HNRS 4100.001
SCIENCE, SKEPTICISM, AND WEIRD BEHAVIOR

Spring, 2007
University of North Texas

READINGS: Selected readings from 2 primary texts- Michael Shermer's Why People Believe Weird Things, and Stuart Vyse's book Believing in Magic: The Psychology of Superstition; plus readings from Lee's The Scientific Endeavor, James "The Amazing Randi" Randi's book Flim-Flam, articles from Skeptical Inquirer magazine, videos from PBS's Nova and Frontline series, other TV newsmagazine shows, and Penn & Teller's series on Showtime.

INSTRUCTOR: Cloyd Hyten, Ph.D., CPT, Associate Professor
Dept. of Behavior Analysis, UNT (course website: www.unt.edu/behv/hyten)
Office: 360J Chilton, Ph: 565-4071, E-mail: Hyten@pacs.unt.edu
Office Hours: TBD Call or e-mail to make an appointment.

CLASS TIME & LOCATION: Thurs 6:30-9:20
GAB 318

OVERVIEW: This course will strive to teach critical scientific thinking in explaining causes of various phenomena, including the realm of the so-called paranormal as well as everyday human behavior. Discussion will focus on scientific versus pseudoscientific explanations, and how to tell the difference. Course content will cover claims of paranormal activity including alleged psychics, alleged therapies for human behavior, and everyday explanations of human behavior. Explanations of why people believe in weird things will be provided. Alternative, natural explanations of mysterious phenomena will be provided. The objective is to provide training in basic scientific thinking about causal explanation of all kinds.

ADA Statement: The Department of Behavior Analysis, in conjunction with the Office of Disability Accommodation, complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request to me before the 4th class meeting.

COURSE COMPONENTS:

Exercises: There will be at least 4 exercises based on the readings and/or videos. These will be worth 15 or 20 points each. NOTE: These must be turned in on time. If an exercise is late by >2 weeks from the due date, 2 points will be subtracted from it

Project: You will be tasked with investigating a strange claim, analyzing why people believe it, and suggesting/reviewing natural explanations for the phenomenon in a report.

Tests: There will be at least 2 major tests: a midterm and final. These will be 50 point exams.

GRADES: Grades will be 90% (A), 80%(B), 70%(C), 60%(D), etc of total points.

OBJECTIVES:

By the end of the semester, students will be expected to know:

1. What science can and can't prove about the paranormal.
2. 20 ways that paranormalists fool naïve observers.
3. What is strong scientific evidence and what is weak.
4. What confounding variables are and methods to control for them.
5. What the Placebo Effect is and how powerful it can be.
6. What constititutes scientific explanation.
7. The self-correcting nature of science.
8. The difference between science and pseudoscience.
9. The difference between rationalism and dogmatism.
10. The process of retrofitting and its role in believing.
11. Scientific issues raised by the analysis of either a) "Gulf War Syndrome", or b) "Alternative Medicine"
12. The Clever Hans Effect.
13. Cold Reading techniques and their use by psychics.
14. 25 Fallacies that support irrational thought and behavior, including 3 problems with scientific thinking (e.g., theory influencing observation), 12 problems with pseudoscientific thinking (e.g., anecdotal evidence), 7 logical problems (e.g., ad hominem and ad ignorantiam arguments) and 3 psychological problems (e.g., need for certainty).
15. What Facilitated Communication is, and methods used to scientifically analyze it.
16. The role of contiguity and operant conditioning in superstitious behavior.
17. What the differences are between simple superstitions, sensory superstitions, and concurrent superstitions.
18. What Gambler's Fallacy is.
19. How the Representativeness Heuristic, the Availability Heuristic, attentional bias, and confirmation bias affect everyday thought and superstition.
20. The role of control in supporting beliefs and superstition.
21. How people react to variable or cyclic events in superstitious ways.
22. How to read a 2X2 table showing the probability of several correlated events.

SCHEDULE:

Section I: Science Takes on the Paranormal/ Basics of the Scientific Method

Weeks 1-4:

- James Randi: Flim-Flam Ch. 1 (Intro)& Ch. 2 (Fairies in England)
- NOVA Video: Secrets of the Psychics (featuring J. Randi) MV5241
  -Handout on the Clever Hans Effect
- Cold Reading: Ray Hyman Article; Ian Rowland on Cold Reading
  -20/20 video: Segment on psychic J. van Praagh
  -Penn & Teller, Episode 1 video and exercise

Weeks 5-7:

- The Scientific Method: Handout & Discussion
- Non-paranormal phenomena exemplifying strengths and weaknesses of scientific method
  -either FRONTLINE Gulf War Syndrome ("Last Battle of the Gulf War") MV 6257 video & exercise
  -or, FRONTLINE "Alternative Fix" video & exercise
- Shermer: Why People Believe Weird Things, Ch. 1 (Skeptic's Manifesto) & Ch. 2 (Science & Pseudoscience)

TEST 1 (roughly midterm, Week 8)

Section II: Scientific Analysis of the Causes of Strange Human Behavior

Weeks 9-11:

- Shermer: Ch. 3 (25 Thinking Fallacies) & 17&18 (Why we/smart people believe weird things)
  -ABCNews Video (Stossel) "Power of Belief" MV5296 & exercise

- Real or bogus? Alleged therapeutic techniques and their scientific analysis
  -FRONTLINE Video: Facilitated Communication and Autism Treatment ("Prisoners of Silence") MV5233, & exercise
  -Article: G. Green: "Evaluating Claims about Treatments for Autism"

Weeks 12-14:

- Superstition
  -Vyse: Psychology of Superstition Ch. 3 (Superstition & Coincidence: Operant Conditioning)

  -Vyse: Ch. 4 (Superstitious Thinking)

FINAL EXAM