

PSYC 420
Studying ongoing thoughts W22.
Professor Jonathan Smallwood
Winter Semester: Jan 10th 2022 – April 8th 2022.
Number of credits 3
Online / On Campus
Pre-requisites: None
Location: Weeks 1-6 Online, Weeks 7-12 Humphrey Hall 223
Time: Monday 10-11.30; Wednesday 08.30-10.00.

Instructor Information

Name: Jonathan Smallwood

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About me: I am a scientist interested in understanding the organization of human cognition. In my research I use the methods of cognitive neuroscience and psychology to ask questions about how the mind generates different patterns of thought. In my spare time I enjoy making and recording music. You can follow me on **Twitter: @the_mindwanders**

1.0 Land Acknowledgment

I will begin this syllabus by acknowledging that Queen's is situated on traditional Anishinaabe and Haudenosaunee territory. We are grateful to be able to live, learn and teach on these lands. By acknowledging this traditional territory, we recognize its history and its significance for the Indigenous Peoples who lived and continue to live, upon it.

2.0 Diversity and Inclusion

In this class, it is my goal to ensure that students from all backgrounds have a great learning experience, and that everyone feels valued, respected, and welcome. The class will represent a diversity of individuals, identities, beliefs, backgrounds and experiences. The diversity of experiences that the students bring to this class will be viewed as a resource, strength and benefit. **With this in mind, please speak up and participate during class meetings by sharing your opinions and questions about the course, however, please do so with respect for other members of the class.**

Welcome

This course is intended to be an in-depth study of how to approach the study of ongoing thought patterns in psychology and cognitive neuroscience. We will understand how people measures ongoing thought patterns. We will read and discuss articles that consider why these are important, how they are linked to the brain and explore how these phenomena are understood in both contemporary psychological and neuroscience research. The course aims to highlight the conceptual challenges that complex naturally occurring patterns of thoughts pose for scientists, and consider the problems faced when attempting to integrate research in this area across psychological and neural levels of analysis.

As a result of the ongoing pandemic, Weeks 1-6 of this course will happen synchronously on zoom at the time described in the syllabus. On Mondays (Meeting ID 981 0971 7051, Passcode 187345) and On Wednesdays (Meeting ID 959 8998 6219, Passcode 796047)

Once classes resume in person, this class will meet at the normal time in the location described at the top of the syllabus.

To take full advantage of this class, it is important that you plan your work load. Key dates (first day of class, tuition due date, last day to add/drop courses) are important to this goal as these help you plan your studies properly. Please find them at [Important Dates](#).

Expectations

In this class I hope to help you be able to understand how to study ongoing thought patterns and how this can help us understand flexible and adaptive behaviour. Don't worry if this seems very complicated – this course is designed so that if you follow the course material you will gain a general understanding of how contemporary researchers think about this important subject of human cognition.

LEARNING OBJECTIVES

To complete this course students will demonstrate their ability to:

- Summarize current theories of ongoing thought patterns and how they relate to both contemporary aspects of cognitive processing including attention, learning and memory, as well as to issues in cognitive neuroscience.
- Critically evaluate current, experimental literature in the field
- Develop oral and presentation skills
- Develop writings skills
- Summarize and communicate research findings in this research domain
- Generate new research questions in the area of ongoing thought

CLASS MATERIALS

There is a moderate amount of reading that is required in this course. You are expected to read the articles before coming to class so that you can contribute to the discussions. The basic readings can be found here:

READING LIST / CLASS SCHEDULE

Week 1. Introduction to the class

Monday. Introduction. No Reading Required

Wednesday. Smallwood, J., and Schooler, J.W. "The science of mind wandering: empirically navigating the stream of consciousness." Annual review of psychology 66 (2015): 487-518.

Week 2. Definitional complexity

Monday. Seli, P., Kane, M. J., Smallwood, J., Schacter, D. L., Maillet, D., Schooler, J. W., & Smilek, D. (2018). Mind-wandering as a natural kind: A family-resemblances view. Trends in cognitive sciences, 22(6), 479-490.

Christoff, K., Mills, C., Andrews-Hanna, J. R., Irving, Z. C., Thompson, E., Fox, K. C., & Kam, J. W. (2018). Mind-wandering as a scientific concept: cutting through the definitional haze. *Trends in cognitive sciences*, 22(11), 957-959.

Wednesday. Christoff, K., Irving, Z.C., Fox, K.C.R., Spreng, R.N., Andrews-Hanna, J.R. (2016). Mind-wandering as spontaneous thought: a dynamic framework. *Nature Reviews Neuroscience*, 17, 718-730, doi:10.1038/nrn.2016.113

Week 3. Relationship to conscious experience

Monday. Smallwood, J. et al., (2021). The neural correlates of ongoing thought. *IScience*, 24. doi.org/10.1016/j.isci. 2021.102132

Wednesday. Gonzalez-Castillo, J., Kam, J.Y., Hoy, C.W., Bandettini, P.A. (2021). How to interpret resting-state fMRI: Ask your participants., *The Journal of Neuroscience*, 10, 41(6): 1130-1141.

Week 4. Executive control

Monday. Executive failure: McVay, J. C., & Kane, M. J. (2010). Does mind wandering reflect executive function or executive failure? Comment on Smallwood and Schooler (2006) and Watkins (2008).

Response: Smallwood, J. (2010). Why the global availability of mind wandering necessitates resource competition: reply to McVay and Kane (2010).

Wednesday. Turnbull, A., Wang, H. T., Murphy, C., Ho, N. S. P., Wang, X., Sormaz, M., ... & Vatansever, D. (2019). Left dorsolateral prefrontal cortex supports context-dependent 3prioritization of off-task thought. *Nature communications*, 10(1), 1-10.

Week 5. Dreaming

Monday. Horikawa, T., Tamaki, M., Miyawaki, Y. & Kamitani, Y. (2013). Neural decoding of visual imagery during sleep. *Science*, 340, 639-642. DOI: 10.1126/science.1234330

Wednesday. Siclari, F, Baird, B, Perogamvros, L., Bernardi, G., LaRocque, J.L., Riedner, B., Boly, M., Postle, B.R., Tononi, G. (2017). The neural correlates of dreaming. *Nature Neuroscience*, 20, 6, 872-878.

Week 6. Association with creativity

Monday. Gable, S. L., Hopper, E. A., & Schooler, J. W. (2019). When the muses strike: Creative ideas of physicists and writers routinely occur during mind wandering. *Psychological science*, 30(3), 396-404.

Wednesday. Beaty, R. E., Kenett, Y. N., Christensen, A. P., Rosenberg, M. D., Benedek, M., Chen, Q., ... & Silvia, P. J. (2018). Robust prediction of individual creative ability from brain functional connectivity. *Proceedings of the National Academy of Sciences*, 115(5), 1087-1092.

Week 7– Reading Week

Week 8 - Ongoing thought in daily life

Monday. Ho, N. S. P., Poerio, G., Konu, D., Turnbull, A., Sormaz, M., Leech, R., ... & Smallwood, J. (2020). Facing up to the wandering mind: Patterns of off-task laboratory

thought are associated with stronger neural recruitment of right fusiform cortex while processing facial stimuli. *NeuroImage*, 116765.

Wednesday. McKeown, B., Poerio, G.L., Strawson, W.H., Martinon, L., Riby, L.M., Jefferies, E., McCall, C & Smallwood, J. (2021). The impact of social isolation and changes in work patterns on ongoing thought during the first COVID-19 lockdown in the United Kingdom. *Proceedings of the National Academy of Sciences*, 118(4), e2102565118 <https://doi.org/10.1073/pnas.2102565118>

Week 9 Dynamics of ongoing thought

Monday. Zanesco, A.P. (2020). Quantifying streams of thought during cognitive task performance using sequence analysis. *Behavioral Research Methods*, 52, 2417-2437, DOI: [10.3758/s13428-020-01416-1](https://doi.org/10.3758/s13428-020-01416-1).

Wednesday. Karapanagiotidis, T., Vidaurre, D., Quinn, A.J., Vatansever, D., Poerio, G.L., Turnbull, A., Ho, N.S.P., Leech, R., Bernhardt, B.C., Jefferies, E., Margulies, D.M., Nichols, T.E., Woolrich, M.W., Smallwood, J. (2020). The psychological correlates of distinct neural states occurring during wakeful rest. *Scientific Reports*, 10, 21121, <https://doi.org/10.1038/s41598-020-77336-z>

Week 10. Relationship to well being

Monday. Engert, V., Smallwood, J., & Singer, T. (2014). Mind your thoughts: Associations between self-generated thoughts and stress-induced and baseline levels of cortisol and alpha-amylase. *Biological psychology*, 103, 283-291, DOI: <https://doi.org/10.1007/s00426-019-01275-2>.

Wednesday. Vatansever, D., Karapanagiotidis, T., Margulies, D. S., Jefferies, E., & Smallwood, J. (2020). Distinct patterns of thought mediate the link between brain functional connectomes and well-being. *Network Neuroscience*, 1-21, doi: [10.1162/netn_a_00137](https://doi.org/10.1162/netn_a_00137).

Week 11 Associations with ADHD

Monday. Seli, P., Smallwood, J., Cheyne, J.A., Smilek, D. (2015). On the relation of mind-wandering and ADHD symptomology. *Psychonomic Bulletin and Review*, 22, 629-636, DOI: <https://doi.org/10.3758/s13423-014-0793-0>.

Wednesday. Bozhilova, N., Michelini, G., Jones, C., Kuntsi, J., Rubia, K., Asherson, P., (2020). Context regulation of mind wandering in ADHD. *Journal of Attention Disorders*, DOI: <https://doi.org/10.1177/1087054720956714>.

Week 12 Mindfulness

Monday. Mrazek, M., Franklin, M.S., Phillips, D.T., Baird, B., Schooler, J.W. (2013). Mindfulness training improves working memory capacity and GRE Performance while reducing mind-wandering. *Psychological Science*, 24, 5. doi.org/10.1177/0956797612459659

Wednesday. Afonso, R.F., Kraft, I., Aratanha, M.A., Kozasa, E.H. (2020). Neural correlates of meditation: a review of structural and functional studies. *Frontiers in Bioscience* 1;12:92-115. doi: 10.2741/S542.

Week 13. Autism

Monday. Turnbull, A., Garfinkel, S.N., Ho, N.S.P., Critchley, H.D., Bernhardt, B.C., Jefferies, E., Smallwood, J., (2020). Word up – Experiential and neurocognitive evidence for associations between autistic symptomology and a preference for thinking in the form of words. *Cortex*, 128, 88-106. doi.org/10.1016/j.cortex.2020.02.019

Wednesday. Hong, S.K., Vos de Wael, R., Bethlehem, R.A.I., Larivière, S., Paquola, C., Valk, S.L., Milham, M.P., Di Martino, A., Margulies, D.M., Smallwood, J. (2019). A typical functional connectome hierarchy in autism. *Nature Communications*, 10, 1022, doi.org/10.1038/s41467-019-08944-1

Grades

The grades for this class will be based on a combination of class participation, low stakes weekly exercises, class presentations and a single piece of written course work.

a. Class Participation (20 X 1 = 20%)

Seminar classes are designed for discussion so there is a substantial participation component to your grade. It's a small group, so these will largely feel like conversations. Feel free to bring a coffee or tea. I expect students to attend all of the classes if possible as this will ensure a more comprehensive understanding of the broader topic. However, students can miss up to four classes (2 weeks worth of classes) without penalty, if I am contacted in advance of the meeting.

b. Discussion Board Posts (10 x 2 = 20% total)

Each class, beginning in the second week of class, you will have the opportunity to write a comment on the class discussion board outlining your thoughts on each paper, based on the readings for that week. You will need to complete 10 of these over the course of the class to get full credit. There is a great deal of flexibility in what you can focus on. You can highlight something that you thought was good about one or other or the papers that we read, a parallel between a paper and one from a prior week. Each comment should be at least three sentences long and should be made before the first class of that week.

c. Class Presentation (20%)

In this course you will make two presentations each worth 10% of your final grade. On one week you will be responsible for presenting one of the selected papers to the class. In your presentation, the goal is to communicate the findings of the article clear and engaging manner, and lead the discussion about the article that you chose. You don't need to produce a power point presentation unless you feel that this will help you communicate the main message(s) of the paper. You will be graded on both the presentation and the extent to which you led the discussion in a way that encouraged thoughtful participation. On a second session you will make a short (approximately 5 minute) presentation that describes the goals of your research proposal (see below).

d. Final Paper (submission of an acceptable first draft in Week 8 on time = 10%, final paper grade = 30%).

A 1-page research proposal (excluding references) is due at the end of term. This will propose an experiment to examine a question on a topic of your choice relevant to the class. This will follow an NSERC research grant proposal (as required by MA or PhD scholarship applications) and is designed to help you develop an idea and get some practice and feedback writing a grant. So, you will be submitting a first draft of the paper and feedback will be provided. More detailed information will follow in class.

First Draft Due: Friday of Week 8 at 5pm.

Final Paper Due: Friday of Week 11 at 5pm.

Overall Grade Composition

Weekly Participation	20%
Discussion Board comments	20%
Presentations	20%
Research proposal Draft	10%
Final Research paper	30%
Total	100%

Suggested Time Commitment

In this course, you should expect to invest on average 8 to 10 hours per week. This will include the time you spend in class or lab/tutorial, studying course material, and completing weekly homework or preparing for your larger assignments and exams. You are encouraged to use a term at a glance and a weekly study schedule (visit [SASS](#)) that distributes the 8-10 hours per week and avoid 'cramming'. This way you will be more likely to complete the course successfully and remember what you learned longer.

Grading Scheme and Grading Method

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale:

Queen's Official Grade Conversion Scale

Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

Questions about the Course and Contacting the Teaching Team

Address for contacting the teaching team: jonathan.smallwood@queensu.ca

Course Announcements

All course announcements will be made on the on-Q site associated with the class and via email to the class.

Accommodations for Disabilities

Queen's University is committed to achieving full accessibility for people with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all their academic activities. The Senate Policy for Accommodations for Students with Disabilities was approved at Senate in November 2016. If you are a student with a disability and think you may need academic accommodations, you are strongly encouraged to contact the **Queen's Student Accessibility Services (QSAS)** and register as early as possible. For more information, including important deadlines, please visit the QSAS website.

Academic Consideration for Students in Extenuating Circumstances

Academic consideration is a process for the university community to provide a compassionate response to assist students experiencing unforeseen, short-term extenuating circumstances that may impact or impede a student's ability to complete their academics. This may include but is not limited to:

- Short-term physical or mental health issues (e.g., stomach flu, pneumonia, COVID diagnosis, vaccination, etc.)
- Responses to traumatic events (e.g., Death of a loved one, divorce, sexual assault, social injustice, etc.)
- Requirements by law or public health authorities (e.g., court date, isolation due to COVID exposure, etc.)

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances. For more information, please see the Senate Policy on Academic Consideration for Students in Extenuating Circumstances.

Each Faculty has developed a protocol to provide a consistent and equitable approach in dealing with requests for academic consideration for students facing extenuating circumstances. Arts and Science undergraduate students can find the Faculty of Arts and Science protocol and the portal where a request can be submitted. Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

If you need to request academic consideration for this course, you will be required to provide the name and email address of the instructor/coordinator. Please use the following contact information:

Instructor/Course Coordinator Name: Jonathan Smallwood

Instructor/Course Coordinator email address: Jonathan.smallwood@queensu.ca

Students are encouraged to submit requests as soon as the need becomes apparent and to contact their Professors/Course Coordinators as soon as possible once Consideration has been granted. Any delay in contact may limit the Consideration options available.

For more information on the Academic Consideration process, what is and is not an extenuating circumstance, and to submit an Academic Consideration request, [please see our website](#).

Winter term centralized deferred exam period: May 12th-15th 2022

Students receiving permission to write a deferred midyear or final exam are expected to write their exam during this deferred exam period. Requests for individualized deferred exam dates will not normally be accommodated. The deferred exam is considered an official exam to which all the exam regulations apply. The Exams Office will set a conflict-free schedule for each student.

Academic Integrity

Copyright of Course Materials

Unless otherwise stated, the material on the course website is copyrighted and is for the sole use of students registered in Psyc320. The material on the website may be downloaded for a registered student's personal use but shall not be distributed or disseminated to anyone other than students registered in this course.

Turnitin Statement

This course uses Turnitin, a third-party application that helps maintain standards of excellence in academic integrity. Normally, students will be required to submit their course assignments through onQ to Turnitin. In doing so, students' work will be included as source documents in the Turnitin reference database, where they will be used solely to detect plagiarism.

Turnitin is a suite of tools that provide instructors with information about the authenticity of submitted work and facilitates the process of grading. Turnitin compares submitted files against its extensive database of content, and produces a similarity report and a similarity score for each assignment. A similarity score is the percentage of a document that is similar to content held within the database. Turnitin does not determine if an instance of plagiarism has occurred. Instead, it gives instructors the information they need to select the authenticity of work as a part of a larger process.

Please read Turnitin's Privacy Pledge, Privacy Policy, and Terms of Service, which govern users' relationship with Turnitin. Also, please note that Turnitin uses cookies and other tracking technologies; however, in its service contract with Queen's, Turnitin has agreed that neither Turnitin nor its third-party partners will use data collected through cookies or other tracking technologies for marketing or advertising purposes. For further information about how you can exercise control over cookies, see Turnitin's Privacy Policy

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