

University of Waterloo
Department of Psychology
Psych 390
Natural Science Advanced Research Methods Topics: Research in Memory
Spring 2021
Online

Instructor and T.A. Information

Instructor: Evan F. Risko

Office: PAS 4010

Office Phone: Not applicable

Office Hours: Students will have regularly scheduled meetings on Teams with the instructor. Otherwise, by appointment.

Email: efrisko@uwaterloo.ca

Please contact the instructor and TA using the email address provided. If we need to contact you, then we will do so using your official uWaterloo address. Students are responsible for all e-mail that is sent to the official uWaterloo email address. Check e-mail regularly for important and time sensitive messages. See Statement on official student e-mail address for further details e.g., procedures and warnings regarding forwarding e-mail to other accounts

T.A.	April Pereira
Email	april.pereira@uwaterloo.ca
Office	PSYCH 390 – SPRING 2021 Team -> General Channel
Office Hours	Monday, 2:00PM-4:00PM Friday, 10:00AM- 12:00PM (or by appointment)

Course Description

The goal of the course is to introduce students to research in memory with a particular emphasis on conducting research in memory.

Course Goals and Learning Outcomes

Goals and learning outcomes are based on APA guidelines for Undergraduate Psychology Majors. Upon completion of this course, students should be able to:

- Demonstrate a working knowledge of research in memory
- Use scientific reasoning to interpret psychological phenomena
- Demonstrate psychology information literacy
- Engage in innovative and integrative thinking and problem solving
- Interpret, design, and conduct basic psychological research
- Demonstrate effective writing
- Exhibit effective presentation skills
- Refine project-management skills

Required Text

- There is no textbook for this course

Readings Available on LEARN

- Readings for the course will consist of primary source material (i.e., journal articles). While the number of pages of text required each week may not be high, reading primary source material is typically much more challenging than textbooks so you should be prepared to read papers more than once. All readings are available on LEARN or through the University of Waterloo Library.

Course Requirements and Assessment

Assessment	Date of Evaluation (if known)	Weighting
Self Guided Assignments	see below	25%
Article Reports	see below	15%
Participation & Research Experience	Last Day of Lectures	10%
Research Proposal	July 5th	30%
Research Report	August 9th	20%
<hr/>		
Total		100%

Self Guided Assignments (25%)

There will be 5 self guided assignments that will provide students the opportunity to develop and practice fundamental research skills. These assignments are self-guided. Each has an associated document that can be completed independently. When you encounter a problem for which the solution is not immediately apparent please first attempt to work through the problem to the best of your ability. Following that, consult readily available resources. For example, if you do not know (remember) how to conduct a paired t-test in SPSS or R (or whatever statistical package you might be using) try searching the Internet for instructions/tutorials (there will be lots). If neither of those two solutions work, then email the TA or Instructor and they will try to help. Each assignment is worth 5% of your total grade on this component.

WEEK 1 & 2 Assignment 1 – Literature Search/Review: 24 May

WEEK 3 & 4 Assignment 2 – Hypotheses/Predictions: 7-June

WEEK 5 & 6 Assignment 3 - Methods: 21-June

WEEK 7, 8, & 9 Assignment 4 – Experiment Programing: 12- July

WEEK 10, 11, & 12 Assignment 5 - Data Analysis: 2-August

Article Reports (15%)

You will complete 14 article reports. Article reports consist of a series of questions answered based on either an instructor selected reading (Weeks 1, 2, 3,9,10,11) or a student choice reading (Week 4-8). The 8 student choice articles are chosen by the student (see Assignment #1). The articles must be (1) from a peer-reviewed journal (2) be related to the memory topic you have picked for your research proposal and (3) report at least one experiment. If you have questions about the appropriateness of an article you have chosen, then please ask the TA or Instructor. Each report will be worth 1% of your final Article Report grade (if you complete all 14 you will earn the final 1%). Each article will receive a grade of 0 = incomplete, 0.5 = complete but significant missing/incorrect information, or 1 = complete. The article reports can be found in the Quizzes section and can be completed and submitted via that section.

WEEK 1 - Agarwal et al. (2008): 17-May

WEEK 2 - Nairne et al. (2008): 24-May

WEEK 3 - Carpenter (2009): 30-May

WEEK 4- Student Choice #1 & #2: 7-June

WEEK 5 - Student Choice #3 & #4: 14-June

WEEK 6 - Student Choice #5 & #6: 21-June

WEEK 7 - Student Choice #7 & #8: 28-June

WEEK 9 - Verde & Perfect (2011): 12-July

WEEK 10 – Roediger & Karpicke (2006): 19-July

WEEK 11 – Abel & Bauml (2020): 26-July

Participation and Research Experience (10%)

Your participation mark will be determined by your participation in the instructor meetings (7%) and completion of the research experience component (3%).

Instructor Meetings (7%). Each week you will have one scheduled 15-25 minute one-on-one meeting with the instructor. In this meeting you will have the opportunity to ask questions, discuss the course (e.g., readings, assignments), and receive feedback. These meetings will be scheduled during the first week and occur at the same time each week. There will be no meetings Weeks #1, #8, and #10. If you need to miss a meeting (e.g., technical problems), then the meeting can occur via email or be rescheduled at a mutually agreeable time. Meetings will take place on the PSYCH 390 – SPRING 2021 Team in each student's private channel.

Research Experience. You will complete 4 research participation credits or 4 article reviews. Please see RESEARCH_PARTICIPATION_INFORMATION on Learn for more information. The research experience needs to be completed before the last day of lectures.

Research Proposal (30%)

The goal of this assignment is for you to write a research proposal and create an oral presentation based on it. The in-class assignments will focus on skill development relevant to this goal. You will propose a novel experiment to test a hypothesis you have generated or found in the literature to explain one of a set of memory phenomenon (or a self-selected one). Please mind the dictum “Keep it simple.” This should be a behavioural experiment, using a ready at hand sample, with a straightforward design, and requiring straightforward statistical tests within your skillset. Proposing tractable studies is an important and overlooked skill. Note that you will be expected in the Research Report to program the experiment and analyze the data that your proposed experiment would generate. There are two components to the Research Proposal, the written component and the oral component.

Written Component

Your written research proposal should include:

- (a) an Introduction consisting of a brief review of the relevant literature and a clear motivation for your proposed experiment. Please cite at least 8 articles.
- (b) a clear description of the hypothesis and prediction to be tested including a clear IF...THEN statement. You do not need to generate the hypothesis yourself (but you can if you like). In many cases, we are testing the proposed explanations of other researchers. This is perfectly fine.
- (c) the proposed methods including the number of participants with associated justification for the sample size (using a power analysis), the design, the stimuli to be used (include exact stimuli or examples in an appendix), and a description of the procedure including a figure that visually communicates it.
- (d) a description of the statistical tests to be used to test your hypothesis
- (e) a complete AsPredicted.org style pre-registration for your proposed experiment (does not count against maximum number of pages). A word document with the required questions will be provided on Learn (i.e., you do not need to complete the pre-registration on OSF.io or AsPredicted.org).

Technical Requirements for the written component

The paper must be at least 5 pages and no longer than 6 pages not including references

You must use 12 point Times New Roman font, double spaced, 2.5 cm margins

Use APA style. Microsoft Word documents preferred.

Oral Component

You will provide a recorded presentation of your research proposal. The presentation must be voice-over slides (e.g., audio of you presenting with visual slides). The oral presentation should be a condensed version of your proposal covering the Introduction/motivation, hypothesis and prediction, the proposed methods, and a description of a statistical approach to be employed. Guidelines for effective academic talks will be provided on Learn along with general technical guidance.

Technical Requirements for the oral component

The oral presentation must be between 5-10 minutes.

Voice-over slides (e.g., powerpoint). Please use a standard video file.

Please submit to the electronic drop box on LEARN on or before midnight on the due date.

You are responsible for keeping a copy of the final version of your written and oral components.

Research Report (20%)

The goal of this assignment is for you to write a complete research report in the format of a published APA article. The in-class assignments will focus on skill development relevant to this goal. The Research Report will build on your Research Proposal. That is, you will receive feedback on your Research Proposal to be integrated. In addition, you will program the experimental task you proposed and you will be provided with a simulated dataset based on your proposed study that you will need to analyze. You will report the results, interpret them within the context of your hypothesis and prediction, and complete a General Discussion.

Your Research Report should include:

- (a) a revised Introduction (including the brief review and motivation for your study) and Method section based on feedback from the TA and/or Instructor. In addition, the Introduction and Methods section should now be written from the perspective that the research has been conducted and this is the Research Report.
- (b) a working program to administer the proposed task
- (c) a results section describing the outcome of your planned analyses using a dataset provided by the instructor and any exploratory analyses that you conducted. In addition, please be sure to conduct detailed initial data analysis and report any data quality issues (e.g., outliers removed).
- (d) at least one Figure or Table
- (e) a General Discussion summarizing and interpreting your results (e.g., were your results consistent or not with your hypothesis?), integrating those results into the literature, and articulating any limitations and future directions.

Technical Requirements

The Research Report must be at least 8 pages and no longer than 10 pages including references
You must use 12 point Times New Roman font, double spaced, 2.5 cm margins
Use APA style. Microsoft Word documents preferred.

Please submit to the electronic drop box on LEARN on or before midnight on the due date.
You are responsible for keeping a copy of the final version of your Research Report.

Course Outline

Week	Date	Tasks	Readings Due
Week 1-12	All	The Research Proposal and Research Report are not listed in the weekly tasks. You should be working on them each week. The Assignments will help you stay on track to some extent (i.e., parts of the Assignments will be used in your Research Proposal and Research Report), but the Research Proposal and Research Report are composed of multiple components and represent a significant time commitment. Please try to distribute that time wisely.	
1	May 10-16	(1) View Course Introduction announcement on Learn and review the syllabus (2) Schedule an instructor meeting time (3) Assignment #1 (4) Read the required papers (5) Agarwal et al. (2008) Article Report	Agarwal et al. (2008) Melby-Lervåg et al. (2016)
2	May 17-23	(1) Submit Agarwal et al. (2008) Article Report by Monday May 17th at noon (2) Assignment #1 (3) Read the required papers (4) Nairne et al. (2008) Article Report (5) Instructor meeting	Nairne et al. (2008) Fernandes et al. (2018)
3	May 24-30	(1) Submit Assignment #1 by Monday May 24th at noon. (2) Submit Nairne et al. (2008) Article Report by Monday May 24th at noon (3) Assignment #2. (4) Read the required paper (5) Carpenter (2009) Article Report (6) Instructor meeting	Carpenter (2009)
4	May 31st-June 6	(1) Submit Carpenter (2009) Article Report by Monday May 31st at noon (2) Assignment #2 (3) Read the required papers (4) Student Choice #1 and #2 Article Report (5) Instructor meeting	Student's Choice #1 Student's Choice #2

Week	Date	Tasks	Readings Due
5	June 7-13	(1) Submit Assignment #2 by Monday June 7th at noon (2) Submit Student Choice #1 and #2 Article Reports by Monday June 7th at noon (3) Assignment #3 (4) Read the required papers (5) Student Choice #3 and #4 Article Report (6) Instructor meeting	Student's Choice #3 Student's Choice #4
6	June 14-20	(1) Submit Student Choice #3 and #4 Article Reports by Monday June 14th at noon (2) Assignment #3 (3) Read the required papers (4) Student Choice #5 and #6 Article Report (5) Instructor meeting	Student's Choice #5 Student's Choice #6
7	June 21-27	(1) Submit Assignment #3 by Monday June 21st at noon (2) Submit Student Choice #5 and #6 Article Reports by Monday June 21st at noon (3) Assignment #4 (4) Read the required papers (5) Student Choice #7 and #8 Article Report (6) Instructor meeting	Student's Choice #7 Student's Choice #8 Peirce et al. (2019)
8	June 28-July 4	(1) Submit Student Choice #7 and #8 Article Report by Monday June 28th at noon. (2) Assignment #4 (3) Read the required paper (4) Instructor meeting (there is no class on Thursday. Instructor meetings will be rescheduled)	Ralph & Smilek (2017)
9	July 5-11	(1) Submit Research Proposal by Monday July 5th at noon (2) Assignment #4 (3) Read the required papers (4) Verde & Perfect (2011) Article Report (5) Instructor meeting	Sungkhasettee et al (2011) Verde & Perfect (2011)

Week	Date	Tasks	Readings Due
10	July 12-18	(1) Submit Assignment #4 by Monday July 12th at noon (2) Submit Verde & Perfect (2011) Article Report by Monday July 12th at noon (3) Assignment #5 (4) Read the required papers (5) Roediger & Karpicke (2006) Article Report	MacLeod et al. (2010) Roediger & Karpicke (2006)
11	July 19-25	(1) Submit Roediger & Karpicke (2006) Article Report by Monday July 19th at noon (2) Assignment #5 (3) Read the required paper (4) Abel and Bauml (2020) Article Report (5) Instructor meeting	Ovalle-Fresa et al. (2021) Abel & Bauml (2020)
12	July 26- August 5	(1) Submit Assignment #5 by Monday August 2nd at noon. (2) Submit Abel and Bauml (2020) Article Report by Monday July 26th at noon (3) Instructor meeting	No readings

Late Work

A late penalty of 10% per day late (24 hours) will be levied against late Self Guided Assignments, Article Reports, Research Proposals and the Research Reports. No course component can be submitted after August 12th, 2021. Research Experience component cannot be submitted after the deadline.

Electronic Device Policy

None.

Information on Plagiarism Detection

None.

Attendance Policy

There are no synchronous components to this class. However, each week (except Weeks #1, #8, and #10) you will meet with the instructor. You are expected to attend those meetings. If you are unavailable to meet, then please let the instructor know so that the meeting can be rescheduled or other accommodations agreed upon.

Academic Integrity

In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility. Check the [Office of Academic Integrity webpage](#) for more information.

Discipline

A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for their actions. Check [the Office of Academic Integrity](#) for more information. A student who is unsure whether an action constitutes an offence, or who needs help in

learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to [Policy 71 - Student Discipline](#). For typical penalties check [Guidelines for the Assessment of Penalties](#).

Concerns about a Course Policy or Decision

Informal Stage. We in the Psychology Department take great pride in the high quality of our program and our instructors. Though infrequent, we know that students occasionally find themselves in situations of conflict with their instructors over course policies or grade assessments. If such a conflict arises, the Associate Chair for Undergraduate Affairs (Richard Eibach) is available for consultation and to mediate a resolution between the student and instructor: Email: reibach@uwaterloo.ca; Ph 519-888-4567 ext. 38790

Grievance

A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70 - Student Petitions and Grievances](#), Section 4. When in doubt, please be certain to contact Richard Eibach, the Associate Chair for Undergraduate Affairs who will provide further assistance; reibach@uwaterloo.ca.

Appeals

A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 - Student Discipline may be appealed if there is a ground. A student who believes they have a ground for an appeal should refer to [Policy 72 - Student Appeals](#).

Note for Students with Disabilities

The [AccessAbility Services](#) office, located on the first floor of the Needles Hall extension (NH 1401), collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AS office at the beginning of each academic term.

Cross-listed Course (if applicable)

Please note that a cross-listed course will count in all respective averages no matter under which rubric it has been taken. For example, a PHIL/PSCI cross-list will count in a Philosophy major average, even if the course was taken under the Political Science rubric.

Accommodation for course requirements for Psychology courses.

Policies of the Psychology department pertaining to course requirements are available on the [department website](#).

Chosen/Preferred First Name

Do you want professors and interviewers to call you by a different first name? Take a minute now to verify or tell us your chosen/preferred first name by logging into [WatiAM](#).

Why? Starting in winter 2020, your chosen/preferred first name listed in WatIAM will be used broadly across campus (e.g., LEARN, Quest, WaterlooWorks, WatCard, etc). Note: Your legal first name will always be used on certain official documents. For more details, visit [Updating Personal Information](#).

Important notes

- If you included a preferred name on your OUAC application, it will be used as your chosen/preferred name unless you make a change now.
- If you don't provide a chosen/preferred name, your legal first name will continue to be used.

Mental Health Support

All of us need a support system. The faculty and staff in Arts encourage students to seek out mental health support if they are needed.

On Campus

Due to COVID-19 and campus closures, services are available only online or by phone.

- Counselling Services: counselling.services@uwaterloo.ca / 519-888-4567 ext. 32655
- [MATES](#): one-to-one peer support program offered by the Waterloo Undergraduate Student Association (WUSA) and Counselling Services

Off campus, 24/7

- [Good2Talk](#): Free confidential help line for post-secondary students. Phone: 1-866-925-5454
- Grand River Hospital: Emergency care for mental health crisis. Phone: 519-749-4300 ext. 6880
- [Here 24/7](#): Mental Health and Crisis Service Team. Phone: 1-844-437-3247
- [OK2BME](#): set of support services for lesbian, gay, bisexual, transgender or questioning teens in Waterloo. Phone: 519-884-0000 extension 213

Full details can be found online on the Faculty of Arts [website](#)

Download [UWaterloo and regional mental health resources \(PDF\)](#)

Download the [WatSafe app](#) to your phone to quickly access mental health support information.

Territorial Acknowledgement

We acknowledge that we are living and working on the traditional territory of the Attawandaron (also known as Neutral), Anishinaabe and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land promised to the Six Nations that includes ten kilometres on each side of the Grand River.

For more information about the purpose of territorial acknowledgements, please see the [CAUT Guide to Acknowledging Traditional Territory](#).

Academic freedom at the University of Waterloo

[Policy 33, Ethical Behaviour](#) states, as one of its general principles (Section 1), “The University supports academic freedom for all members of the University community. Academic freedom carries with it the duty to use that freedom in a manner consistent with the scholarly obligation to base teaching and research on an honest and ethical quest for knowledge. In the context of this policy, 'academic freedom' refers to academic activities, including teaching and scholarship, as is articulated in the principles set out in the Memorandum of Agreement between the FAUW and the University of Waterloo, 1998 (Article 6). The academic environment which fosters free debate may from time to time include the presentation or discussion of unpopular opinions or controversial material. Such material shall be dealt with as openly, respectfully and sensitively as possible.” This definition is repeated in Policies 70 and 71, and in the Memorandum of Agreement, Section 6

Intellectual Property

Students should be aware that this course contains the intellectual property of their instructor, TA, and/or the University of Waterloo.

Intellectual property includes items such as:

- Lecture content, spoken and written (and any audio/video recording thereof);
- Lecture handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides);
- Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and
- Work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner).

Course materials and the intellectual property contained therein, are used to enhance a student’s educational experience. However, sharing this intellectual property without the intellectual property owner’s permission is a violation of intellectual property rights. For this reason, it is necessary to ask the instructor, TA and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online (e.g., to an online repository).

Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of intellectual property rights.

Please alert the instructor if you become aware of intellectual property belonging to others (past or present) circulating, either through the student body or online. The intellectual property rights owner deserves to know (and may have already given their consent).