Course title: Advanced Experimental Research Design

Type of course: Elective doctoral programme course

Number of credits allocated: ECTS: 6

Name of lecturer: prof. dr. Bob M. Fennis (University of Groningen, the Netherlands, Victoria University of Wellington, New Zealand)

Objectives of the course:

This high-density, 3-day advanced course builds on the basic course "Experimental Research Design" and hence starts where that one left off. Similar to the basic course, it will focus the main stages of experimental research starting from generating interesting, and testable hypotheses, via the selection of a suitable design and the sample size that affords testing the key notions, to analyzing the data, writing up the results and developing and pursuing a program of research.

Yet, the perspective from which we do that is more advanced and is heavily influenced by the increased demands that are placed on all of us by journal editors, reviewers and the academic community at large. A key "game changer" responsible for these increased demands is the *replication crisis* in empirical science, that was observed first in psychology, but subsequently spread to basically all empirical social sciences including economics, management, business, and marketing.
Fortunately, psychology was also the first discipline where effective remedies to manage the crisis and improve the quality of science were developed and hence we will zoom in on several of these innovations as they are now implemented as the "gold standard" in our own disciplines.

This advanced course is decidedly practical in nature, giving participants a state-of-the-art overview of the new approaches and methods used in the development and analysis of experimental designs as they are presently published in the top-tier journals in our field, while providing many opportunities for methodological practice. In addition, the course is aimed at teaching and practicing advanced, but hands-on research skills that can be readily implemented in one's own research program.

The course is aimed at PhD students and research staff with a background in marketing, management, business, consumer behavior or psychology and with a basic understanding of the fundamentals of experimental research design (I would not recommend this course for those that have not taken the basic course). Moreover, I expect participants to have a research agenda that they wish to pursue (needed for the exercises).

In this course, a highly interactive workshop format is adopted where we discuss and practice each of the following stages in experimentation, from research question to research paper:

1. *Revisiting the Basics:* Short recap of the fundamentals of experimental design
   a. Generating hypotheses
   b. Basic designs
   c. Basic analyses
2. *Experimenting after the Replication Crisis:* What has changed?
   a. Crisis? What crisis?
   b. Hypothesis generation 2.0: theory-driven or data-driven?
   c. When is your contribution substantial?
3. *Overview and Design:* What kind of experiment?
   a. Sample size and power determination: Using G*Power
   b. Extending the 2x2 design: Mixed designs, adding archival data
   c. Designs with continuous moderators, covariates and multiple mediators
4. *Analysis and Results 1:* The 2x2 and its alternatives
   a. Recap: testing your hypothesis: moderation and mediation
   b. Outliers and attention checks: IMC, MAD and ZResid
   c. Analyzing mixed designs
5. *Analysis and Results II:* Beyond the interaction

   a. Simple main effects analysis in SPSS
   b. Spotlight and floodlight analyses in PROCESS with continuous moderators
   c. Moderated mediation and mediated moderation: the classic approach
   d. Moderated mediation and mediated moderation using PROCESS
  6. *General Discussion:* How to write it all up and move from there…
   a. When to add a single paper meta-analysis to your sequence of studies?
   b. Starting the journey: submitting it to a journal and dealing with reviews
   c. Pursuing a research program: tips and pitfalls in the new era

Schedule in detail:

The schedule for each session in this 3-day workshop is pretty structured, with a brief intro (by me, but of course interspersed by your questions, comments and suggestions), a practice session, and a round of presentation, feedback and discussion. Exercises will be introduced and elaborated during the workshop, so they are not listed here. Below you will find a detailed schedule for each session plus recommended reading per session that we will discuss. I have included each days' schedule (although it appears a little repetitive) to enable you to drop in or drop out sessions at convenient times (i.e., in between sessions or during breaks/lunches).

I strongly recommend delving into the material before the start of the workshop to gain the most of it.

Monday January 14th

Morning session: *Revisiting the Basics:* Short recap of the fundamentals of experimental design

–10.00 – 10.45 hrs: intro
–10.45 – 11.00 hrs: coffee break
–11.00 – 11.15 hrs: intro on practice section
–11.15 – 11.45 hrs: practice section
–11.45 – 12.00 hrs: coffee break
–12.00 – 12.20 hrs: presentation of outcomes, feedback and discussion
–12.20 – 12.30 hrs: wrap up morning session

Lunch (12.30 – 13.30 hrs)

Afternoon session: *Experimenting after the Replication Crisis:* What has changed?

–13.30 – 14.15 hrs: intro
–14.15 – 14.30 hrs: coffee break
–14.30 – 14.45 hrs: intro on practice section
–14.45 – 15.15 hrs: practice section
–15.15 – 15.30 hrs: coffee break
–15.30 – 15.50 hrs: presentation of outcomes, feedback and discussion
–15.50 – 16.00 hrs: wrap up afternoon session

Literature:

https://www.nytimes.com/2017/10/18/magazine/when-the-revolution-came-for-amy-cuddy.html
  A telling story from the New York Times about the replication crisis and how it affected this researcher

Cumming, G. (2014). The new statistics: Why and how. *Psychological science*, *25*(1), 7-29.
  This paper summarizes the key issues underlying the replication crisis and recommends a host of useful tools to improve the quality of published research, both experimental and otherwise. Several of these have been adopted by marketing, economics and business journals

Fiedler, K. (2018). The creative cycle and the growth of psychological science. *Perspectives on Psychological Science*, *13*(4), 433-438.

Interesting perspective on what constitutes a substantial contribution in science, (and not just psychological science …)

Lynch Jr, J. G., Alba, J. W., Krishna, A., Morwitz, V. G., & Gürhan-Canli, Z. (2012). Knowledge creation in consumer research: Multiple routes, multiple criteria. *Journal of Consumer Psychology*, *22*(4), 473-485.
Discusses the classic distinction between theory driven and data driven research questions and the merits and disadvantages of both.

Tuesday January 15th

Morning session: *Overview and Design:* What kind of experiment?

−10.00 – 10.45 hrs: intro
−10.45 – 11.00 hrs: coffee break
−11.00 – 11.15 hrs: intro on practice section
−11.15 – 11.45 hrs: practice section
−11.45 – 12.00 hrs: coffee break
−12.00 – 12.20 hrs: presentation of outcomes, feedback and discussion
−12.20 – 12.30 hrs: wrap up morning session

Lunch (12.30 – 13.30 hrs)

Afternoon session: *Analysis and Results 1:* The 2x2 and its alternatives

−13.30 – 14.15 hrs: intro
−14.15 – 14.30 hrs: coffee break
−14.30 – 14.45 hrs: intro on practice section
−14.45 – 15.15 hrs: practice section
−15.15 – 15.30 hrs: coffee break
−15.30 – 15.50 hrs: presentation of outcomes, feedback and discussion
−15.50 – 16.00 hrs: wrap up afternoon session

Literature:

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior research methods*, *41*(4), 1149-1160.
The title says it all…

Heng, Y. T., Wagner, D. T., Barnes, C. M., & Guarana, C. L. (2018). Archival research: Expanding the methodological toolkit in social psychology. *Journal of Experimental Social Psychology*, *78*, 14-22.
Discusses a key trend in multistudy papers: combining experimental with archival data, and when and how to do that.

Meyvis, T., & Van Osselaer, S. M. (2017). Increasing the Power of Your Study by Increasing the Effect Size. *Journal of Consumer Research*, *44*(5), 1157-1173.
Very useful paper that summarizes a host of options to boost the effect size of your study (other than increasing the sample size)

Leys, C., Ley, C., Klein, O., Bernard, P., & Licata, L. (2013). Detecting outliers: Do not use standard deviation around the mean, use absolute deviation around the median. *Journal of Experimental Social Psychology*, *49*(4), 764-766.
A useful alternative to 'classic' outlier detection.

Wednesday January 16th

Morning session: *Analysis and Results II:* Beyond the interaction

−10.00 – 10.45 hrs: intro

−10.45 – 11.00 hrs: coffee break
−11.00 – 11.15 hrs: intro on practice section
−11.15 – 11.45 hrs: practice section
−11.45 – 12.00 hrs: coffee break
−12.00 – 12.20 hrs: presentation of outcomes, feedback and discussion
−12.20 – 12.30 hrs: wrap up morning session

Lunch (12.30 – 13.30 hrs)

Afternoon session: *General Discussion:* How to write it all up and move from there…

−13.30 – 14.15 hrs: intro
−14.15 – 14.30 hrs: coffee break
−14.30 – 14.45 hrs: intro on practice section
−14.45 – 15.15 hrs: practice section
−15.15 – 15.30 hrs: coffee break
−15.30 – 15.50 hrs: presentation of outcomes, feedback and discussion
−15.50 – 16.00 hrs: total recap and wrap up

Literature:

Spiller, S. A., Fitzsimons, G. J., Lynch Jr, J. G., & McClelland, G. H. (2013). Spotlights, floodlights, and the magic number zero: Simple effects tests in moderated regression. *Journal of marketing research*, *50*(2), 277-288.
> *Very useful paper explaining the basics of when and how to use spotlight and floodlight analyses, including how to write them up!*

Muller, D., Judd, C. M., & Yzerbyt, V. Y. (2005). When moderation is mediated and mediation is moderated. *Journal of personality and social psychology*, *89*(6), 852-863.
> *The 'classic' approach to testing for moderated mediation and the reverse, using an extension of the Baron and Kenny (1986) approach.*

McShane, B. B., & Böckenholt, U. (2017). Single-paper meta-analysis: Benefits for study summary, theory testing, and replicability. *Journal of Consumer Research*, *43*(6), 1048-1063.
> *When, why and how to perform a single paper, multi study meta-analysis (a potential key argument in your paper!)*

Wigboldus, D. H., & Dotsch, R. (2016). Encourage playing with data and discourage questionable reporting practices. *Psychometrika*, *81*(1), 27-32.
> *Pragmatic guide outlining how to analyze your data and write them up in the post replication crisis era!*

http://www.ejcr.org/teaching-sets/Painted_Bunting/manuscriptreviewhistory_paintedbunting.html
> *Take the time to browse through this full review history of a paper that was submitted to this journal, and was accepted after 4 rounds (the rule, not the exception for top journals!). Very insightful! (there are more review examples on this site available.*