. M., Alvarez, M., & Azmitia, M. (1990). Science and morality: The role of values in science and the scientific study of moral phenomena. Psychological Bulletin, 107, 283-295.

Bartels, R. (1967). A model for ethics in marketing. Journal of Marketing, 31, 20-26.

Hunt, S. D. (1993). Objectivity in marketing theory and research. Journal of Marketing, 57, 76-91.

Manicas, P. T., & Secord, P. F. (1983). Implications for psychology of the new philosophy of science. American Psychologist, 38, 399-413.

Behling, O. (1980). The case for the natural science model for research in organizational behavior and organizational theory. Academy of Management Review, 5, 483-

490.

Behling, O. (1978). Some problems in the philosophy of science of organizations. Academy of Management Review, 3, 193-201.

Steffy, B. D., & Grimes, A. J. (1986). A critical theory of organization science. Academy of Management Review, 11, 322-336.

Hirschman, E. C. (1986). Humanistic inquiry in marketing research: Philosophy, method, and criteria. Journal of Marketing Research, 23, 237-249.

White, P. A. (1990). Ideas about causation in philosophy and psychology. Psychological Bulletin, 108, 3-18.

B.2. Issues About Inferences

(These readings deal with some issues that present confusion sometimes in selecting a topic.)

Platt, J. R. (1964). Strong inference. Science, 146, October 16, 347-353.

MacKenzie, K. D., & House, R. J. (1978). Paradigm development in the social sciences: A proposed research strategy. Academy of Management Review, 3, 7-23.

Bradshaw, G. F., Langley, P. W., & Simon, H. A. (1983). Studying scientific discovery by computer simulation. Science, 222, 4627, December 2, 971-975.

Sternthal, B., Tybout, A. M., & Calder, B. J. (1987). Confirmatory versus comparative approaches to judging theory tests. Journal of Consumer Research, 14, 114-125.

Klein, K. J., Dansereau, F., & Hall, R. J. (1994). Levels issues in theory development, data collection, and analysis. Academy of Management Review, 19, 195-229.

Dunnette, M. D. (1966). Fads, fashions, and federal in psychology. American Psychologist, 21, 343-352.

Popper, K. R. (1959, 1961). The logic of scientific discovery. NY: Basic Books. (pp. 276-281).

Murray, D. (1971). That's interesting. Philosophy of the Social Sciences. 1, 309-345.

Topic 1. How to Build Theories and Develop Hypotheses (Sept. 24, Oct. 1)

Assignment: Present your own theory and hypotheses (due Oct. 1)

Class Leader: On Sept. 24, present an example of a good and poor theory and/or hypothesis and summarize the key points in the readings.

Textbook Readings

K: Chapter 3, Reviewing the Literature
 Chapter 4, Formulating a Research Problem
 Chapter 5, Identifying Variables
 Chapter 6, Constructing Hypotheses

R & R: Chapter 2, Contexts of Discovery and Justification

Additional Readings

Popper, K. R. (1959, 1961). The logic of scientific discovery. NY: Basic Books.
 (pp. 40-44, 140-145).

Chamberlain, T. C. (1965). The method of multiple working hypotheses. Science,
 148, May 7, 754-759 (originally, Science, 1890).

Dubin, R. (1976). Theory building in applied areas. In M. D. Dunnette (Ed.)
Handbook of industrial and organizational psychology (pp. 17-39). Chicago:
 Rand McNally.

Campbell, J. P. (1990). The role of theory in industrial and organizational
 psychology. In M. D. Dunnette & L. M. Hough (Eds.), Handbook of industrial
 and organizational psychology (Vol. 1) (2nd ed.) (pp. 39-73). Palo Alto, CA:
 Consulting Psychologists Press.

Whetton, D. A. (1989). What constitutes a theoretical contribution? Academy of
 Management Review, 14, 490-495.

Bacharach, S. B. (1989). Organizational theories: Some criteria on evaluation.
Academy of Management Review, 14, 496-515.

Sutton, R. I., & Staw, B. M. (1995). What theory is not. Administrative Science
 Quarterly, 40, 371-384.

Topic 2. How to Assure Validity and Reliability (Oct. 8-15)

(Due Oct 15: Presentation of how to insure reliability and validity in your study).
 Class Leader, Oct 8: Present example of good and poor validity and reliability and summarize the key points in the readings.

Text Readings

K: Chapter 9, Selecting a Method of Data Collection
 Chapter 10, Collecting Data Using Attitudinal Scales
 Chapter 11, Establishing the Validity and Reliability of a Research Instrument

R & R: Chapter 4, Reliability and Validity and Validity of Measurement

Additional Readings

Stevens, S. S. (1968). Measurement, statistics, and the schemapiric view. Science, 161, Aug. 30, 849-856.

Cronbach, L. J., & Gleser, G. C. (1953). Assessing similarity between profiles. Psychological Bulletin, 50, 456-473.

Cronbach, L. J. (1955). Processes affecting scores on A understanding of others and Assumed similarity. Psychological Bulletin, 52, 177-193.

Cronbach, L. J., & Meehl, P. E. (1955). Construct validation in psychological tests. Psychological Bulletin, 52, 281-302.

Cronbach, L. J., & Furby, L. (1970). How we should measure Achange--or should we? Psychological Bulletin, 74, 68-80.

Cronbach, L. J. (1992). Four Psychological Bulletin articles in perspective. Psychological Bulletin, 112, 389-392.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. Psychological Bulletin, 56, 81-105.

Fiske, D. W., & Campbell, D. T. (1992). Citations do not solve problems. Psychological Bulletin, 112, 393-395.

Green, B. F. (1981). A primer on testing. American Psychologist, 36, 1001-1011

Peter, J. P. (1979). Reliability: A review of psychometric basics and recent marketing practices. Journal of Marketing Research, 16, 6-17

- Churchill, G. (1979). A paradigm for developing better measures of marketing constructs. Journal of Marketing Research, 16, 64-73.
- Peter, J. P. (1981). Construct validity: A review of basic issues and marketing practices. Journal of Marketing Research, 18, 133-145.
- Schwab, D. P. (1980). Construct validity in organizational behavior. In B. M. Staw and L. L. Cummings (Eds.), Research in Organizational Behavior, 2, 3-43. Greenwich, CT: JAI Press.
- Schmitt, N. (1994). Method bias: The importance of theory and measurement. Journal of Organizational Behavior, 15, 393-398.
- Howard, G. S. (1994). Why do people say nasty things about self-reports? Journal of Organizational Behavior, 15, 399-404.
- Dragow, F., & Hulin, C. L. (1990). Item response theory. In M. D. Dunnette & L. M. Hough (Eds.), Handbook of industrial and organizational psychology (Vol. 1) (2nd ed.) (pp. 577-636). Palo Alto, CA: Consulting Psychologists Press.

Topic 3. How to Design a Study (Oct. 22-29)

(Assignment due Oct. 29. Present your own study design.)

Class Leader (Oct. 22): Give example of a bad and a good study design and summarize the key points about study designs.

Text Readings:

- K: Chapter 7, The Research Design
Chapter 8, Selecting a Study Design
- R & R: Part III: The logic of Research Designs
Chapter 7 Randomized Controlled Experiments
Chapter 8 Non randomized Research

Other Readings

Ellsworth, P. C. (1977). From abstract ideas to concrete instances: Some guidelines for choosing natural research settings. American Psychologist, 32, 604-615.

Adelman, L. (1991). Experiments, quasi-experiments, and case studies: A review of

empirical methods for evaluating decision support systems. IEEE Transactions

on Systems, Man, & Cybernetics, 21, 293-301.

Lucking-Reiley, D. (1999). Using field experiments to test equivalence between auction formats: Magic on the internet. American Economic Review, 1063-1080.

Topic 4. How to Collect Data (Nov. 5-12)

(Assignment Due Nov. 12: Show how you propose to collect data.)

Class Leader (Nov. 5) Show good and poor data collection and summarize the key points about data collection.

Text Readings:

K: Chapter 12, Sampling
Chapter 14, Considering Ethical Issues in Data Collection
Chapter 15, Processing

R & R Chapter 5 Observations, Judgments and Composite Variables
Chapter 6 Questionnaires, interviews and Diaries
Chapter 9 Sampling Units

Other Readings:

Judson, H. F. (1983). Reweaving the web of discovery. The Sciences, 23, 6 (Nov/Dec), 44-52.

Bouchard, T. J. (1976). Field research methods: Interviewing, questionnaires, participant observation, systematic observation, unobtrusive measures. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 363-413). Chicago: Rand McNally.

Boice, R. (1983). Observational skills. Psychological Bulletin, 93, 3-29.

Fromkin, H. L., & Streufert, S. (1976). Laboratory experimentation. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 415-465). Chicago: Rand McNally.

Topic 5. How to analyze data and interpret results (Nov. 19, Dec. 3)

(Assignment due Dec. 3. How do you propose to analyze your data with illustration)
 Discussion Leader (Nov. 19) Give examples of good and poor data analysis and give summary of key points in the readings (see table at the end of the course outline about statistical analyses).

Text Readings

R & R: Chapter 10, Describing, Displaying, and Exploring Data
 Chapter 11, Correlation
 Chapter 12, Statistical Power
 Chapter 13 & 14, Comparing Means and F tests
 Chapter 16, Factorial Design of Experiments
 Chapter 17, Interaction Effects
 Chapter 18, Repeated-Measures Designs

Optional:

Chapter 19, Significance tests
 Chapter 20, Multivariate Procedures
 Chapter 21, Meta-Analysis

Other Readings

Signorelli, A. (1974). Statistics: Tool or master of the psychologist. American Psychologist, 29, 774-777.

Cowles, M., & Davis, C. (1982). On the origins of the .05 level of statistical significance. American Psychologist, 37, 553-558.

Bakan, D. (1966). The test of significance in psychological research. Psychological Bulletin, 66, 423-437.

- Shrout, P. E., Hunter, J. E., Harris, R. J., Abelson, R. P., Scarr, S., & Estes, W. K. (1997). Special Section: Should significance tests be banned? Psychological Science, 8, 1-20.
- Hagen, R. L. (1997). In praise of the null hypothesis statistical test. American Psychologist, 52, 1, 15-24.
- Loftus, G. R. (1996). Psychology will be a much better science when we change the way we analyze data. Current Directions in Psychological Science, 5, 6, 161-171.
- Grady, K. E. (1982). Measures of explained variance: Cautions and limitations. Psychological Bulletin, 92, 3, 766-777.
- Mook, D. G. (1983). In defense of external invalidity. American Psychologist, 38, 379-387.
- Cohen, J. (1968). Multiple regression as a general data-analytic system. Psychological Bulletin, 70, 426-443.
- Cohen, J. (1992). Fuzzy methodology. Psychological Bulletin, 112, 409-410.
- Cohen, J. (1992). A power primer. Psychological Bulletin, 112, 155-159.
- Cohen, J. (1992). Statistical power analysis. Current Directions in Psychological Science, 1, 3, 98-101.
- Zuckerman, M., Hodgins, H. S., Zuckerman, A., & Rosenthal, R. (1993). Contemporary issues in the analysis of data: A survey of 551 psychologists. Psychological Science, 4, 49-53.
- James, L. R., & Brett, J. M. (1984). Mediators, moderators, and tests for mediation. Journal of Applied Psychology, 69, 307-321.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality & Social Psychology, 51, 1173-1182.
- Stone, E. F. (1988). Moderator variables in research: A review and analysis of conceptual and methodological issues. Research in Personnel and Human Resources Management, 6, 191-229.

- Rosnow, R. L., & Rosenthal, R. (1989). Definition and interpretation of interaction effects. Psychological Bulletin, 105, 143-146.
- Abelson, R. P., Petty, R. E., et al., & Rosnow, R. L., & Rosenthal, R. (1996). Technical Commentary Section: Interactions. Psychological Science, 7, 242-257.
- Bobko, P. (1990). Multivariate correlational analysis. In M. D. Dunnette & L. M. Hough (Eds.), Handbook of industrial and organizational psychology (Vol. 1) (2nd ed.) (pp. 637-686). Palo Alto, CA: Consulting Psychologists Press.
- Williams, L. J., & Podsakoff, P. M. (1989). Longitudinal field methods for studying reciprocal relationships in OB research: Toward improved causal analysis. Research in Organizational Behavior, 11, 247-293.
- Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. Psychological Bulletin, 88, 588-606.
- Bentler, P. M. (1992). On the fit of models to covariances and methodology. Psychological Bulletin, 112, 400-404.
- Harris, M. M., & Schaubroeck, J. (1990). Confirmatory modeling in OB/HR management: Issues and applications. Journal of Management, 16, 337-360.
- Medsker, G., Williams, L., & Holahan, P. (1994). A review of current practices for evaluating causal models in OB and HRM. Journal of Management, 20, 439-464.
- Olkin, I. (1992). Reconcilable differences: Gleaning insight from conflicting scientific studies. The Sciences, 32, 4, 30-36.
- Oxman, A. D., & Guyatt, G. H. (1993). The science of reviewing research. Annals of the New York Academy of Sciences, 703, 125-134.
- Schmidt, F. L. (1992). What do data really mean? Research findings, meta-analysis, and cumulative knowledge in psychology. American Psychologist, 47, 1173-1181.
- Guzzo, R. A., Jackson, S. E., & Katzell, R. A. (1987). Meta-analysis. Research in Organizational Behavior, 9, 407-442.
- Drazin, R. & Vande Ven, A. (1985). Alternative forms of fit in contingency theory. Administrative Science Quarterly, 30, 514-539.
- Schoonhoven, C. B. (1981). Problems with contingency theory: Testing assumptions

hidden with the language of contingency theory. Administrative Science Quarterly, 26, 349-377.

Petty, R. E., Fabrigar, L., Wegener, D., & Priesten. (1996). Understanding data when interactions are present or hypothesized. Psychological Science, 247-257.

Topic 5b. How To Do Causal Analyses (Optional)

Byrne, B. (1998). Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming. Mahwah, NJ: Lawrence Erlbaum, 3-40.

Other readings may be assigned.

Final Topic: Putting all the topics together (Dec. 10)

Student presentations of their papers

OPTIONAL SUPPLEMENTARY READINGS (BOOKS)

The following books may also be helpful for fulfilling the course requirements of writing a proposal. They are listed and then keyed to course topics on the following page.

Campbell, D. T., & Stanley, J. C. (1963, 1966). Experimental and quasi-experimental designs for research. Chicago: Rand McNally.

Cronbach, L. J., Gleser, G. C., Nanda, H., & Rajaratnam, N. (1972). The dependability of behavioral measurements. NY: Wiley.

Dubin, R. (1969). Theory building. NY: Free Press.

Dunnette, M. D. (Ed.) (1976). Handbook of industrial and organizational psychology. Chicago: Rand McNally.

Galtung, J. (1967). Theory and methods of social science. NY: Columbia University Press.

Hyman, H. (1972). Secondary analysis of sample surveys. NY: Wiley.

Kaplan, A. (1964). The conduct of inquiry. San Francisco: ChandlerKuhn, T. (1970). The structure of scientific revolutions. Chicago: University of Chicago Press.

- Lin, N. (1976). Foundations of social research. NY: McGraw Hill.
- Nagel, E. (1961). The structure of science: Problems in the logic of scientific explanation. NY: Harcourt, Brace, and World.
- Oppenheim, S. (1966). Questionnaire design and attitude measurement. NY: Basic Books.
- Popper, K. R. (1959, 1961). The logic of scientific discovery. NY: Basic Books.
- Schmitt, N. W., & Klimoski, F. J. (1991). Research methods in human resources management. Cincinnati: Southwestern Publishing.
- Sekaran, U. (1992). Research method for business (2nd ed.). New York: John Wiley & Sons.
- Selltiz, C., Wrightsman, L. S., & Cook, S. W. (1976). Research methods in social relations. NY: Holt, Rinehart, and Winston.
- Zeller, R., & Carmines, E. (1980). Measurement in the social sciences. Cambridge: Cambridge University Press.

1. General and Philosophical Issues

Kaplan, Chapters I, IX, X
 Kuhn
 Nagel, Chapter 1
 Popper, Chapters 1 to 3, 4 to 7, 8 to 10
 Schmitt & Klimoski, Chapter 1
 Sekaran, Chapters 1 and 2

2. How to Build Theories and Formulate Hypotheses

Dubin
 Dunnette (Chapter 5: Argyris)
 Kaplan, Chapters VIII, II, III, VII
 Sekaran, Chapter 3
 Selltiz, et al., Chapters 2 and 3

3. Issues of Reliability and Validity

Cronbach, et al.
Dunnette (Chapter 6: Campbell)
Kaplan, Chapter V
Lin, Chapter 10
Schmitt & Klimoski, Chapters 3 to 8
Sekaran, Chapter 6
Selltiz, et al., Chapter 6
Zeller & Carmines, Chapters 1 to 4.

4. How to Design a Study

Campbell & Stanley
Kaplan, Chapter IV
Schmitt & Klimoski, Chapters 9 to 11
Sekaran, Chapters 4 and 5
Selltiz, et al., Chapters 4 and 5

5. How to Collect Data

Lin, Chapter 9
Sekaran, Chapter 8
Selltiz, et al., Appendix A
Galtung, Part I
Oppenheim
Sekaran, Chapter 7
Selltiz, et al., Chapters 8 to 11 and Appendix B

6. Data Analysis and Interpretation

Dunnette (Chapter 8: Weiss)
Galtung, Part II
Hyman
Kaplan, Chapter VI
Lin, Chapters 15 and 16
Schmitt & Klimoski, Chapters 2 and 12
Sekaran, Chapters 9 and 10
Selltiz, et al., Chapter 14

EVALUATING EMPIRICAL RESEARCH FOR DELIVERABLE 3

This material is designed to form a checklist of various questions one can ask about research proposals.

THEORY AND DEDUCTION

I. Theory and Hypothesis Formulation

1. Was a significant problem or research question examined?
2. To what extent were the aims or purpose of the study delineated?
3. To what extent was the literature reviewed? integrated?
4. To what extent were the concepts defined (conceptual definitions)?
5. Were the hypotheses specified? Did they follow from 2, 3, and 4 above? Are they falsifiable?
6. Were boundaries and levels of analysis specified? included in hypotheses?
7. Are alternative hypotheses/theories specified?

II. Method

1. Was the study designed to answer the problem or research question?
2. Did the method follow from the theory/hypotheses?

A. Measurement

1. What were the independent, dependent, and control (moderator, etc.) variables?
2. For each variable: was it operationalized? justified?
3. For each variable: what evidence for validity was given?
4. For each variable: what evidence for reliability was given?
5. Were the measures quantifiable?
6. Was the unit or level of analysis specified and defined? measures at appropriate level of analysis?

B. Sample

1. Is the population and sample described? justified?
2. What sampling procedure was used?
3. To what extent was the population sampled appropriate for the research question?
4. To what extent was the sample adequate to answer the research question?

5. Were different/multiple units and levels of analysis specified? sampled?

C. Study Design

1. What specific design was used? Can it be diagramed?
2. How were subjects/objects assigned to conditions (treatments)?
3. How was comparability of groups established?
4. To what extent were threats to internal validity controlled?
5. To what extent were threats to external validity controlled?
6. To what extent were threats to statistical conclusion validity controlled?
7. To what extent were threats to construct validity controlled?
8. Can the study be replicated?
9. Are the manipulations adequate?
10. To what extent is correlation distinguished from causation?
11. Are various controls used?

DATA ANALYSIS AND INDUCTION

I. Techniques of Data Collection

1. How were the data collected? at multiple/single level(s)?
2. Was the technique appropriate?
3. Were data coding explained adequately?
4. Were data sources specified? multiple or single source(s)?

II. Models of Data Analysis and Interpretation

1. How were the data analyzed? Was the technique appropriate?
2. What were the empirical findings? Descriptive statistics?
3. To what extent were the findings statistically and practically significance? effect sizes reported?
4. To what extent and how were extraneous variables controlled?
5. Was a treatment effect of relationship among variables found?
6. What was the magnitude of the effect or relationship?

7. Were the treatments manipulated or delivered as intended?
8. Were multiple levels of analysis examined? How?

INFERENCES

I. Theory-Data Alignment

1. Did the results provide support for a hypothesis/theory relative to other hypotheses/theories which were tested?
2. Were the conclusions (verbal statements) consistent with the empirical findings (data)?
3. Were there other extraneous variables which could lead to an alternative explanation? What were the alternative explanations? What is a way to control for the extraneous variable(s) involved?
4. To what extent can the findings be generalized from the sample to population? from sample to theory?
5. To what extent can the findings be generalized to other populations, treatments, time periods, methods of measurement, or theory?
6. Was statistical significance confused with practical and/or substantive significance?
7. Were boundary conditions and levels of analysis accounted for?

III. Feedback and Summary

1. Were the results integrated with a stream of scientific knowledge?
2. Were the implications for research and practice stated?
3. To what extent did the study contribute to scientific knowledge? Was there a value-added contribution to the literature?
4. Was it well-organized, well-presented, well-written, etc.
5. Does it reach the target audience?

SUMMARY OF STATISTICAL ANALYSES				
<u>INDEPENDENT VARIABLES</u>	<u>MEASURED (SCORES) DEPENDENT VARIABLES</u>		<u>CATEGORICAL (COUNTS) DEPENDENT VARIABLES</u>	
	One (Univariate)	More than one (Multivariate)		
Categorical (Nominal Scales) (Counts)	One	t/F 1-way Analysis of Variance (ANOVA) or Planned Contrasts \bar{x}	λ /Mult F/F 1-way Multivariate Analysis of Variance (MANOVA) \bar{x}	Non-Parametric Techniques Cross tabs: χ^2 tests
	More than One	t/F \bar{x} 2-way ANOVA 3-way ANOVA etc. or Planned Contrasts	\bar{x} λ /Mult F/F 2-way MANOVA 3-way MANOVA etc.	Log Linear Models
Measured (Other Scales) (Scores)	One	t/Z Simple Correlation or Simple Regression (Regression Analysis is Correlation Analysis) r	t/F/ λ /Mult F Multivariate Simple Regression (Multiple Correlation by <u>reserving</u> independent and dependent variables) R	Non-Parametric Techniques (unless <u>reverse</u> the independent and dependent variables)
	More than One	t/F r Multiple Correlation or Multiple Regression (Correlation is Regression)	r λ /Mult F/F Canonical Correlation (Multivariate Multiple Regression)	Discriminant Analysis
Both Measured and Categorical	Analysis of Covariance Models (ANCOVA) (MANCOVA)			
Variables <u>and</u> Levels of Analysis	Within and Between Analysis (WABA), Hierarchical Linear Models (HLM), Hierarchical & Moderated Regression			

Web Support for MGB 700 (Optional)

The course's web site contains:

1. The course outline
2. A link to UB Learns so that you can use the bulletin board or chat room for this course

You can get to the course home page in the following ways

1. Go to <http://www.levelsofanalysis.com>. Scroll down the page until you see Fred Dansereau's home page and click on that. Then click on MGG 700
2. Go to <http://mgt.buffalo.edu/departments/ohr/mgtdanso/> and then click on MGG 700
3. Go to UBLearns.buffalo.edu. Enter your ID and password and click on this course.
Then go to the section on external links then click on course home page.