Psychology 498/971
Attention and Performance

Department of Psychology
University of Nebraska - Lincoln
Fall 2008

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Meeting Time and Location: Wednesdays 2:30 – 5:20
Regular Meeting Room: Teachers College Hall 139
Note: We will not meet on November 26th

Objective: This course will cover a variety of topics in the domain of human attention and performance. Each week we will hold a critical discussion on current theories, data, and/or trends. Students will have the opportunity to discuss and critique current research via weekly discussions, thought papers, presentations, and a major paper

Text: There is no required text for this course. If you are interested in a background text in attention I'd suggest either Pashler's "The Psychology of Attention" or Johnson and Proctor's "Attention: Theory and Practice." And we may discuss the book Blink in this course, which is an excellent read.

Readings: approximately 3-4 current research articles each week (listed below and available on the course webpage)

Course Web Page: http://psych.unl.edu/mdodd/Psy498/

How the class will proceed: This class will be run as a seminar to allow for the free exchange of ideas and criticism/discussion of current issues in attention/performance. I will start off each class with an introduction to the topic area for the week, along with the relevant background. After this introduction, we will have a student(s) presentation which should lead into a discussion on the weeks readings. There will be no exams in this course.

Evaluation:

Presentation (10%): Each week, one student will begin class by briefly presenting a current research article (preselected by me) that is not on the core reading list for the week. This 10-15 minute presentation is simply intended to lead into a discussion of the issues/results/theories presented in the other articles that week. To that end, the presenting student is also responsible for generating a few questions regarding the week's and leading the discussion. Other students are also required to send in questions ahead of

time also, however, so I can post them on the web and get people thinking about relevant issues. This way, the presenting student will have access to all questions to keep things going smoothly throughout the class/

Thought Papers (40%): Throughout the term you are required to submit a series of thought papers on the articles/issues contained within that week's readings. The papers are to be no more than one page double spaced (about 250-300 words). Your 8 highest scoring thought papers will count towards your final mark. You have the choice, therefore, to either submit more than 8 papers and have me count your best 8 or to simply submit only 8 papers through the term, all of which will count towards your mark. Try to take a different approach with the papers each week (e.g., don't make every paper a criticism of that weeks research). There is no requirement regarding what you write. You can criticize some of the research, pitch ideas for related studies, talk about applications of the work, etc. The thought papers are due at the end of each class.

Major Paper (30%): The major paper can take one of two forms. You can either write an critical review of an area of research or you can write a research proposal that more briefly reviews an area of cognition and presents a new empirical idea. In either case, the paper is expected to be 6-8 pages, not counting title page, references, etc. The paper is due at the beginning of class on April 23rd

Note for graduate students taking this course: Your paper will be required to be in the 12-15 page range, or you can opt to write 2 shorter papers of 6-8 pages each on two different topics.

Questions (10%): Each week all students are required to submit 2-3 questions to me that we will address during the seminar. The presenting student for the week will be required to compile the questions and use them to lead the discussion.

Attendance/Participation (10%): Given that this course has no exams and is intended as a seminar/discussion group, attendance is critical. It is also important to contribute to the discussion which means you should have the articles read prior to class and come with something to discuss (I'll post discussion questions on the website by Tuesday and you should look these over). I will be particularly disappointed if I read a good idea in a thought paper that was not raised during class. Given the small class side everyone should have a chance to participate amply.

Penalty for Lateness: The research proposal is due at the start of class on April 23rd. The penalty for lateness is 5% per day (including weekends). The thought papers are due at the end of each class

Tentative Schedule for Lectures and Reading Assignments

Date	***Topics***	**Article Readings**	**Big Picture Question**
Aug. 27th	Organizational meeting		
Sept. 3rd	Sensory Memory, Pattern Recognition, the lead up to attention	See below	How many separate sensory systems and why?
Sept. 10th	Attention basics, development of attention	See below	How is attention represented (spotlight, zoom lens, distribution)
Sept. 17th	Gaze cues, faces, arrows, other cues	See below	What shifts attention and why?
Sept. 24th	Object/Location Attention	See below	Does attention select objects or locations? Advantages of each?
Oct. 1st	Change Blindness/Inattentional Blindness	See below	How much are we not seeing?
Oct. 8th	Visual search in and out of the lab	See below	What factors influence visual search and how important are they to day-to-day cognition
Oct. 15th	Automatic/Controlled Processing	See below	Why do we do things automatically even when it's bad to do so
Oct. 22nd	Eye Movements (with some aging thrown in)	See below	
Oct. 29th	Perception and Action/Performance		What are the most critical perceptual systems for action?
Nov. 5th	Errors of Attention/Perception, Visual Illusions	See below	Why can some illusions be overcome while others can't
Nov. 12th	Emotion and Attention	See below	Does emotion help or hurt cognition?
Nov. 19th	Video Games and Performance	See below	Video games…good or bad?
Nov. 26th	**No class, student vacation**	See below	
Dec. 3rd	Cognitive disorders, effect on attention **Major Paper Due**	See below	What do disorders tell us about normal function?
Dec. 10th	Blink, rapid cognition	No reading: lecture and discussion	

Articles

Note: The presenting student each week is required to read and present about the paper denoted by the *. Other students can feel free to also read that article if they want to but it is not required. Thus, there are only 2-3 short readings required each week.

Sensory Memory, Pattern Recognition, the lead up to Attention

*Alvarez, G. A., & Cavanagh, P. (2004). The capacity of visual short-term memory is set both by visual information load and by number of objects. *Psychological Science, 15,* 106-111.

Cowan, N., Suomi, K., & Morse, P. A. (1982). Echoic storage in infant perception. *Child Development, 53,* 984-990.

Luck, S. J., & Vogel, E. K. (1997). The capacity of visual working memory for features and conjunctions. *Nature, 390,* 279-281.

Zhong-Lin Lu, Neuse, J., Madigan, S., & Dosher, B. A. (2005). Fast decay of iconic memory in observers with mild cognitive impairments. *PNAS Proceedings of the National Academy of Sciences, 102,* 1797-1802.

Attention basics, development of attention

*Kramer, A. F., & Hahn, S. (1995). Splitting the beam: Distribution of attention over noncontiguous regions of the visual field. *Psychological Science, 6,* 381-386.

Muller, M., M., & Hubner, R. (2002). Can the spotlight of attention be shaped like a doughnut? Evidence from steady-state visual evoked potentials. Psychological Science, 13, 119-124.

Posner, M. I. (1980). Orienting of attention. *Quarterly Journal of Experimental Psychology, 32,* 3-25.

Gaze cues, faces, arrows, other cues

Fischer, M. H., Castel, A. C., Dodd, M. D., & Pratt, J. (2003). Perceiving numbers causes spatial shifts of attention. Nature Neuroscience, 6, 555-556.

*Friesen, C. K., & Kingstone, A. (1998). The eyes have it! Reflexive orienting is triggered by nonpredictive gaze. *Psychonomic Bulletin & Review, 5,* 490-495.

Hommel, B., Pratt, J., Colzato, L., & Godijn, R. (2001). Symbolic control of visual attention. Psychological Science, 12, 360-365.

Kingstone, A., Tipper, C., Ristic, J., & Ngan, E. (2004). The eyes have it!: An fMRI investigation. *Brain & Cognition, 55,* 269-271.

Object/Location attention

Fischer, M. H., & Hoellen, N. (2004). Space- and object-based attention depend on motor attention. *Journal of General Psychology, 131,* 365-377.

*Pratt, J., & Sekuler, A. B. (2001). The effects of occlusion and past experience on the allocation of object-based attention. Psychonomic Bulletin & Review, 8, 721-727.
Turatto, M., Mazza, V., & Umilta, C. (2005). Crossmodal object-based attention: Auditory objects affect visual processing. *Cognition, 96,* B55-B64.
Wuhr, P. (2007). A Stroop effect for spatial orientation. *The Journal of General Psychology, 134,* 285-294.

Change blindness/inattentional blindness

Davies, G., & Hine, Sarah. (2007). Change blindness and eyewitness testimony. The Journal of Psychology, 141, 423-434.
Fougnie, D., & Marios, R. (2007). Executive working memory load induced inattentional blindness. Psychonomic Bulletin & Review, 14, 142-147.
Kuhn, G., & Tatler, B. (2005). Magic and fixation: Now you don't see it, now you do. Perception, 34, 1155-1161.
*Simons, D. J., & Levins, D. T. (1998). Failure to detect changes to people during a real-world interaction. Psychonomic Bulletin & Review, 5, 644-649

Visual search in and out of the lab

*Fleck, M. S., & Mitroff, S. R. (2007). Rare targets are rarely missed in correctable search. *Psychological Science, 18,* 943-947.
Horowitz, T. S., & Wolfe, J. M. (1998). Visual search has no memory. *Nature, 394,* 575-577.
Kristjansson, A. (2000). In search of remembrance: Evidence for memory in visual search. *Psychological Science, 11,* 328-332.
McCarley, J. S., Kramer, A. F., Wickens, C. D., Vidoni, E. D., & Boot, W. R. (2004). Visual skills in airport-security screening. *Psychological Science, 15,* 302-306.

Automatic and Controlled Processing

Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of Social Behavior: Direct effects of trait construct and stereotype activation on action. Journal of Personality and Social Psychology, 71, 230-244.
Gehring, W. J., Karpinski, A., & Hilton, J. L. (2003). Thinking about interracial interactions. *Nature Neuroscience, 6,* 1241-1243.
*Raz, A., Moreno-Iniguez, M., Martin, L., & Zhu, H. (2007). Suggestion overrides the Stroop effect in highly hypnotizable individuals. Consciousness & Cognition, 16, 331-338.
Yantis, S. (1993). Stimulus-driven attentional capture and attentional control settings. *Journal of Experimental Psychology: Human Perception and Performance, 19,* 676-681.

Eye Movements (with some aging thrown in)

Bojko, A., Kramer, A. F., & Peterson, M. S. (2004). Age equivalence in switch costs for prosaccade and antisaccade tasks.

Irwin, D. E., & Brockmole, J. R. (2004). Suppressing where but not what: The effect of saccades on dorsal- and ventral-stream visual processing. *Psychological Science, 15,* 467-473.
Scialfa, C. T., Hamaluk, E., Skaloud, P., & Pratt, J. (1999). Age differences in saccadic averaging. *Psychology and Aging, 14,* 695-699.
*Trottier, L., & Pratt, J. (2004). Visual processing of targets can reduce saccadic latencies. *Vision Research, 45,* 1349-1354.

Perception and Action/Performance

Brass, M., & Heyes, C. (2005). Imitation: Is cognitive neuroscience solving the correspondence problem. *Trends in Cognitive Sciences, 9,* 489-495.
Knoblich, G., & Flach, R. (2001). Predicting the effects of actions: Interactions of perception and action. *Psychological Science, 12,* 467-472.
*Kunde, W., Landgraf, F., Paelecke, M., & Kiesel, A. (2007). Dorsal and ventral processing under dual-task conditions. *Psychological Science, 18, 100-104*
Witt, J. K., & Proffitt, D. R. (2005). See the ball, hit the ball: Apparent ball size is correlated with batting average. *Psychological Science, 937-938.*

Errors of Attention/Perception, Visual Illusions

Dodd, M. D., McAuley, T., & Pratt, J. (2005). An illusion of 3-D motion with the Ternus display. Vision Research, 45, 969-973.
*Glover, S. (2003). Visual illusions affect planning but not control. *Trends in Cognitive Sciences, 6,* 288-292.
Glover, S., & Dixon, P. (2001). The role of vision in the on-line correction of illusion effects on action. *Canadian Journal of Experimental Psychology, 55,* 96-103.
Milner, D., & Dyde, R. (2003). Why do some perceptual illusions affect visually guided action, when others don't? *Trends in Cognitive Sciences, 7,* 10-11.

Emotion and Attention

*Fox, E., Griggs, L., & Mouchlianitis, E. (2007). The detection of fear-relevant stimuli: Are guns noticed as quickly as snakes. *Emotion, 7,* 691-696.
Hajcak, G., & Olvet, D. M. (2008). The persistence of attention to emotion: Brain potentials during and after picture presentation. *Emotion, 8,* 250-255.
Hope, L., & Wright, D. (2007). Beyond unusual? Examining the role of attention in the weapon focus effect. *Applied Cognitive Psychology, 21,* 951-961.
Schmidt, S. R. (2002). Outstanding Memories: The positive and negative effects of nudes on memory. Journal of Experimental Psychology: Learning, Memory, & Cognition, 28, 353-361.

Video Games and Performance

Feng, J., Spence, I., & Pratt, J. (2007). Playing an action video game reduces gender differences in spatial cognition. *Psychological Science, 18,* 850-855.

*Green, C. S., & Bavelier, D. (2003). Action video game modifies visual selective attention. *Nature, 423,* 534-537.
Green, C. S., & Bavelier, D. (2006). Effect of action video games on the spatial distribution of visuospatial attention. *Journal of Experimental Psychology: Human Perception and Performance, 32,* 1465-1478.
Green, C. S., & Bavelier, D. (2007). Action-video-game experience alters the spatial resolution of vision. *Psychological Science, 18,* 88-94.

Cognitive Disorders, effect on attention/performance

Flor, H. (2002). Phantom-limb pain: Characteristics, causes, and treatment. The Lancet Neurology, 1, 182-189.
Gillen, J. A., & Dutton, G. N. (2003). Balint's syndrome in a 10-year-old male. Developmental Medicine & Child Neurology, 45, 349-352.
*Smilek, D., Dixon, M. J., Cudaby, C., & Merikle, P. M. (2002). Synesthetic color experiences influence memory. Psychological Science, 13, 548-552.
Trevethan, C. T., Sahraie, A., & Weiskrantz, L. (2007). Can blindsight be superior to 'sighted-sight'? Cognition, 103, 491-501.

Blink: Rapid Cognition