This is a graduate level course. Junior or Senior undergraduates may sign up with consent of the instructor.

Description

We focus this semester on the intersection between the concepts of Expertise and Training with Intelligence and Ability. “Ability” is often considered innate and battles often rage over whether “expertise” reflects hours spent practicing the right tasks in the right way (i.e., “deliberate practice”) or whether expertise also includes an innate “ability” component. With the relationship between Ability & Expertise as our true focus, we begin by reviewing parts of the historic record which did not distinguish between these two core concepts. Whether time on task always or usually improves either skills or ability is also a concern and that concerns opens the door to whether playing computer games can improve basic cognitive abilities or “merely” improves skilled performance in the game itself. Ours is a huge topic and we will fluidly shift our focus among Expertise, Training, and Intelligence.

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PART I: INTRODUCTION TO OUR TOPIC

Week 1  INTRO AND LECTURES ON SOME VERY OLD DATA


Week 2  DEEP WATER – 180906

[All response papers are due by 6:00 pm the TUESDAY before class.]


All read and write 1/2 to 1 page (max) response paper for each of the 4 sections plus one for the big question:

1. Intro; pp227–230; focus!

2. A New Approach to Adult Intellect; p230-237; focus!

3. A Proposed Theory: PPIK; pp237-250;

4. At the bottom of p230 Ackerman gives us his goals for this paper. Based on your careful assessment of what he has written, how well has he succeeded??

5. Finally . . . come to class prepared to talk about whether and, if so, how Ackerman’s view of intelligence encompasses expertise and/or extreme expertise.

Paper presentations: Five 5-min presentations w/slides, one presentation from each of 5 students volunteers:


**Week 3  A DEEPER DIVE – 180913**

[All response papers are due by 6:00 pm the TUESDAY before class.]

All read and write 1 page (max) response papers for each section as enumerated below:


Paper presentations: w/slides


**Week 4  ADULT INTELLIGENCE – 180920**

[All response papers are due by 6:00 pm the TUESDAY before class.]

All read and write a 1 page response paper for each of:


[All response papers are due by 6:00 pm the TUESDAY before class.]

Paper presentations by . . . .


**PART II: HOW TO MEASURE INTELLIGENCE . . .**

**Week 5  CLOCKING THE MIND – 180927**

[All response papers are due by 6:00 pm the TUESDAY before class.]

All read and write 1/2 to 1 page per section (max) response papers for each of these five sections:


Response papers written by sections
1. INTRO & CHRONOLOGY OF RESEARCH pp93-99
2. THE HICK PARADIGM; p99-106
3. RT PARADIGMS AND PSYCHOMETRIC g; pp106-121
4. TOWARD A THEORY OF IDs IN RT AND g; pp121-127
5. A MODEL FOR RT IN THE HICK PARADIGM; pp127-131

Paper presentations by . . . :


**Week 6 CLOCKING, cont’d – 181004**

[All response papers are due by 6:00 pm the TUESDAY before class.]

All read and write a 1/2-to-1 page response papers for each of:


Paper presentations by . . . :


**Week 7 CLOCKING, cont’d – 181011**

[All response papers are due by 6:00 pm the TUESDAY before class.]

All read and write a 1-to-2 page response paper for:


Paper presentations by . . . :

Week 8  THE ex-GAUSSIAN GANG – 181025 – note that class has been pushed back one week due to CTWC

[All response papers are due by 6:00 pm the TUESDAY before class.]

All read and write 1-to-1.5 page response paper to each of:


Paper presentations by . . .:


Week 9  IND DIFS & THE HERITABILITY OF COG ABILITY – 181101

[All response papers are due by 6:00 pm the TUESDAY before class.]


Response papers written by sections (1/2-to-1 page max per each section)

- **ABSTRACT**, and **(1) INTRO**; pp1-4
- **(2) METHOD**; pp4-10
- **(3) RESULTS**; pp10-15
- **(4) DISCUSSION**; pp15-18

Paper presentations by . . .:

- **both of these papers are cited by Evans et al. (2018)**
PART III: TRAINING INDUCED COMPENSATION VS MAGNIFICATION OF INDIVIDUAL DIFFERENCES

Week 10  EFFECTS of TRAINING On INTELLIGENCE – 181108

[All response papers are due by 6:00 pm the TUESDAY before class.]
All read and write one, 1/2-to-1 page response paper for each of these two papers:


Paper presentations by . . .:


Week 11  EFFECTS of INTELLIGENCE On TRAINING – 181115

[All response papers are due by 6:00 pm the TUESDAY before class.]
All read and write a 1/2-to-1 page response paper for each of these papers:


Paper presentations by . . .:


PART IV: ABILITY AND INTELLIGENCE VS SKILLED PERFORMANCE AND ACHIEVEMENT

Week 12 ABILITY AND ITS INTERACTION WITH TRAINING – 181129

[All response papers are due by 6:00 pm the TUESDAY before class.]
All read and write a 1-2 page response paper to:


Paper presentations by . . .:


Week 13 ABILITY AND EXPERIENCE IN GAMERS – 181206

[All response papers are due by 6:00 pm the TUESDAY before class.]
Response papers written by sections (1/2 to 1-page max per each section) for:


- ABSTRACT, and (1) INTRO; pp77-80
- (2) KEY ISSUES; pp80-82
- (3) THE CURRENT META-ANALYSIS; pp80-89
- (4) RESULTS; pp89-93
- (5) DISCUSSION; pp93-103

Paper presentations by . . .:


comprehensive meta-analysis. *Intelligence, 59*, 72–83. doi:https://doi.org/10.1016/j.intell.2016.08.002

**Week 14  MENTAL SPEED & ABILITIES or SKILL STRUCTURE 181213**

- hold open

[All response papers are due by 6:00 pm the TUESDAY before class.]
All read and write one 1-to-2 page response paper to either:


or


**SPECIAL TUTORIAL PRESENTED BY ROUSSEL:**


**Week 15  ALTERNATIVE PAPER PRESENTATIONS**

We are not meeting wk15 but it is okay to chose one of these readings as a Paper Presentation for an earlier week (e.g., for week 11, 12, 13, or 14)

PAPER PRESENTATIONS by . . . :


**90  REQUIREMENTS**

**90.1  PreRequisites**

Permission of the instructor. This is a graduate research seminar in the Cognitive Science Department. However, all interested undergraduates and interested graduate students from other departments are encouraged to contact the instructor to
discuss their participation in the seminar. Responsibilities and assignments for undergraduates will be discussed and agreed on, in writing, by the student and the instructor.

90.2 About the Instructor
Professor Gray has been a member of the Cognitive Science Department at RPI since the Fall of 2002. For details on his research interests and activities see his homepage.

90.3 Activities
Reading, Writing, Presenting, Discussing

• Group discussion.
  – The most important contribution each person can make is to our discussions of the readings. I believe a seminar course in which everyone actively participates can be the most productive and educational forum in grad school (often for the instructor as well). Bringing together the various backgrounds and training of everyone in the room generally leads to a much richer perspective than would otherwise be possible. There is a lot of individual variability in tendency to speak up in this type of environment, but it is critical to an academic career to be comfortable doing so. You cannot succeed in this field without a willingness (and desire) to share your ideas in the face of criticism, and this is perhaps the best context to practice. If you are someone who has no qualms about dominating a debate, this is also a good place to practice restraint and listening.
  – Students (graduate and undergraduate) will take a turn leading a discussion of each week's core assigned readings. Advanced preparation for this includes the Response Paper for that week's readings.

• Response Papers
  – For each week students will be asked to write short, one-page, “response papers”. Each response paper will be on one of that week’s assigned readings.
  – Unless explicitly told otherwise, response papers will always be due by 5pm the day before class meets. This will enable me sufficient time to read your papers, to integrate the various themes that different students identify, and to gage the difficulties (if any) the class had understanding the paper.

• Paper presentations.
  – Most weeks will feature a group discussion of all or parts of our current group readings, followed by one to three detailed presentations on research papers assigned by the instructor as relevant to that week’s topic. Generally, just one student will read and present each research paper. There will be 1-3 presentations per week, one each by 1-3 different students. The number of presentations per student will be inversely proportional to class size (which is topped at 10 students). Longer or survey papers may be divided among several students.
In general, each presentation should be 20-25 minutes long and structured as though you were presenting your own work at a conference. A useful strategy is to copy key figures and tables out of each article and supplement with (scant) text stating the major points. Focus on summarizing the research, as the authors present it (including motivation, background, methods, results, and conclusions), but also allow us to hear your voice as well – however, be sure we know when the author is speaking and when you are speaking.

- Undergraduate presentations.
  
  * As this is a communication intensive course, I will be asking our undergraduates (if any) to also do presentations. These will be fewer in number than the graduate student assignments; however, I will encourage each undergraduate to prepare her/his presentation a week in advance, in time for it to be delivered in a practice session to me or to one of the senior graduate students. This extra meeting is intended as a “practice” session to get you comfortable with this type of presentation.

91 Grading Policy

- Examinations – none

- Group Discussion
  - 35% Grad Students; 45% Undergrads
  - For active participation in all discussions on all weeks in which the seminar is held. Exceptions due to professional travel or other activities need to be discussed with the instructor ahead of time.

- Response Papers
  - 35% Grad Students; 45% Undergrads
  - Prior to each week’s meeting, one or more readings will be assign and, for each reading, all students are expected to write a short, one-page Response Paper. The Response Paper should not merely summarize or outline the assigned reading but should reflect your thoughts on the author’s arguments, the strength of evidence, alternative hypotheses, implications, and so on.
  - Response papers are due to the Instructor by 5:00 pm the day before the seminar.

- Presentations
  - 35% Grad Students; 15% Undergrads
  - Throughout the semester, an average of one or two students each week will be asked to present the findings of a published research paper, assigned by the instructor. The presentation should be in the range of 20-30min. The student should assume the role of the paper’s author and present the case made by the author in her paper. Use of figures, tables, and headings from the paper is encouraged, as well
as original visualizations created by the student, as appropriate. The student may also step out of their role as “surrogate author” for various “meta” comments on the material but should, generally, maintain and represent the case made by the original author in her paper.

- Yes. I expect 105% out of you!

92 Honors Policy

- My expectation is that all of the work you do for me in this class will be the work of one individual. Exceptions to this rule will be broadcast to the class by email.

- As you will all find out, I explicitly encourage you to engage in public (using email and other media to broadcast a message to the entire) or private (one-to-one) discourse regarding the readings and topics raised in this class. Study groups are encouraged.

- If any of you have any questions regarding current situations or future situations, remember that I am your first contact on this. Please come and see me.
93 References


This document contains 48 references.