PSYC*7140, Course Outline: Winter 2021

General Information

Due to the COVID-19 pandemic, this course is offered in an alternative format: Alternative Delivery Synchronous (AD-S) with specific days and times for virtual class lecture.

Course Title: I/O DOCTORAL RESEARCH SEMINAR

Course Description:

Participants investigate a specific area of Industrial/Organizational. They critically review past and current research, including theory development and empirical findings. Participants work together to integrate past theory and findings, to note inconsistencies in the literature, and to identify promising areas for future investigations.

The current topic for the doctoral research seminar is multilevel analyses. Multilevel analyses and research designs are ubiquitous in I/O psychology. As a result, in order to understand much of contemporary research in I/O psychology an understanding of multilevel analyses is imperative. Moreover, for students seeking to publish research in I/O journals, multilevel analyses can frequently be requisite. As a result, the goal of the current seminar is to provide students with an in-depth knowledge of the multilevel analyses. The course will focus on interpretation and execution of a variety of multilevel analyses. No previous experience with multilevel analyses is required as the course will start with basic concepts founded in linear regression and build to more complicated issues and techniques.

Finally, multilevel analyses are fun! As someone much wiser than me once said, “Be playful, stick with it, make honourable mistakes without any embarrassment, and don’t worry about whether you understand everything perfectly – you’ll get it soon enough.”

Credit Weight: .50

Academic Department (or campus): Psychology

Semester Offering: Winter

Class Schedule and Location: Tuesdays, 8:30-11:20AM, AD-S.

Instructor Information

Instructor Name: Jeffrey Spence
Instructor Email: spencejr@uoguelph.ca
Office location and office hours: Fridays 9:30-10:30AM

Learning Outcomes

1 Critical and Creative Thinking: Problem Solving and Depth and Breadth of Understanding: The ability to solve analytic problems related to multilevel designs and analyses. Be able to apply multilevel statistics to original research designs and analyses.

2 Literacy: Quantitative Literacy, Technological Literacy, and Visual Literacy: The ability to understand, evaluate, and interpret results from multilevel designs and analyses. Comfort in using statistical software to conduct analyses. Ability to interpret and create visual aids used to interpret statistical results.

4 Communicating, Written Communication: The ability to express one's ideas, summarize, and interpret results. Synthesize information and arguments informed by statistical results and assumptions of statistical tests.

5 Professional and Ethical Behaviour: Personal Organization & Time management and Intellectual Independence: Using time management skills to complete assignments and readings. Work independently on course work and develop professional relationships with classmates through in-class discussions and exercises.

Topics to be covered

- What is nesting? Understanding the need for and opportunities multilevel analyses provide.
- Multilevel modeling notation
- Fixed and random effects
- Intraclass correlations and residual intraclass correlations
- Centering
- Cross-level interactions
- Model fit and complex error structures
- Sample sizes and power for multilevel models
- Multilevel Generalized Linear Models (logistic and poisson outcomes)
- Bayesian estimation of multilevel models
- Mediation for multilevel analyses
- Moderated mediation for multilevel analyses
- Multilevel confirmatory factor analysis

Lecture Content and Readings:

The lecture will be structured in three parts: (a) presentation of article from Journal of Applied Psychology that uses multilevel analysis, (b) lecture on multilevel topic, (c) practical demonstration of how to perform analytic techniques in R. You are responsible for all material presented in lectures, including any announcements.

Course Assignments:

In-class participation (10%). Being present physically (attendance) and psychologically (active listening, participating during presentations, lectures, and practical exercises). Each class students will receive a grade between 0-2. 2 points for actively participating, 1 point for being present but not participating. Unaccounted for absence results in a grade of 0/2 for the week. 12 classes each worth 2 points = 24 points total.

Weekly discussion questions based on presentation reading (20%). Every week that there are assigned presentation readings that will be presented by a student in the class (12 presentations total). For each presentation reading, ALL students are required to read each article and come up with 2 questions, insights, observations about the analysis conducted and submit them before class. Some critical reflection and introspection is expected. For instance, it is expected that submissions will extend beyond, "The authors did/said _____ and I don't know what it is." Students will receive a grade out of 4 for each presentation reading: 2 points for completion and 2 points for demonstrating effort and thought in generating questions (12 articles will be presented therefore 24 points can be achieved).

Presentation (30%). Each student will conduct one 20-minute presentation of a presentation article listed in course outline (presentation readings will be assigned during the first class meeting). The goal of presentation is to provide an overview of theory and hypotheses and then take class through the analysis and results, with consideration given to the previously covered content and the current week's topic. In presenting the results and analyses, the goal is to illustrate what analysis, techniques, and statistics get used and presented. Review old concepts and introduce new ones. Students are NOT required to teach or explain or defend the analysis. *However, some critical analysis should be provided that is in accordance with the course content that has been covered up to that point in the course.* Presentations will be scored out of 100.

Presentations will be followed by an, up to, 20-minute question period.

All students are required to read each presentation article prior to class and have the presentation article in front of them during the presentation and question period.

Quizzes (40%). Throughout the term there will be 6 quizzes based on the content and R demonstrations. Each quiz will be open book and students will have one week to complete each quiz.

Assignment or Test	Due Date	Contribution to Final Mark (%)	Learning Outcomes Assessed
In-class participation	**Graded each week.**	**10%**	**1-7**
Weekly discussion questions	**Graded each week.**	**20%**	**1-6**
Presentation	**Scheduled throughout term.**	**30%**	**Determined by presentation topic**
Quizzes	**Scheduled throughout term.**	**40%**	**1-7**

Course Resources

Texts:

Finch, W. H., Bolin, J. E., & Kelley, K. (2014). *Multilevel modeling using R*. New York: NY: Taylor & Francis Group.

Other Resources:

Course Website: On CourseLink. This website will contain announcements, lecture notes, discussion, and other information pertinent to the course.

Course Policies

Grading Policies

All assignments will be graded in accordance with standards established by the University of Guelph. Graduate Grade interpretation

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time. Failure to turn in assignments at the scheduled time will result in a grade of 0 for that assignment.

Please note that these policies are binding unless academic consideration is given to an individual student.

Course Policy regarding use of electronic devices and recording of lectures:

Electronic recording of classes is expressly forbidden without consent of the instructor. When recordings are permitted they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

Student Rights and Responsibilities when Learning Online

Privacy Rights

Lectures held via Virtual Classroom on Courselink may be recorded for the purpose of posting them for students. As a student, you have the right to protect your privacy online and may choose to turn off your video and/or audio when in session. In the event that your video and/or audio remain on, please note that you are consenting to your presence in lecture recordings. Under no circumstances are you permitted to transmit copies of the recordings to others, without the express written consent of the instructor.

Online behaviour

According to the University Secretariat, students have a responsibility to help support community members' access to the tools they need to engage in their learning and development, both in and outside of the classroom. An example of this type of responsibility is the requirement to abide by the following:

Section 4.3.3. Disruption - to not interfere with the normal functioning of the University, nor to intimidate, interfere with, threaten or otherwise obstruct any activity organized by the University, including classes, or to hinder other members of the University community from being able to carry on their legitimate activities, including their ability to speak or associate with others.

As such, appropriate online behaviour will not be tolerated. Examples of inappropriate online behaviour include

- Posting inflammatory messages about your instructor or fellow students
- Using obscene or offensive language online
- Copying or presenting someone else's work as your own
- Adapting information from the Internet without using proper citations or references
- Buying or selling term papers or assignments
- Posting or selling course materials to course notes websites
- Having someone else complete your quiz or completing a quiz for/with another student
- Stating false claims about lost quiz answers or other assignment submissions
- Threatening or harassing a student or instructor online
- Discriminating against fellow students, instructors and/or TAs
- Using the course website to promote profit-driven products or services
- Attempting to compromise the security or functionality of the learning management system
- Sharing your username and password

University Policies

Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings and academic schedules. Any such changes will be announced via CourseLink and/or class email. All University-wide decisions will be posted on the COVID-19 website and circulated by email.

Illness

The University will not require verification of illness (doctor's notes) for the Fall 2020 or Winter 2021 semesters. However, requests for Academic Consideration may still require medical documentation as appropriate.

Academic Consideration

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the academic calendar for information on regulations and procedures for

Academic Consideration:
Grounds for Academic Consideration

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring.

University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Graduate Calendar:

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Student Accessibility Services as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 54335 or email accessibility@uoguelph.ca or the Student Accessibility Services Website

Course Evaluation Information

Please refer to the Course and Instructor Evaluation Website **.**

Drop date

The last date to drop one-semester courses, is April 12, 2021. For regulations and procedures for Dropping Courses, see Current Graduate Calendar

Schedule:

Topics, dates, presentations, and readings (topics and readings may change depending on progress through material, presentation readings and dates will not change):

Week 1
(January 12)
Introduction and course overview; Introduction to multilevel analyses; What is nesting? How to structure datasets

Readings:

Nezlek, J. B. (2008). An introduction to multilevel modeling for social and personality psychology. *Social and Personality Psychology Compass, 2,* 842-860.

Week 2
(January 19)
Fundamentals of multilevel regression

Random and fixed effects, *p* values, CIs, intraclass correlations, residual intraclass correlations, How to run and interpret a basics of models.

Presentation reading:

Staw, B. M., DeCelles, K. A. (2019). Leadership in the locker room: How the intensity of leaders' affective displays shapes team performance. *Journal of Applied Psychology, 104,* 1547-1557.

Readings:

Harrison et al. (2018). A brief introduction to mixed effects modelling and multi-model inference in ecology. PeerJ 6:e4794; DOI 10.7717/peerj.4794

Hofmann, D. A. (1997). An overview of the logic and rationale of hierarchical linear models. *Journal of Management, 23,* 723-744.

Chapter 3 in Finch, Bollin, & Kelley

Week 3
(January 26)
More Fundamentals of multilevel regression

Random and fixed effects, *p* values, CIs, intraclass correlations, residual intraclass correlations, How to run and interpret a basics of models.

Presentation reading:

Lin, J. K., Savani, K., & Ilies, R. (2019). Doing good, feeling good? The roles of helping motivation and citizenship pressure. *Journal of Applied Psychology, 104,* 1020-1035.

Readings:

Harrison et al. (2018). A brief introduction to mixed effects modelling and multi-model inference in ecology. PeerJ 6:e4794; DOI 10.7717/peerj.4794

Hofmann, D. A. (1997). An overview of the logic and rationale of hierarchical linear models. *Journal of Management, 23,* 723-744.

Chapter 3 in Finch, Bollin, & Kelley

Week 4
February 2
Centering in multilevel models

Group mean and grand mean centering. Implications, interpretation and how to center in R.

Presentation reading:

Maltarich, M. A., Reilly, G. & DeRose, C. (2019). A theoretical assessment of dismissal rate and unit performance, with empirical evidence. *Journal of Applied Psychology, 105,* 527-537.

Reading:

Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods, 12,* 121-138.

Week 5

February 9

Cross-level interactions

Presentation reading:

Probst, T. M. Lee, H. J., & Bazzoli, A. (in press). Economic stressors and the enactment of CDC-recommended COVID-19 prevention behaviors: The impact of state-level context. *Journal of Applied Psychology.*

Reading:

Aguinis, H., Gottredson, R. K., & Culpepper, S. A. (2013). Best-practice recommendations for estimating cross-level interaction effects using multilevel modeling. *Journal of Management, 39,* 1490-1528.

READING WEEK

Week 6

February 23

Complex error structures

Presentation reading:

French, K. A. & Allen, T. D. (2019). Episodic work-family conflict and strain: A dynamic perspective. *Journal of Applied Psychology, 105,* 863-888. (hard article to present)

Readings:

None.

Week 7
March 2
Growth Models

Presentation reading:

Hulsheger, R. U., van Gils, S. & Walkowiak, A. (in press). The regulating role of mindfulness in enacted workplace incivility: An experience sampling study. *Journal of Applied Psychology.*

Readings:

None.

Week 8
March 9
Multilevel Generalized Linear Models (logistic and poisson)

Presentation reading:

Sayre, G. M., Grandey, A. A., & Chi, N. W. (2020). From cheery to "cheers"? Regulating emotions at work and alcohol consumption after work. *Journal of Applied Psychology, 105,* 597-618.

Readings:

Chapters 7 & 8 in Finch, Bolin, & Kelley

Week 9
March 16
Mediation

Presentation reading:

Vogel, R. M., Rodell, J. B., & Sabey, T. B. (2019). Meaningfulness misfit: Consequences of daily meaningful work needs-supplies incongruence for daily engagement. *Journal of Applied Psychology, 105,* 760-770.

Readings:

Imai, K., Keele, L., & Tingley, D. (2010). A general approach to causal mediation analysis. *Psychological Methods, 15,* 309-334.

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology, 58,* 593-614.

Week 10
March 23
Bayesian Estimation of multilevel models

Presentation reading I:

Hu, J., He, W., & Zhour, K. (2020). The mind, the heart, and the leader in times of crisis: How and when COVID-19-triggered mortality salience relates to state anxiety, job engagement, and prosocial behavior. *Journal of Applied Psychology, 105,* 1218-1233. (Only Study 1)

Presentation reading II:

Rosen, C. C., Simon, L. S., Gajendran, R. S., Johhnson, R. E., Lee, H. W., & Lin, S. (2019). Boxed in by your inbox: Implications of daily E-mail demands for managers' leadership behaviors. *Journal of Applied Psychology, 104,* 19-33.

Week 11
March 30
Power and Sampling Size planning for multilevel models

Presentation reading:

Gabriel, A. S., Lanaj, K., &Jennings, R. E. (in press). Is one the loneliest number? A within-person examination of the adaptive and maladaptive consequences of leader loneliness at work. *Journal of Applied Psychology (2 studies)*

Readings:

Maas, C. J. M., & Hox, J. J. (2005). Sufficient sample sizes for multilevel modeling. *Methodology, 1,* 86-92.

Mathieu, J. E., Aguinis, H., Culpepper, S. A., & Chen, G. (2012). Understanding and estimating the power to detect cross-level interaction effects in multilevel modeling. *Journal of Applied Psychology, 97,* 951-966.

Week 12

April 6

TBD: Three level, notation, Multilevel Factor Analysis??

Presentation reading:

Chong, S., Huang, Y., & Chang, C. (in press). Supporting interdependent telework employees: A moderated-mediation model linking daily COVID-19 task setbacks to next-day work withdrawal. *Journal of Applied Psychology*.