

Seminar – Psychology of Risk

Book for Purchase at University Bookstore:

*Understanding Risk: Informing Decisions in a Democratic Society*, National Research Council.  
(you can also read this online at <http://www.nap.edu/openbook/030905396X/html/index.html>)  
Recommended: Moore (2003), *Silent Scourge: Children, pollution, and why scientists disagree*.  
We will read Ch. 2, part of Ch. 6 and Ch. 7 from Moore (2003).

This is a seminar, not a lecture course. The goal is to think about psychological issues in risk analysis, risk assessment, risk perception, risk communication, and almost anything else related to risk that is of interest to the students in the class. Each student will be required to complete a term paper with an oral presentation. Along the way students will occasionally work in teams on class presentations. The term paper will be the major determinant of the course grade. I expect attendance in class and active participation.

Week 1: Do numerical risk perceptions tell the whole story?

Gigerenzer, G. (2004). Dread risk, September 11, and fatal traffic accidents. *Psychological Science*, 15(4), 286-287. (available in on-line library)

Sivak, M. & Flannagan, M. J. (2003). Flying and driving after the September 11 attacks. *American Scientist*, 91(1), 6. (available online)

Letters to the editor in response to Sivak & Flannagan. *American Scientist*, 2003, 91(2).

Week 2: Beyond crunching the numbers.

*Understanding Risk*, Executive Summary, Ch 1, The idea of risk characterization, Ch. 2, Judgment in the risk decision process.

Freudenburg, W. R. (1988). Perceived risk, real risk: Social science and the art of probabilistic risk assessment. *Science*, 242, 44-49. (online in JSTOR through the UW Library).

Slovic, P. (1987). Perception of risk. *Science*, 236, 280-285. (also in JSTOR)

Week 3: Thinking about the numbers that were crunched.

Moore, 2003, Ch. 2, Mercury, esp. pp. 64-77.

NAS, Toxicological effects of methylmercury (2000), Ch. 7, Dose-response assessment, and Ch. 8, Risk characterization. (can read on-line at <http://books.nap.edu/books/0309071402/html/index.html> )

Weeks 4-5: Oral reports (we will do these in teams of 2-3 people).

Find a numerical risk analysis, read it, and critique it. What assumptions are embedded in it? What other outcomes could have been used? What judgment calls were made that are not mentioned?

Week 6-7: Ethics, trust, and risk (we will select from these resources)

Moore (2003), Ch 6, It isn't fair: Environmental pollution disasters and community relocations, esp. the section on Love Canal, pp. 228 ff., and Ch. 7, The best science, values, and the precautionary principle to protect children.

Shrader-Frechette, K. S. (2002). Trading jobs for health: Ionizing radiation, occupational ethics, and the welfare argument. *Science and Engineering Ethics*, 8(2), 139-154.

Shrader-Frechette, K. S. (2000). Duties to future generations, proxy consent, intra- and intergenerational equity: The case of nuclear waste. *Risk Analysis*, 20(6), 771-778.

Slovic, P. et al. (1991). Perceived risk, trust, and the politics of nuclear waste. *Science*, 254, 1604.

Lynn, F.M. (1986). The interplay of science and values in assessing and regulating environmental risks. *Science, Technology, & Human Values*, 11(2), 40-50.

Greenberg, M. & Goldberg, L. (1994). Ethical challenges to risk scientists: An exploratory analysis of survey data. *Science, Technology & Human Values*, 19(2), 223-241.

*Science, Technology, & Human Values*, Vol. 12, No. 3/4, Special Issue on the Technical and Ethical Aspects of Risk Communication. (Summer - Autumn, 1987).

MacKinnon, B. (1986). Pricing human life. *Science, Technology & Human Values*, 11(2), 29-39.

At this point in the course we will hold a group discussion of the topics and directions we will consider in the following 4-5 weeks. The list below provides examples of various areas we could examine. The last 3 weeks of class will be devoted to term paper presentations by students.

### Overviews of and Theoretical Issues

Loewenstein, G. F. et al. (2001). Risk as feelings. *Psychological Bulletin*, 127(2), 267-286.

Slovic, P. et al. (2004). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk and rationality. *Risk Analysis*, 24(2), 311-322.

Sagan, L. (1987). Beyond risk assessment. *Risk Analysis*, 7, 1-2.

Fischhoff, B. (1996, May). Public values in risk research. *Annals of the American Academy of Political and Social Science*, 545, 75-84.

Yates, J. F. (1990). Chapter 11, "Expected value versus risk." In *Judgment and decision making*. Englewood Cliffs, NJ: Prentice-Hall.

Garvin, T. (2001). Analytical paradigms: The epistemological distances between scientists, policy makers, and the public. *Risk Analysis*, 21(3), 443-455.

Simonet, S., & Wilde, G. (1997). Risk: Perception, acceptance and homeostasis. *Applied Psychology – An international review*, 46, 235-252.

Apostolakis, G. E. (2004). How useful is quantitative risk assessment? *Risk Analysis*, 24(3), 516-520.

Starr, C. (1969). Social benefit versus technological risk. *Science*, 165(3899), 1232-1238.

Silbergeld, E. K. (1987). Risk assessment (letter to the editor). *Science*, 237(4821), 1399.

(also see special issue of *Science*, April 17, 1987 on risk assessment)

### Accuracy of Judgments and Measurement Issues

Dawes, R. M. (1979). The robust beauty of improper linear models in decision making. *American Psychologist*, 571-582.

Schapira, M. et al. (2004). Agreement between scales in the measurement of breast cancer risk perceptions. *Risk Analysis*, 24(3), 665-673.

### Risky Choice and Framing

Kahneman, D., & Tversky, A. (1984). Choices, values, and frames. *American Psychologist*, 39, 341-350.

Levin, I. P. et al. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes*, 76, 149-188.

#### Communication, Information, Risk Perception, and Protection/Prevention

See the special issue on risk communication, *Risk Analysis*, 2003, 23(2).

Griffin, R. J., Dunwoody, S., & Neuwirth, K. (1999). Proposed model of the relationship of risk information seeking and processing to the development of preventative behaviors. *Environmental Research (Section A)*, 80, S230-S245.

Trumbo, C. W. & McComas, K. A. (2003). The function of credibility in information processing for risk perception. *Risk Analysis*, 23(2).

Perry, M. J., & Christiani, D. C. (1999). Herbicide and insecticide exposures among dairy farm pesticide applicators. *American Journal of Public Health*, 89, 1118-1119.

Niewohner, J. et al. (2004). Evaluating the efficacy of a mental models approach for improving occupational chemical risk protection. *Risk Analysis*, 24(2), 350-362.

Cox, P. et al. (2003). The use of mental models in chemical risk protection: Developing a generic workplace methodology. *Risk Analysis*, 23(2).

Stone, E. R. et al. (1994). Risk communication: Absolute versus relative expressions of low probability risk. . *Organizational Behavior and Human Decision Processes*, 60, 387-408.

Knuth, B. A. et al. (2003). Weighing health benefit and health risk information when consuming sport-caught fish. *Risk Analysis*, 23(6).

#### Ethnicity, Culture, Gender, SES

Johnson, B. B. (2004). Arguments for testing ethnic identity and acculturation as factors in risk judgments. *Risk Analysis*, 24(5), 1279-1287. (available online)

Yates, J. F. et al. (1998). Cross-cultural variations in probability judgment accuracy: Beyond general knowledge overconfidence. *Organizational Behavior and Human Decision Processes*, 74, 89-117.

Rayner, S., & Cantor, R. (1987). How fair is safe enough? The cultural approach to societal technology choice. *Risk Analysis*, 7, 3-9.

Flynn, J. et al. (1994). Gender, race, and perception of environmental health risks. *Risk Analysis*, 14, 1101-1108.

Davidson, D. J. & Freudenburg, W. R. (1996). Gender and environmental risk concerns: A review and analysis of available research. *Environment and Behavior*, 28, 302-339.

Lindbladh, E. & Lyttkens, C. H. (2003). Polarization in the reaction to health-risk information: A question of social position? *Risk Analysis*, 23(4).

#### Expert vs non-expert

Barke, R. P., & Jenkins-Smith, H. C. (1993). Politics and scientific expertise: Scientists, risk perception, and nuclear waste policy. *Risk Analysis*, 13, 425-439.

Kasperson, R. E. et al. (1988). The social amplification of risk: A conceptual framework. *Risk Analysis*, 8, 177-187. (also Commentaries on , pp. 193-204)

Gregory, R. et al. (1995). Technological stigma. *American Scientist*, 83, 220-223.

Gibbons, F. X., & Gerrard, M. (1995). Predicting young adults' health risk behavior. *Journal of Personality and Social Psychology*, 69, 505-517.

Savatori, L. et al. (2004). Expert and public perceptions of risk from biotechnology. *Risk Analysis*, 24(5), 1289-1299. (available online).

Wright, G. et al. (2002). An empirical test of the relative validity of expert and lay judgments of risk. *Risk Analysis*, 22(6).

### Medical and health risk

Steiner, J. F. (1999). Talking about treatment: The language of populations and the language of individuals. *Annals of Internal Medicine*, 130, 618-622. (also letters, Vol. 132, pp. 93-94)

Phillips, K. et al. (1999). Putting the risk of breast cancer in perspective. *New England Journal of Medicine*, 340, 141-144.

Holtgrave, D. R., & Weber, E. U. (1993). Dimensions of risk perception for financial and health risks. *Risk Analysis*, 13, 553-558.

Mearns, K., & Flin, R. (1996, September). Risk perception in hazardous industries. *The Psychologist*, 401-404.

Hofstetter, P. & Hammitt, J. K. (2002). Selecting human health metrics for environmental decision-support tools. *Risk Analysis*, 22(5).

(I also have a list of references on clinical judgment of risk in mental health problems)

### Time and risk

Keren, G., & Roelofsma, P. (1995). Immediacy and certainty in intertemporal choice. *Organizational Behavior and Human Decision Processes*, 63, 287-297.

Arkes, H. R., & Blumer, C. (1985). The psychology of sunk cost. *Organizational Behavior and Human Decision Processes*, 35, 124-140.

### Precautionary Principle

Hrudey, S. E. & Leiss, W. (2003). Risk management and precaution: Insights on the cautious use of evidence. *Environmental Health Perspectives*, 111(13), 1577-1581.

Starr, C. (2003). The precautionary principle versus risk analysis. *Risk Analysis*, 23(1).

Farrow, S. (2004). Using risk assessment, benefit-cost analysis, and real options to implement a precautionary principle. *Risk Analysis*, 24(3), 727-735.

Leszczynski, D. (2001). Mobile phones, precautionary principle, and future research (letter to the editor). *Lancet*, 358, 1733.

Editorial. (2000). Caution required with the precautionary principle. *Lancet*, 356 (9226), 265.

Starr, C. (1980). Risks of risk decisions. *Science*, 208(4448), 1114-1119.

Fox, G. A. (2001). Wildlife as sentinels of human health effects in the Great Lakes-St. Lawrence Basin. *Environmental Health Perspectives*, 109(Supplement 6), 853-861.

### Applications to environmental risks and wildlife

Vyas, N. B. (1999). Factors influencing estimation of pesticide-related wildlife mortality. *Toxicology and Industrial Health*, 15, 186-191.

Von Winterfeldt, D. et al. (2004). Managing potential health risks from electric powerlines: A decision analysis caught in controversy. *Risk Analysis*, 24(6).

Von Krauss, M. P. et al. (2004). Elicitation of expert judgments of uncertainty in the risk assessment of herbicide-tolerant oilseed crops. *Risk Analysis*, 24(6).

McKibben, B. (2000). Consuming nature. The Sun, Issue 295, 20-23. (An interesting essay on whether we ought to control black flies).

Aipanjiguly, S., Jacobson, S. D. & Flamm, R. (2003). Conserving manatees: Knowledge, attitudes, and intentions of boaters in Tampa Bay, Florida. *Conservation Biology*, 17(4), 1098-1105. (not in reading packet – available in UW library on line).

- Gibbs, J. P. & Shriver, G. (2002). Estimating the effects of road mortality on turtle populations. *Conservation Biology*, 16(6), 1647-1652. (Not in the reading packet – in on-line library).
- Jacobson, S. K., Sieving, K. E., Jones, G. A. & VanDoorn, A. (2003). Assessment of farmer attitudes and behavioral intentions toward bird conservation on organic and conventional Florida farms. *Conservation Biology*, 17(2), 595-606. (Not in reading packet; in UW on-line library).
- Fernandez-Juricic, E., Jimenez, M. D. & Lucas, E. (2001). Alert distance as an alternative measure of bird tolerance to human disturbance: Implications for park design. *Environmental Conservation*, 28(3), 263-269. (Not in reading packet – in UW on-line library).