

**ADVANCED TOPICS IN COGNITIVE NEUROSCIENCE:
ACHIEVEMENT AND MOTIVATION**
Prof. Elizabeth Tricomi (Eebie)
Psychology 512 Syllabus

COURSE OVERVIEW:

What causes people to act the way they do? Why do some people strive to improve or demonstrate their competence more than others? The motivational control of behavior depends on many things, including goals, beliefs, and experience. In this cross-disciplinary course, students will read, discuss, and write about scholarly literature across subfields of Psychology on achievement and motivation. Sample topics include drive theory and incentive learning, cognitive neuroscience of motivation, naive beliefs about intelligence, and motivation in education.

LEARNING OBJECTIVES:

Students who complete this course will be able to demonstrate knowledge of research findings and theories from across subfields of Psychology on the topic of Achievement and Motivation. In addition, students will also gain writing expertise by writing a term paper and providing constructive criticism on other students' writing through peer review. Students' own writing is expected to improve from evaluating peer writing and through thoughtful revision based on feedback from their peers and from the instructor.

COURSE REQUIREMENTS:

- (1) The required reading assignments should be completed BEFORE class. You will be required to submit 2 discussion questions on the readings each week over e-mail to etricomi@rutgers.edu, by midnight on Monday. The additional readings are not required, but may be a good starting place when researching your paper topic.
- (2) Class attendance/participation. Since there are no tests, class participation will be weighted heavily. All students are encouraged to participate fully in discussion through comments, questions, and contributions from personal experience. Thoughtful involvement in every aspect of the class enhances the educational experience of the entire class. Please also be mindful that your classmates need a chance to be heard, too.
- (3) Term paper. The term paper will be completed in stages (see schedule below), and in total will be worth 60% of your grade. It can be on any topic relating to Achievement and Motivation. Be sure not to choose a topic that is too broad. The paper should be about 10-12 pages, double-spaced.

GRADE:

Your final grade will be calculated as follows:

Participation:

Discussion topic submission:	10%
Class attendance:	10%
<u>Contribution to class discussion:</u>	<u>20%</u>
Total Participation	40%

Term paper:Due Date:

Topic choice:	5%	Rough topic due, 2/3; Final topic due 2/17
First Draft:	15%	Monday, 3/23, 9AM
Two Reviews:	15%	Friday, 4/10, 5PM
Class Presentation:	5%	Tuesday, 4/28, in class
Response to Reviews:	5%	Tuesday, 5/12, 5PM
<u>Final Draft:</u>	<u>15%</u>	<u>Tuesday, 5/12, 5PM</u>
Total Term Paper	60%	

- ACADEMIC INTEGRITY: *Students are expected to do their own work at all times.* Plagiarism or other breaches of academic integrity are taken very seriously. You should familiarize yourself with the University policy on academic integrity outlined at the following URL:
<http://academicintegrity.rutgers.edu/integrity.shtml>

NOTES:

- If you need accommodation for a learning disability, please talk to me at the beginning of the course. Tutoring, skills workshops, and writing assistance are available at the Learning Resource Center.
- The best way to reach me is by email or to talk after class. My office hours will be held in my office, 353 Smith Hall, and I am happy to meet with you at other times if you make an appointment.

OFFICE HOURS:

Tuesdays from 10:00-11:30 AM, or by appointment
353 Smith Hall e-mail: etricomi@rutgers.edu

COURSE WEBSITE: The syllabus and readings will be available on Blackboard.

Schedule of Readings/Discussion Topics

JAN 20 Introduction**JAN 27 Drive Theory and Incentive Learning****Required readings:**

Berridge, K. C. (2004). Motivation concepts in behavioral neuroscience. *Physiology and Behavior*, 81, 179-209.

Dickinson, A., & Balleine, B. W. (1995). Motivational control of instrumental action. *Current Directions in Psychological Science*, 4, 162-167.

Additional readings:

Berridge, K. C. (2001). Reward learning: Reinforcement, incentives, and expectations. In D. L. Medin (Ed.), *The Psychology of Learning and Motivation* (Vol. 40, pp. 223-278): Academic Press.

Wise, R. (2004). Drive, Incentive, and Reinforcement: The Antecedents and Consequences of Motivation. In R. Dienstbier, R. A. Bevins, and M. T. Bardo (Eds.), *Motivational factors in the etiology of drug abuse: Volume 50 of the Nebraska Symposium on Motivation* (p. 159-195): University of Nebraska Press.

FEB 3 Reinforcement Learning**NOTE: Rough term paper topic due in class.****Required readings:**

Schultz, W. (1997). Dopamine neurons and their role in reward mechanisms. *Curr Opin Neurobiol*, 7(2), 191-197.

Montague, P. R., Hyman, S. E., & Cohen, J. D. (2004). Computational roles for dopamine in behavioural control. *Nature*, 431, 760-767.

Everitt, B. J., & Robbins, T. W. (2005). Neural systems of reinforcement for drug addiction: from actions to habits to compulsion. *Nature Neurosci.*, 8, 1481-1489.

Additional readings:

Schultz, W., Dayan, P., & Montague, P. R. (1997). A neural substrate of prediction and reward. *Science*, 275, 1593-1599.

Maia, T. V. (2009). Reinforcement learning, conditioning, and the brain: Successes and challenges. *Cognitive Affective & Behavioral Neuroscience*, 9(4), 343-364.

FEB 10 Performance Feedback**Required readings:**

Tricomi, E., & Fiez, J. A. (2008). Feedback signals in the caudate reflect goal achievement on a declarative memory task. *Neuroimage*, *41*(3), 1154-1167.

Shohamy, D. (2011). Learning and motivation in the human striatum. *Curr Opin Neurobiol*, *21*(3), 408-414.

van Duijvenvoorde, A. C., Zanolie, K., Rombouts, S. A., Raijmakers, M. E., & Crone, E. A. (2008). Evaluating the negative or valuing the positive? Neural mechanisms supporting feedback-based learning across development. *J Neurosci*, *28*(38), 9495-9503.

Additional readings:

Tricomi, E., Delgado, M. R., McCandliss, B. D., McClelland, J. L., & Fiez, J. A. (2006). Performance feedback drives caudate activation in a phonological learning task. *Journal of Cognitive Neuroscience*, *18*(6), 1029-1043.

Smith, J. G., & McDowall, J. (2006). When artificial grammar acquisition in Parkinson's disease is impaired: The case of learning via trial-by-trial feedback. *Brain Research*, *1067*(1), 216.

FEB 17 Control as a Source of Motivation

NOTE: Final term paper topic due in class.

Required readings:Cognitive Neuroscience of Perceived Control

Tricomi, E. M., Delgado, M. R., & Fiez, J. A. (2004). Modulation of caudate activity by action contingency. *Neuron*, *41*, 281-292.

Bhanji, J. P., & Delgado, M. R. (2014). Perceived control influences neural responses to setbacks and promotes persistence. *Neuron*, *83*(6), 1369-1375.

Control in Education

Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology*, *52*, 890-898.

Pierro, A., Presaghi, F., Higgins, E. T., & Kruglanski, A. W. (2009). Regulatory mode preferences for autonomy-supporting vs. controlling instructional styles. *British Journal of Educational Psychology*, *79*, 599-615.

Additional readings:

Deci, E. L., & Ryan, R. M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.

Higgins, E. T. (2013). Control: Managing what happens. In *Beyond pleasure and pain: How motivation works*, pp. 155-196. New York, NY: Oxford University Press.

FEB 24 Goal Pursuit**Required readings:**

Grant, H. & Gelety, L. (2009). Goal content theories: Why differences in *what* we are striving for matter. In G.B. Moskowitz and H. Grant (Eds.), *The Psychology of Goals*, pp. 77-97. New York, NY: The Guilford Press.

Forster J. & Werth, L. (2009). Regulatory focus: Classic findings and new directions. In G.B. Moskowitz and H. Grant (Eds.), *The Psychology of Goals*, pp. 292-322. New York, NY: The Guilford Press.

Additional readings:

Berkman, E.T. & Lieberman, M.D. (2009). The neuroscience of goal pursuit: Bridging gaps between theory and data. In G.B. Moskowitz and H. Grant (Eds.), *The Psychology of Goals*, pp. 98-126. New York, NY: The Guilford Press.

Elliot, A.J. & Diesta, D. (2009). Goals in the context of the hierarchical model of approach-avoidance motivation. In G.B. Moskowitz and H. Grant (Eds.), *The Psychology of Goals*, pp. 56-76. New York, NY: The Guilford Press.

MAR 3 Motivation and Emotion**Required readings:**

Ashby, F. G., Isen, A. M., & Turken, A. U. (1999). A neuropsychological theory of positive affect and its influence on cognition. *Psychological Review, 106*(3), 529-550.

Oettingen, G., & Stephens, E.J. (2009). Fantasies and motivationally intelligent goal setting. In G.B. Moskowitz and H. Grant (Eds.), *The Psychology of Goals*, pp. 153-178. New York, NY: The Guilford Press.

Additional readings:

Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin, 127*(2), 267-286.

Berkowitz, L., & Harmon-Jones, E. (2004). Toward an understanding of the determinants of anger. *Emotion, 4*(2), 107-130.

MAR 10 Motivation in Education

Required readings:

Wigfield, A., & Eccles, J. S. (2000). Expectancy-Value Theory of Achievement Motivation. *Contemp Educ Psychol, 25*(1), 68-81.

Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of Educational Psychology, 95*(4), 667-686.

Additional readings:

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist, 34*(3), 169-189.

Beilock, S. L., Kulp, C. A., Holt, L. E., & Carr, T. H. (2004). More on the fragility of performance: Choking under pressure in mathematical problem solving. *Journal of Experimental Psychology: General, 133*(4), 584-600.

MAR 17 Spring Break (no class)

(First Draft of Paper Due, Monday, MAR 23, 9AM)

MAR 24 Self-Efficacy Theory

Required readings:

Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (1996). Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Development, 67*, 1206-1222.

Caprara, G.V., Barbaranelli, C., Pastorelli, C. & Cervone, D. (2004). The contribution of self-efficacy beliefs to psychosocial outcomes in adolescence: predicting beyond global dispositional tendencies. *Personality and Individual Differences, 37*, 751-763.

Additional readings:

Higgins, E. T. (2013). Personality and culture: Ways of seeing and coping with the world. In *Beyond pleasure and pain: How motivation works*, pp. 155-196. New York, NY: Oxford University Press.

Schunk, D. H., & Pajares, F., (2009). Self-efficacy theory. In K. R. Wentzel & A. Wigfield

(Eds.), *Handbook of motivation at school* (pp. 35-53). New York, NY: Taylor Francis.

MAR 31 Cognitive Neuroscience Society Conference—No Class

Please use the extra time to work on your peer reviews.

APR 7 Naïve Theories of Intelligence

Required readings:

Mueller, C. M., & Dweck, C. S. (1998). Praise for intelligence can undermine children's motivation and performance. *Journal of Personality and Social Psychology*, 75, 33–52.

Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development*, 78, 246-263.

Additional readings:

Molden, D. C., & Dweck, C. S. (2006). Finding “meaning” in psychology: A lay theories approach to self-regulation, social perception, and social development. *American Psychologist*, 61, 192-302.

Miele, D. B., & Molden, D. C. (2010). Naive theories of intelligence and the role of processing fluency in perceived comprehension. *Journal of Experimental Psychology: General*, 139, 535–557.

(Peer reviews due Friday, APR 10, 5PM)

APR 14 Stereotype Threat

Required readings:

Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, 69(5), 797-811.

Grimm, L. R., Markman, A. B., Maddox, W. T., & Baldwin, G. C. (2009). Stereotype threat reinterpreted as regulatory mismatch. *Journal of Personality and Social Psychology*, 96(2), 288-304.

Additional readings:

Aronson, J., Fried, C. B., & Good, C. (2002). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology*, 38, 113-125.

Beilock, S. L., Jellison, W. A., Rydell, R. J., McConnell, A. R., & Carr, T. H. (2006). On the causal mechanisms of stereotype threat: Can skills that don't rely heavily on working memory still be threatened? *Personality and Social Psychology Bulletin*, 32(8), 1059-1071.

APR 21 Interpersonal Influences on Achievement

Required readings:

Pomerantz, E. M., & Dong, W. (2006). Effects of mothers' perceptions of children's competence: The moderating role of mothers' theories of competence. *Developmental Psychology*, 42(5), 950-961.

Furrer, C., & Skinner, E. A. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology*, 95, 148-162.

Additional readings:

Wentzel, K. (2009). Students' relationships with teachers as motivational contexts. In K. R. Wentzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 301-322). New York, NY: Taylor Francis.

Grolnick, W. S., Friendly, R. W., & Bellas, V. M. (2009). Parenting and children's motivation at school. In K. R. Wentzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 279-300). New York, NY: Taylor Francis.

APR 28 Class Presentations

FINAL Paper/Response to Reviews due: Tuesday, MAY 12, 5PM