The Psychology of Disaster Preparedness
Psych W3285 (4 points)
Fall 2015

Course Information
405 Schermerhorn
Thursdays, 2:10-4pm

Instructor Information
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Course Description
This seminar addresses the psychological factors—cognitive biases, heuristics, risk perception, social influences, and past experiences—that together help explain why people tend to underprepare for potential natural and man-made disasters. Implications for science communication and public policy are discussed.

Prerequisites
Thinking and Decision Making (W2235) or equivalent course on judgment and decision making, and instructor's permission. Students with little psychology coursework but a background in earth science, public policy, or another related field are welcome to enroll if space allows; however, you will need to meet with me before registering to obtain permission and discuss any additional readings that might be necessary to bring you up to speed with the rest of the group.

Enrollment limit: 12. If the course is full, senior psychology majors, senior neuroscience and behavior majors, and psychology postbacs will have priority, followed by junior majors, followed by non-majors. Other things being equal, students who have the best preparation and strongest motivation will be selected.

Motivating Questions
1. Why don't people prepare enough for potential hazards, and why do they often fail to evacuate when warned about imminent disasters?
2. Mitigation and prevention efforts can save over four times their cost in cleanup—why is that fact alone not enough to encourage people to invest in mitigation?
3. How can psychological insights into the way people perceive and make decisions about environmental risks help us improve public policy and scientific communication on hazards?

Course Overview
Natural and man-made disasters easily grab hold of the public's attention immediately after they occur, yet during the most effective time in the disaster cycle for intervention—after rebuilding but prior to the next destructive event—it is often very difficult to capture the public's interest or gain support for prevention or mitigation. Many of the people living in hazardous areas are un- or underprepared for future events, and when forecasts warn of an upcoming disaster, evacuation rates are often much lower than public officials or physical scientists recommend. Hazard researchers often say that although scientists and policymakers can almost never prevent natural disasters from *occurring*, we can often prevent a disaster from becoming a catastrophe. Still, there is relatively little public or political support for such prevention and mitigation procedures.

This course draws on classic and cutting-edge findings in social and cognitive psychology to help explain why people appear to underprepare for, or under-weight the danger of, potential disasters. We will explore the influence of cognitive biases, risk perception, decision making under uncertainty, social forces, construal theory, and prior experience or knowledge, among many other psychological factors. Through class discussions, student presentations, critical reading of research and review papers, and writing of an analytical paper, students will gain knowledge of the current state of research in the psychology of disaster preparedness.

Note: this is NOT a class about post-traumatic stress disorder (PTSD) or the psychological aftereffects of disasters. Psychological trauma is, of course, an integral force in the disaster cycle, and deserving of a full course of its own, but students looking for an in-depth study of how people process or react to traumatic events will likely be disappointed by this course. Instead, our focus is on *prospective* elements of hazards—how people look ahead to uncertain future events.

Course Objectives

1. Students will learn the prescriptive and descriptive ways of preparing for or mitigating several common natural disasters—that is, they will learn the *accepted best practices* for preparing communities and individuals for hazards, in contrast with what *people usually tend to do*.
2. Students will gain a deeper understanding of the psychological processes, biases, and heuristics that lead to this disconnect between descriptive and prescriptive preparations.
3. Students will gain a deeper understanding of topics in decision making and risk perception, through application of these topics to the case studies addressed in class and in the readings.
4. Students will become familiar with current research on natural disaster preparation, and be equipped to critically assess the methods and results of new research in the field. Psychology students will leave the course prepared to carry out disaster- or risk-perception-related research of their own; students from the physical sciences or public policy will leave with the tools necessary to incorporate findings from psychology into their own work.

Hazards Website

We'll be using CourseWorks as a digital syllabus, message board, and filesharing system. But we'll also be creating a new, **public website** devoted to the intersection of social science research and natural hazards preparation. Its content will be targeted at scientists and policymakers, and also the general population—anyone curious about why we don't prepare enough for hazards, and eager to learn how to overcome some of those natural barriers to preparation. There aren't too many courses out there like this one, but interest in hazard research is growing, especially where it connects to social science. Part of our aim for the website will also be to create a resource that other classes can use to help structure their own investigation of this topic.

One of your assignments in this class will involve creating content for this new website, and you'll also have input in naming the site and choosing its layout and organization. If you'd like, you may opt to have your final paper posted to the site as well.

Course Organization

Class

This class will meet once a week. Each two-hour course meeting will consist primarily of student-led presentations of one of the assigned readings, and discussion of the topics of those readings. Whether or not it is your day to present, please come to class prepared to actively participate!

Assignments

Note: more detail on each assignment will be posted on CourseWorks.

Website posts. One short essay of approximately 600 words may be written on any course topic students choose. The essay will address a particular psychological issue as it pertains to several different hazards. The essay is due any time before the 11th class meeting (November 19, the week before Thanksgiving break), but if you have a strong preference for writing about topics that we will cover after that week, you're welcome to do so as long as you discuss your topic and planned deadline with me well in advance.

I will give you feedback on your essay that you may use as you edit it for posting to the website. The initial essay is worth 10% of your grade, and your edited version is worth another 5%, for a total of 15%. The feedback you get may also be helpful as write your final paper, so if you're the type of student who likes to get started on your term papers early, you may also want to submit

your web essay early in the semester, so you'll have the feedback on the essay by the time you want to get started on your longer paper.

Please check in with me about the topic you want to write on before you begin your essay, so we can make sure we don't end up with, say, 12 posts all about temporal discounting. Some overlap is fine, but the more different topic areas the site covers, the better it will be. We'll talk in more detail about how these essays should look during the first class meeting.

Student presentations. Each student will briefly present an assigned reading during one class period. The 10-15 minute presentation should briefly recap the reading's important points and scientific value, and also offer a critical assessment of it in the context of other course materials; be as ruthless as you want! Presentations should also include questions to start our discussion. I'll meet with each of you briefly a few days before your presentation date to help you prepare.

Detailed requirements for the presentation will be discussed during the first class meeting, when we will also go over the list of topics and tentative schedule. Please bring your calendars with you to the first class meeting to facilitate our creation of the schedule.

Final paper. The paper is an 8-page assessment of a particular disaster event, with a focus on which aspects of preparation, mitigation, and response were done well, and which others might have been improved. This assessment should discuss the most relevant psychological factors (cognitive biases, risk attitudes, social influences, and other topics covered in the course) and how they influenced preparation activities, and how that pre-event preparation did (or did not) affect the outcome. The paper should include lessons learned and suggestions for the future, and address the question of which elements of this case are unique, and which might apply to other hazards.

Alternatively, students may write a proposal for a research study that would answer an open question about the psychology of disaster preparedness. This version of the assignment can potentially be more rewarding than the assessment version (especially if you are interested in actually carrying out this type of research), but may also be more challenging. If you would like to take this option, email me or come talk with me as early as possible to discuss your research ideas and the appropriate format for the paper.

Detailed requirements and grading information for the paper will be posted midway through the semester. Final papers are due via CourseWorks by 11:59pm on Wednesday, December 16 (the day before final exams begin). If your final exam schedule would make it particularly difficult to submit your paper by this due date, please contact me at least two weeks beforehand to discuss an extension. Extensions will only be given to students who consult with me *before* the due date, so plan ahead!

Grading

Participation:	20%
Web essay:	15%
Class presentation:	25%
Final Paper:	40%

There is no extra credit for this course. For students who are on the border between grades, I will consider their participation in discussions throughout the term to decide whether to bump them up to the next highest grade (e.g., a very high B+ could be bumped to an A-).

Class Policies

Class attendance. Participation is an essential component of this course and of your grade, and you are expected to attend each class period. Each student may miss one class meeting, for any reason, without any penalty to their participation grade. After that free miss, excused absences require a note from your doctor or advising dean, and unexcused absences will count against your participation grade.

Late assignments are generally marked down by 10% per day, unless you have contacted me *before* the due date to discuss an extension. Overall, I would prefer to have you all write quality papers and learn a lot in the process, but hand them in late, rather than dashing off some incoherent ideas in order to make the deadline—so if something comes up, please check in with me. But that said, "I can't finish the paper on time because I started it too late" is not a convincing argument for an extension. Neither is: "I left my website post to the last week but now I'm also really busy studying for a midterm in another class!"

Class Conduct. Please turn off or silence your cell phones during class. Laptops are fine, but please respect your classmates and instructor by refraining from non-class-related activities such as email, Facebook browsing, and online shopping (unless you are buying stylish, disaster-themed T-shirts for the whole class). Though you may have a preternatural ability to multi-task, using a laptop for purposes other than taking notes can be distracting to those around you.

Academic Integrity. Academic honesty includes presenting only your own work in exams and assignments, and correctly attributing others' ideas where appropriate. Taking credit for work that is not your own is a serious violation within the academic community, and anyone found to be cheating or plagiarizing in this class will be reported to the university. Detailed definitions and examples of academic dishonesty (and a rundown of the consequences) are available in Columbia's Guide to Academic Integrity (http://www.college.columbia.edu/academics/integrity)—it might not be the most riveting text on the internet, but since you'll be held to it, you should probably give it a read.

I assume you're all here because you're interested in the course topics and enthusiastic to learn as much as you can. But I know that in real life, stuff happens. I always prefer to deal with any issues before they get so bad that they become overwhelming, or so bad that a student feels that cheating or plagiarism is his or her best (or only) option. After all, this is a course about focusing on prevention, and avoiding messy aftermaths. So please do come to me if you have any questions about how to properly cite a source or build upon others' ideas, or if you're feeling stressed out about the class workload (or about anything else). If you have an issue that you'd rather not talk about with me, you might consider speaking with your academic advisor or dean; with one of the Psych Department's other Directors of Undergraduate Studies (Trisha Lindemann or Nim Tottenham); or with the counselors at Columbia's Counseling and Psychological Services (http://health.columbia.edu/services/cps).

Students With Disabilities. Students with special needs who may require accommodations should make an appointment to see me as soon as possible, at least by the end of the second week of class. If you have not already done so, stop by the Office of Disability Services (ODS) on the 7th floor of Lerner Hall to register for support services. ODS often requires two weeks to process an application, so please contact them as soon as you can, preferably before the course begins.

Tentative List of Topics and Readings

The readings listed below will be updated shortly before the semester starts, so the experimental papers on this list might not be the exact ones we end up reading for this course. For now, use this list to get a sense for the types of papers we'll be reading.

Each class period after the first week will be devoted to one topic in cognitive psychology, and its implications for disaster preparedness. **The topics listed below are not necessarily in the order in which we will cover them**—we'll determine the final schedule for which topics we'll cover each week during the first course meeting, based on which topics each of you is interested in presenting on, and when you're able to do so. **Depending on student interest, we may end up skipping some topics and spending two weeks on others, so each section below does not necessarily represent a single week's worth of reading.** We will typically have 2-3 papers assigned for each week.

Each topic below has a couple of background readings and one main reading in bold: the bolded reading is my suggestion for which paper to present for each topic. If, however, you find a different paper that you would rather present instead, that's great! If that's the case, you'll need to clear the new paper with me at least a week before your scheduled presentation, and post the paper to CourseWorks for the rest of the class to access.

The final reading list, with PDFs of all of the readings and the dates on which we'll cover each topic, will be posted on CourseWorks. The books from which we will draw several readings are listed below. You don't need to buy them for this class, but if you'd like to explore certain topics further, I encourage you to start here (older editions than those listed here should be fine). You'll find a full list of references for our readings after the schedule of course topics.

Abbott, P. L. (2006). Natural Disasters (5th ed.). New York: McGraw-Hill. ISBN 0-07-282681-9

Davis, M. (1999). Ecology of Fear: Los Angeles and the Imagination of Disaster. New York: Vintage.

Plous, S. (1993). The Psychology of Judgment and Decision Making. New York: McGraw-Hill. ISBN 978-0070504776

Slovic, P. (2000). The Perception of Risk. London: Earthscan. ISBN 978-1853835285

Week #	Topics	Tentative reading assignments **(those in bold may be presented by students)** *(those in italics are optional background readings)*
Week 1	Introduction to the course • introduction to the disaster cycle • overview of natural disasters: their characteristics, primary dangers, misconceptions. Feasible prevention actions people *could* take, and what they typically *do*. • course requirements • assignment of presentation topics	Abbott, Chapter 1 Slovic, Chapter 1 Abbott, Chapters 5, 8, 9, 12, 13, 14 (each is about a different type of natual disaster; **skim one** based on your interests) Davis, Chapters 1-4 (they're a quick read, and quite interesting; **choose one** based on your interests) *New Yorker Wildfire article* *Baker, 1991* *Borden, Schmidtlein, Emrich, Piegorsch, & Cutter, 2007*

TBD	• Probability perception and interpretation • Communicating probability	Slovic, 1987 **Gigerenzer et al., 2005** Fischhoff, 2009 **Budescu, Broomell, & Por, 2009** *Plous, Chapter 12*
TBD	• Prospect theory, loss aversion, and decisions from description • Decisions from experience	Tversky & Kahneman, 1992 (ignore the equations; focus on understanding the graphs!) **Hertwig & Erev, 2009** **Weber, 2006** *Plous, Chapter 14*
TBD	• Perceptions of uncertainty and ambiguity • Types of uncertainty and their relevance to disasters	Knight, 1921 (excerpt) Taleb (excerpt) **Gottlieb, Weiss, & Chapman, 2007** Slovic, Chapter 6 **Broad, Leiserowitz, Weinkle, & Steketee 2007**
TBD	• Temporal, spatial, and social discounting, and construal theory	**Hardisty & Weber 2009** Trope & Liberman 2010 *Plous, Chapter 6* *Chapman, 1996*
TBD	• Cognitive Biases	**Hansen, Marx, & Weber, 2004** *Plous Chapters 3, 11, 13, 15, 19*
TBD	• Post-disaster: relief/rebuilding and willingness to invest • Post-disaster: PTSD and its relevance for future preparedness	Spence, Poortinga, Butler, & Pidgeon, 2011 **Boin, Hart, McConnell, & Preston, 2010** Barlow & Durand, p. 154-160 **Neria, Nandi, & Galea, 2008**
TBD	• Blame, experience, knowledge, and perceptions of probability after an event; false-alarm effects and the effects of prior decisions on later ones	**Olson, 2000** Slovic, Chapter 14 **Pacala, Bulte, List, & Levin, 2003**
Weeks 12-13	• How do/can we study pre-disaster risk perception and decision making?	**Carbone, Hallstrom, & Smith, 2006**

	• How can social and physical scientists work together to improve communication? How can policymakers and community leaders apply the knowledge we've discussed in this course to strengthen their communities' resilience? • How are the concepts we've been discussing different (or not) for natural vs. man-made disasters? Political and economic problems? Other societal ills?	Becu, Neef, Schreinemachers, & Sangkapitux 2008 Shome & Marx 2009 **Hogarth & Soyer 2011**Slovic, Chapters 11 & 19 Helmuth et al. 2009 (pp. 1-10, 95-104, and any case studies that spark your interest) Perrow: Chapter 9, and one of Chapters 2, 4-8, depending on your interests (it's a bit dated, but reads quickly and is very interesting)

List of Readings

Baker, E. (1991). Hurricane evacuation behavior. *Int'l Journal of Mass Emergencies and Disasters, 9*(2), 287-310.

Becu, N., Neef, A., Schreinemachers, P., & Sangkapitux, C. (2008). Participatory computer simulation to support collective decision-making: Potential and limits of stakeholder involvement. *Land Use Policy, 25*(4), 498-509.

Barlow, D. H., & Durand, V. M. (2005) Abnormal Psychology: An Integrative Approach (4th ed.). Thomson: New York.

Boin, A., Hart, P. T., McConnell, A., & Preston, T. (2010). Leadership style, crisis response and blame management: The case of hurricane Katrina. *Public Administration, 88*(3), 706-723.

Borden, K. A., Schmidtlein, M. C., Emrich, C. T., Piegorsch, W. W., & Cutter, S. L. (2007). Vulnerability of U.S. cities to environmental hazards. *Journal of Homeland Security and Emergency Management, 4*(2).

Broad, K., Leiserowitz, A., Weinkle, J., & Steketee, M. (2007). Misinterpretations of the 'cone of uncertainty' in Florida during the 2004 hurricane season. *Bulletin of the American Meteorological Society, 88*(5), 651-667.

Carbone, J. C., Hallstrom, D. G., & Smith, V. K. (2006). Can natural experiments measure behavioral responses to environmental risks? *Environmental & Resource Economics, 33*(3), 273-297.

Casimir, M. J. (2009). Culture and the Changing Environment: Uncertainty, Cognition, and Risk Management in Cross-Cultural Perspective. Berghan Books: New York.

Chapman, G. B. (1996). Expectations and preferences for sequences of health and money. *Organizational Behavior and Human Decision Processes, 67*, 59-75.

Fischhoff, B. (2009). Risk perception and communication. In R. Detels, R. Beaglehole, M.A. Lansang, and M. Gulliford (Eds), *Oxford Textbook of Public Health, Fifth Edition* (pp. 940-952). Oxford: Oxford University Press. Reprinted in N.K. Chater (Ed.), Judgement & Decision Making. London: Sage.

Gigerenzer, G., Hertwig, R., Van Den Broek, E., Fasolo, B., & Katsikopoulos, K. V. (2005). "A 30% chance of rain tomorrow": How does the public understand probabilistic weather forecasts? *Risk Analysis, 25*(3), 623-629.

Gottlieb, D. A., Weiss, T., & Chapman, G. B. (2007). The format in which uncertainty information Is presented affects decision biases. *Psychological Science, 18*(3), 240-246.

Hansen, J., Marx, S., & Weber, E. U. (2004). *The role of climate perceptions, expectations, and forecasts in farmer decision making*: IRI.

Hardisty, D. J., & Weber, E. U. (2009). Discounting Future Green: Money Versus the Environment. *Journal of Experimental Psychology: General, 138*(3), 329-340.

Hellmuth M.E., Osgood D.E., Hess U., Moorhead A., & Bhojwani H. (eds). (2009). Index insurance and climate risk: Prospects for development and disaster management. Climate and Society No. 2. International Research Institute for Climate and Society (IRI), Columbia University, New York.

Hertwig, R., & Erev, I. (2009). The description-experience gap in risky choice. *Trends in Cog. Sci., 13*(12), 517-523.
Hogarth, R.M., & Soyer, E. (2011). Sequentially simulated outcomes: Kind experience versus nontransparent description. *Journal of Experimental Psychology: General, 140*(3), 434-463.
Knight, F. H. (1921). *Risk, uncertainty, and profit*. Boston, MA: Hart, Schaffner & Marx: Houghton Mifflin Company.
Kunreuther, H. (1984). Causes of underinsurance against natural disasters. *The Geneva Papers on Risk and Insurance, 9*, 206-220.
Neria, Y., Nandi, A., & Galea, S. (2008). Post-traumatic stress disorder following disasters: A systematic review. *Psychological Medicine, 38*(4), 467-480.
Olson, R. S. (2000). Toward a politics of disaster: Losses, values, agendas, and blame. *International Journal of Mass Emergencies and Disasters, 18*(2), 265–287
Pacala, S. W., Bulte, E., List, J. A., & Levin, S. A. (2003). False Alarm over Environmental False Alarms. *Science, 301*(5637), 1187-1188.
Putnam, L. & Gibber, J. (2006). PowerPoint Design and Delivery. Columbia U. Brown Bag in Science Teaching.
Shome, D. & Marx, S. (2009). The Psychology of climate-change communication: A guide for scientists, journalists, educators, political aides, and the interested public. The Center for Research on Environmental Decisions.
Slovic, P. (1987). Perception of risk. *Science, 236*, 280–285.
Spence, A., Poortinga, W., Butler, C., & Pidgeon, N. F. (2011). Perceptions of climate change and willingness to save energy related to flood experience. *Nature Clim. Change, 1*(1), 46-49.
Taleb, N.N. (2007). The Black Swan: The Impact of the Highly Improbable. Random House: New York.
Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty, 5*(4), 297-323.
Waters, R.D. (2009). Examining the role of cognitive dissonance in crisis fundraising. *Public Rel. Rev., 35*, 139-143.
Weber, E. U. (2006). Experience-based and description-based perceptions of long-term risk: Why global warming does not scare us (Yet). *Climatic Change, 77*(1), 103-120.
Weber, E. U., Johnson, E. J., Milch, K. F., Chang, H., Brodscholl, J. C., & Goldstein, D. G. (2007). Asymmetric Discounting in Intertemporal Choice. *Psychological Science, 18*(6), 516-523.