Research Methods 2

Spring, 2010

MAN 390.2, McCombs School of Business, The University of Texas at Austin

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Class: Wednesday 1-4p; CBA 4.204

Office hours: come by and knock, or by appt

This course is the second half of a year-long introduction to doing social science research, intended for graduate students studying management and organizations. The goal is to provide a sense of what doing such research is about, so as to prepare students to read and do it, and to provide a basis for subsequent courses on analyzing data. Our focus is on methods, not statistics, yet we will discuss some conceptual statistical issues.

The course format will be based on discussions and mini-lectures. Most weeks, we will spend considerable time examining your homework assignments together, analyzing the issues raised and not raised in concrete instances, then comparing and contrasting across them to understand the core ideas involved in research methods. We will learn by ascending from the concrete to the general, engaging in constant efforts to recognize consistent methodological issues within everchanging research contexts.

This class is intended to help you launch a career conducting research. As such, I am listing both required readings, and a list of optional readings and links to serve as a starting point whenever those issues arise for you more forcefully in the future and you need more involved guidance.

Readings

We will be using articles that I will hand out or post online through the UT Blackboard course website (http://courses.utexas.edu). I will also continue to draw on our course texts from the fall: Abelson (1995). Statistics as principled argument. Erlbaum.

Shadish, Cook & Campbell (2001). Experimental and quasi-experimental designs for generalized causal inference. Houghton Mifflin.

Rosenthal & Rosnow (2008). Essentials of behavioral research, Third Edition. McGraw Hill.

Also, in case it is useful:

http://www.mccombs.utexas.edu/faculty/Jeffrey.Loewenstein/resources.htm

Assignments

I provide detailed descriptions of all out-of class assignments as we meet them during the semester; what follows is a brief indication of what to expect.

Your main assignment this semester is to generate a research proposal. It should be about 15 pages, plus an abstract. I will use as a guideline the central National Science Foundation criteria for evaluating proposals (below), although naturally I will have a particular focus on your methods.

What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? To what extent does the proposed activity suggest and

explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

You will turn written assignments most weeks (40%) submit a first draft of a proposal (15%), and a final proposal (25%). Your active participation is also expected (20%).

Academic Honesty

You should hand in work that is yours, and that is original work for this class. You are free to hand in assignments drawing on topics that you are working on with other people and for other classes. You may discuss the topic with others you are working with. This is in many ways a good thing. However, you must motivate distinct hypotheses and introduce something distinct in the methods. I should be grading your work, not anyone else's.

I have no tolerance for acts of academic dishonesty. Such acts damage the reputation of the school and the degree and demean the honest efforts of the majority of students. The minimum penalty for an act of academic dishonesty will be a zero for that assignment. The responsibilities for both students and faculty with regard to the Honor System are described on http://mba.mccombs.utexas.edu/students/academics/honor/index.asp and on the following pages. As the instructor for this course, I agree to observe all the faculty responsibilities described therein. If the application of the Honor System to this class and its assignments is unclear in any way, it is your responsibility to ask me for clarification.

Students with Disabilities

Upon request, the University of Texas at Austin provides appropriate academic accommodations for qualified students with disabilities. Services for Students with Disabilities (SSD) is housed in the Office of the Dean of Students, located on the fourth floor of the Student Services Building. Information on how to register, downloadable forms, including guidelines for documentation, accommodation request letters, and releases of information are available online at http://deanofstudents.utexas.edu/ssd/index.php. Please do not hesitate to contact SSD at (512) 471-6259, VP: (512) 232-2937 or via e-mail if you have any questions.

Possibility of Changes

In rare circumstances it is necessary to change the above policies and schedules during the semester. Any changes will be announced in class and accompanied by a written notice.

Research Methods 2 Course Schedule Spring 2010

Week	Topic	Readings	Task
1	Overview	Scandura & Williams; Pfeffer;	
1/20		MacCoun	
2	Idea generation	Sutton; McGuire; Dunbar; Tetlock;	Generate ideas
1/27		Hastie	
3	Philosophy of	McKelvey; Godfrey & Hill; Tsang &	Critique your ideas
2/3	science	Kwan; Anderson; Hunt; Medin & Bang	
4	Content analysis	Pennebaker et al; Krippendorff [2	Coding assignment
2/10		articles]; RR Ch4	
5	Time/levels/units	Zaheer et al; Mitchell & James;	Consider units for
2/17		Klein et al; Klein & Kozlowski	your ideas
6	Groups	Chan; Bliese; Weller	Generate a group
2/24			study idea
7	Nested measures;	[Notes]; Castro; Pollack; RR Ch18	Gather related
3/3	HLM		literature
8	Social Networks	Kilduff & Tsai; Wasserman &	Generate a network
3/10		Faust; Galaskiewicz; Provan et al	study idea
Spring break			
9	Meta-Analysis	[Notes]; RR Ch21; Schmidt &	Analyze your
3/24		Hunter; Hedges	gathered literature
10	Modeling /	Argote et al; Cohen et al; Harrison	Generate a model for
3/31	Simulations	et al; Marr	your idea
11	Writing hypotheses	Booth et al; Clark	Write hypotheses for
4/7			your idea
12	Factor Analysis,	[Notes]; Gorsuch; Preacher &	Turn in proposal
4/14	SEM	MacCallum; Ullman & Bentler	
13	Data considerations	[Notes]; Chinn & Brewer	Turn in critique of
4/21			research proposal
14	Presentations	Kline	Presentations
4/28			
15	Ethics	RR Ch3; SCC Ch9; On being a	Presentations
5/5		scientist; AOM; UT IRB	
5/12			Turn in Final
			Research Proposal

[&]quot;Abelson" = Abelson (1995). *Statistics as principled argument*. Erlbaum.

[Notes] are brief discussions generated for this class, posted on blackboard.

[&]quot;SCC" = Shadish, Cook & Campbell (2001). Experimental and Quasi-Experimental Designs for Generalized Causal Inference. Houghton Mifflin.

[&]quot;RR" = Rosenthal & Rosnow (2008). Essentials of behavioral research, Third Edition. McGraw Hill.

Overview

Scandura, T. A., & Williams, E. A. (2000). Research methodology in management: Current practices, trends and implications for future research. *Academy of Management Journal*, *43*(6), 1248-1264.

A quick overview of validity, and then descriptive data on the variety of methodological approaches used in management.

Pfeffer, J. 1993. Barriers to the advancement of organizational science: Paradigm development as a dependent variable. *Academy of Management Review*, 18, 599-620. *An influential discussion of field-level progress*.

MacCoun, R. J. (1998). Biases in the interpretation and use of research results. *Annual Review of Psychology*, 49, 259-287.

A review on concerns about drawing conclusions from research findings.

Extensions:

Sage Publishers, Quantitative Applications in the Social Sciences. http://www.sagepub.com/booksSeries.nav?series=Series486&seriesDesc=Quantitative%20Applications%20in%20the%20Social%20Sciences&_requestid=377024

Sage publishes a series of brief (~100 pages each) and inexpensive introductions to specialized topics that you might find useful if you need to know more about a specific approach.

Other alternatives are brief summer courses on campus, at other schools, and at conferences (e.g., 1- to 5- day introductory seminars on a topic, e.g., Baysian analysis).

Idea generation

Sutton, R. I. (1997). The virtues of closet qualitative research. *Organization Science*, 8(1), 97-106.

A discussion of generating ideas through observation.

McGuire, W. J. (1997). Creative hypothesis generating in psychology: Some useful heuristics. *Annual Review of Psyhology*, 48, 1-30.

Note the sheer variety of entry points.

Dunbar, K. (1999). How scientists build models: InVivo science as a window on the scientific mind. In L. Magnani, N. Nersessian, & P. Thagard (Eds.), *Model-based reasoning in scientific discovery (pp 89-98)*. Plenum Press.

Note the implied process model.

Tetlock, P. E. Some functionalist frameworks for judgment and choice: Intuitive politicians, theologians, and prosecutors. *Psychological Review*, *109*(3), 451-471.

A fantastic example of productively carrying through metaphors.

Hastie, R. (2001). Problems for judgment and decision making. *Annual Review of Psychology*, 52, 653-683.

An example of questions as guides for an area of research.

Extensions:

Heath, C, & Heath, D. (2007). *Made to stick: Why some ideas survive and others die.* New York: Random House.

A popular press book by a leading researcher on selection in the marketplace of ideas; roughly, what makes ideas more likely to be talked about by others.

Also, recall the papers on explanations from last semester, and the often assigned (so I won't):

Davis, M. S. (1971). That's interesting! Toward a phenomenology of sociology and a sociology of phenomenology. Philosophy of the Social Sciences, 1, 309-344.

Philosophy of science

- McKelvey, B. (1997). Quasi-natural organization science. *Organization Science*, 8(4), 352-380. *Focus in particular on section 3.2. We will probably not discuss past p. 365.*
- Godfrey, P. C., & Hill, C. W. L. (1995). The problem of unobservables in strategic management research. *Strategic Management Journal*, *16*, 519-533. *Especially through p. 527*.
- Tsang, E. W. K., & Kwan, K.-M. (1999). Replication and theory development in organizational science: A critical realist perspective. *Academy of Management Review*, 24(4), 759-780. *A nice discussion of a central concern: is generalization meaningful?*
- Anderson, P. F. (1986). On method in consumer research: A critical relativist perspective. Journal of Consumer Research, 13(2), 155-173. A nice discussion of a relativist position.
- Medin, D.L. & Bang, M. (2008). Perspective Taking, Diversity and Partnerships. *American Psychological Association*. 22(2) online. http://www.apa.org/science/psa/medin.html *A pragmatic approach to conducting research not bound to one's own naïve realist view*.

Extensions:

Kuhn, T. S. (1962). The Structure of Scientific Revolutions. Chicago: Univ. of Chicago Press.

A classic, perhaps the most well-known on the topic; the argument for paradigms and incommensurability, and accordingly against positivism and at least some forms of realism.

Popper, K. (1959). The logic of scientific discovery. New York: Basic Books. *The classic argument for the falsifiability of theories*.

This is a branch of philosophical discussion, and hence there is simply too much to even list; a brief listing of names as further entry points, if you become interested, is Bhaskar; Boyd; Feyerabend; Hacking; Hesse; Lakatos; Laudan; Nagel; Suppes.

Wicks, A. C., & Freeman, R. E. (1998). Organization studies and the new pragmatism: Positivism, anti-positivism and the search for ethics. *Organization Science*, 9(2), 123-140.

Lee, A. S. (1991). Integrating positivist and interpretive approaches to organizational research. *Organization Science*, *2*(4), 342-365.

Kilduff, M., & Mehra, A. 1997. Postmodernism and organizational research. *Academy of Management Review*, 22: 453-481.

Camerer, C. 1985. Redirecting research in business policy and strategy. *Strategic Management Journal*, 6: 1-15.

Chua, W. F. 1986. Radical developments in accounting thought. *The Accounting Review*, 4: 601-632. Friedman, M. 1953. The methodology of positive economics. From: Essays in Positive Economics. Chicago: University of Chicago Press.

Hunt, S. D. 1991. Positivism and paradigm dominance in consumer research: Toward critical pluralism and rapprochement. *Journal of Consumer Research*, 18: 32-44.

Meredith, J. R., Raturi, A., Amoako-Gyampah, K., & Kaplan, B. 1989. Alternative research paradigms in operations. *Journal of Operations Management*, 4: 297-326.

Lee, B., Barua, A., & Whinston, A. B. 1997. Discovery and representation of causal relationships in MIS research: A methodological framework. MIS Quarterly, 21: 109-136.

A sampling of papers from across the various business school areas.

Content analysis

Pennebaker, J. W., Mehl, M. R., & Niederhoffer, K. G. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology, 54*, 547-577. *This paper presents an overview of the use of computerized coding of the frequency of kinds of words appearing in texts.*

Krippendorff, K. (2004). Content analysis: An introduction to its methodology, Second edition (Chapter 5). Thousand Oaks, CA: Sage.

This is the leading overview of content analysis methodology. I have given you chapter 5 to read on unitizing, perhaps the most distinctive aspect of content analysis.

Krippendorff, K. (2004). Reliability in content analysis: Some common misconceptions and recommendations. *Human Communication Research*, 30(3), 411-433. *A comparison of several measures of reliability*.

The Rosenthal and Rosnow chapter is a reminder on issues of reliability.

Extensions:

Kassarjian, H. H. (1977). Content analysis in consumer research. Journal of Consumer Research, 4(1), 8-18.

An early influential review.

Duriau, V. J., Reger, R. K., & Pfarrer, M. D. (2007). A content analysis of the content analysis literature in organization studies. Organizational Research Methods, 10(1), 5-34.

A recent overview of the use of content analysis in management journals.

Time / levels / units

Zaheer, S., Albert, S., & Zaheer, A. (1999). Time scales and organizational theory. *Academy of Management Review*, 24(4), 725-741.

An argument for being aware of how long events take to occur.

Mitchell, T. R., & James, L. R. (2001). Building better theory: Time and the specification of when things happen. *Academy of Management Review*, 26(4), 530-547.

An argument for being aware of how long a cause has an effect.

Klein, K. J., Dansereau, F., & Hall, R. J. (1994). Levels issues in theory development, data collection, and analysis. *Academy of Management Review*, 19(2), 195-229. *A frequently cited paper on levels of analysis and cross-level concerns*.

Klein, K. J. & Kozlowski, S. W. J. (2000). From micro to meso: Critical steps in conceptualizing and conducting multi-level research. *Organizational Research Methods*, *3*(3), 211-236.

Some help on kinds of cross-level effects and a discussion of related statistical concerns.

Extensions:

Kelly, J. R., & McGrath, J. E. 1988. On time and method. Beverly Hills, CA: Sage. *Probably the best known book on methods issues and time in management.*

Mosakowski, E., & Earley, P. C. 2000. A selective review of time assumptions in strategy research. Academy of Management Review, 25 796-812. *Useful contextualizing for those in strategy.*

Newell, A. 1990. *Unified theories of cognition*. Cambridge, MA: Harvard University Press

A compelling discussion of systems at differing levels of analysis.

Wolff, P. (2003). Direct causation in the linguistic coding and individuation of causal events. Cognition, 88(1), 1-48.

Zacks, J. M., &Tversky, B. (2001). Event structure in perception and conception. *Psychological Bulletin*, 127(1), 3-21.

Psychological research on how people perceive events and the question of what counts as an event.

Groups

Chan, D. (1998). Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *Journal of Applied Psychology*, 83(2), 234-246.

A framework for clarifying kinds of unit-group relations.

Bliese, P (2000). Within-group agreement, non-independence, and reliability. In K. Klein & S. Kozlowski (Eds.) *Multi-level theory, research, and methods in organizations* (pp.349-381). San Francisco: CA: Jossey-Bass.

A discussion of top-down and bottoms-up aggregation issues.

Weller, S. C. 2007. Cultural consensus theory: Applications and frequently asked questions. *Field Methods*, 19(4), 339-368.

An approach to assessing collective beliefs from cultural anthropology.

Extensions:

Dansereau's website with comparisons between statistical approaches to aggregation and levels of analysis issues:

http://www.levelsofanalysis.com/

Some resources for comparing approaches.

Klein, K. J., Conn, A. B., Smith, D. B., & Sorra, J. S. (2001). Is everyone in agreement? An exploration of within-group agreement in employee perceptions of the work environment. *Journal of Applied Psychology*, 86(1), 3-16.

An investigation of what influences within-group agreement.

Currall, S. C., Hammer, T. H., Baggett, L. S., & Doniger, G. M. 1999. Combining qualitative and quantitative methodologies to study group processes: An illustrative study of a corporate board of directors. *Organizational Research Methods*, 2, 5-36. *A study of group process using content analysis*.

Hughes, M. A., & Garrett, D. E. (1990). Intercoder reliability estimation approaches in marketing: A generalizability framework for quantitative data. *Journal of Marketing Research*, 27(2), 185-195.

A discussion of alternative forms of assessing reliability.

Nested measures and hierarchical linear modeling

The notes provide a brief introduction to HLM.

Pollack, B. N. (1998). Hierarchical linear modeling and the "unit of analysis" problem: A solution for analyzing responses of intact group members. *Group Dynamics: Theory, Research, and Practice, 2*(4), 299-312.

A more involved introduction to HLM.

Castro, S. L. (2002). Data analytic methods for the analysis of multilevel questions: A comparison of intraclass correlation coefficients, $r_{wg(j)}$, hierarchical linear modeling, within- and between-analysis, and random group resampling. *Leadership Quarterly*, 13, 69-93.

A comparison of approaches of suggestions on when to use them.

The Rosenthal and Rosnow chapter discusses repeated measures designs, which are increasingly being analyzed using HLM-type approaches (e.g., SAS proc MIXED). Note longitudinal analysis is also closely related.

Extensions:

Raudenbush, S. W. and Bryk, A. S. (2001). *Hierarchical Linear Models: Applications and Data Analysis Methods (Advanced Quantitative Techniques in the Social Sciences)*. Sage Publications, Inc.

The common reference on HLM.

Singer, J. D. (1998). Using SAS PROC MIXED to fit multilevel models, hierarchical models, and individual growth models. *Journal of Educational and Behavioral Statistics*, 24(4), 323-355.

A sort of "how-to" guide.

LeBreton, J. M., & Senter, J. L. (2008). Answers to 20 questions about interrater reliability and interrater agreement. *Organizational Research Methods*, 11(4), 815-852.

A discussion of reliability and agreement focused on rwg and icc, discussed in the context of multi-level modeling and judging when aggregating is acceptable.

Social networks

Kilduff, M., & Tsai, W. 2003. *Social Networks and Organizations*. London: Sage. *An overview from an introductory textbook*.

Wasserman, S., & Faust, K. 1994. *Social network analysis: methods and applications*. New York, Cambridge University Press.

An introduction from the leading methods book for social networks.

Galaskiewicz, J. (2007). Has a network theory of organizational behavior lived up to its promises? *Management and Organization Review*, 3, 1-18.

Provan, K. G., Fish, A., & Sydow, J. (2007). Interorganizational networks at the network level: a review of the empirical literature on whole networks. *Journal of Management*, 33, 479-516.

Two papers with recent over-views of network research to give a feel for its use.

Extensions:

Sotware: Borgatti, Everett, & Freeman UCINET Network Analysis Software. http://www.analytictech.com/

UCINET tutorial by Bob Hanneman http://faculty.ucr.edu/~hanneman/nettext/

The most commonly used software for conducting network analyses.

Meta-analysis

Notes

Rosenthal and Rosnow chapter

Schmidt, F. L., & Hunter, J. E. (2003). Meta-analysis. In J. A. Schinka, W. F. Velicer, & I. B. Weiner (Eds.), *Handbook of Psychology, Volume 2*. Hoboken, NJ: Wiley. *The three readings provide introductions to meta-analysis. Why multiple introductions? Because this is an area without a clear consensus on the specifics.*

Hedges, L. (1987). How hard is hard science, how soft is soft science: The empirical cumulativeness of research. *American Psychologist*, 42(5), 443-455.

An interesting comparison using meta-analysis to compare fields.

Extensions:

Cooper, H. & Hedges, L. (Eds.) (1994). *The handbook of research synthesis*. New York: Russell Sage Foundation.

A leading guide to meta-analysis.

Ioannidis, J. P. A. (2008). Why most discovered true associations are inflated. *Epidemiology*, *19*, 640-648.

An argument that early findings tend to be larger than later replications bear out.

The January 2008 issue of Organizational Research Methods was devoted to Meta-Analysis.

Modeling / simulations

Marr, D. (1982). Vision (pp. 19-29). New York: Freeman.

A brilliant summary of modeling: a representation, a process, and three levels of description.

Harrison, J. R., Lin, Z., Carroll, G. R., & Carley, K. M. (2007). Simulation modeling in organizational and management research. *Academy of Management Review*, *32*(4), 1229-1245.

An overview of the use of computational models in management.

Argote, L., Beckman, S. L., & Epple, D. (1990). The persistence and transfer of learning in industrial settings. Management Science, 36(2), 140-154.

An example of using a formal model.

Cohen, M., March, J.G. & Olsen, J.P. (1972). A Garbage Can Model of Organizational Choice. *Administrative Science Quarterly*, 17, 1-25.

By far the most influential use of a computer simulation in management research, please read the description of the simulation itself carefully.

Extensions:

Hannan, M. T., Polos, L., Carroll, G. (2007). *Logics of organization theory: Audiences, codes, and ecologies.* Princeton, NJ: Princeton University Press. *An example of a model developed using formal logic.*

Sterman, J. D. (2002) All models are wrong: Reflections on becoming a systems scientist. *System Dynamics Review*, 18, 501-531.

Useful insights into modeling and its necessity.

Netlogo: http://ccl.northwestern.edu/netlogo/

A very user-friendly platform for generating agent-based models.

Davis, J. P., Eisenhardt, K. M., & Bingham, C. B. (2007). Developing theory through simulation methods. *Academy of Management Review*, 32(2), 480-499.

Some helpful notes on theory development, but less insight on modeling.

Writing hypotheses

Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). The craft of research, Third Edition. Chicago, IL: University of Chicago Press.

Selections about developing arguments from a useful book, written by humanities faculty, on the process of moving from vague ideas to written papers.

Clark, H. H. (1999). Everyone can write better (and you are no exception). Unpublished manuscript, Stanford University.

This is general writing advice rather than specific advice on writing hypotheses, but it is very good advice, and very useful for writing hypotheses.

Extensions:

Rips, L. J. (1998). Reasoning and conversation. Psychological Review, 105(3), 411-441.

A nice framework for thinking about informal arguments and their components.

Factor analysis and structural equation modeling

Introductory notes on factor analysis and on structural equation modeling.

Gorsuch, R. L. (2003). Factor analysis. In J. A. Schinka, W. F. Velicer, & I. B. Weiner (Eds.), *Handbook of Psychology, Volume 2*. Hoboken, NJ: Wiley. *An overview*.

Preacher, K. J., & MacCallum, R. C. (2003). Repairing Tom Swift's electric factor analysis machine. *Understanding Statistics*, 2(1), 13-43.

A history of use and recommendations.

Ullman, J. B., & Bentler, P. M. (2003). Structural equation modeling. In J. A. Schinka, W. F. Velicer, & I. B. Weiner (Eds.), *Handbook of Psychology, Volume 2*. Hoboken, NJ: Wiley.

An overview.

Extensions:

Mulaik, S. A. (1972). The foundations of factor analysis. New York: McGraw-Hill.

Bollen, K. A. (1989). *Structural equations with latent variables*. New York, NY: John Wiley & Sons.

Kline, R. B. (2005). *Principles and practice of structural equation modeling*. New York, NY: The Guilford Press.

Useful introductions.

A web resource: http://davidakenny.net/cm/causalm.htm

Anderson, J.C. & Gerbing, D.W. 1988. Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103: 411-423. *A well-cited guide*.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C. & Strahan, E. J. 1999. Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, *4*(3), 272-299.

Useful discussion.

Ford, J.K., MacCallum, R.C., & Tait, M. 1986. The application of exploratory factor analysis in applied psychology: A critical review and analysis. *Personnel Psychology*, 39: 291-314.

A well-cited guide.

Data considerations

Introductory notes on data issues.

Kline, R. B. 2009. *Becoming a behavioral science researcher (data screening selection from Chapter 8)*. New York: Guilford.

A brief introduction to the first things you should do with your data.

Chinn, C. A., & Brewer, W. F. (1993). The role of anomalous data in knowledge acquisition: A theoretical framework and implications for science instruction. Review *of Educational Research*, 63(1), 1-49.

Insightful typology of responses to data.

Extensions:

Ratcliff, R. (1993). Methods for dealing with reaction time outliers. *Psychological Bulletin*, 114(3), 510-532.

The topic is reaction time data analysis, but it is a useful analysis of various approaches to transforming and trimming data.

Wilcox, R. R. (2005). Introduction to Robust Estimation and Hypothesis Testing. 2nd Edition. San Diego, CA: Academic Press.

A leading book on robust statistics. See also http://www-rcf.usc.edu/~rwilcox/

Presentations

Kline, R. B. 2009. *Becoming a behavioral science researcher (presentation selection from Chapter 10)*. New York: Guilford.

Some notes on giving talks.

Extensions:

Tufte, E. (2001). *The visual display of quantitative information, second edition*. Cheshire, CT: Graphics Press.

A leading writer on visual displays of data. He has other books and writings as well (http://www.edwardtufte.com) and has some scathing words on powerpoint. Donald Norman (http://www.jnd.org/), has the pithy rebuttal, which is basically that powerpoint is very useful for presenting images.

Ethics

The Rosenthal and Rosnow chapter provides an overview of ethics issues in research.

The Shadish, Cook and Campbell chapter provides a discussion of ethics in experiments.

Committee on Science, Engineering, and Public Policy. (2009). *On being a scientist: A guide to responsible conduct in research, third edition*. Washington, DC: National Academies Press.

A pretty user-friendly guide to ethical research.

The UT IRB file provides guidelines for human subjects research; please look at pp. 1-57, and if you haven't already done so, flip through the irb human subjects training slides starting on p. 222. Better yet, go through it online so you can be verified online as having done it.

http://www.utexas.edu/research/rsc/humansubjects/training/index.html

Academy of Management. (1990). The Academy of Management code of ethical conduct. *Academy of Management Journal*, *33*, 901-908.

Many fields have ethical codes for their members (although apparently economics does not); you should become familiar with your own.

Extensions:

Marino, G. (2004). Before teaching ethics, stop kidding yourself. Chronicle of Higher Education, 50(24), B5. http://chronicle.com/weekly/v50/i24/24b00501.htm A reminder that being ethical is about the actions you do and do not take, not what you know about theories of ethics.

http://www.research.illinois.edu/ethics/

A varied and useful set of starting points on research ethics.

http://www.web-miner.com/socsciethics.htm.

A somewhat dated but useful bibliography.