

Multi-Item Scale Development and Testing

Summer Institute in Survey Research Techniques, 2018

Instructor: Dr. Pamela Campanelli

Time: 21-22 June, 9.00 to 4.00 pm

Location: To be determined

Office and Phone: Institute for Social Research – Room number to be given on Day 1

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Course Description

Standardised multi-item scales are more common in some disciplines than others. This one week course is designed to inspire participants from all disciplines that it is possible to develop your own high quality multi-item scales (or correctly adapt existing multi-item scales) and offers an introduction on how to do this. It covers the psychometric principles of question development while adding in principles of general questionnaire design. Focusing first on Classical Measurement Theory, participants design their own multi-item scales. This is followed by a group discussion of existing multi-item scales. The course then introduces some basic statistical tools for assessing the reliability and dimensionality of multi-item scales and participants get to practice evaluating some existing scales in a computer lab session. The course finishes with an introduction to Item Response Theory.

Evaluation

Grading for the course will be based on a two-part assignment due 2 weeks after the last day of class. The first part will involve writing your own new multi-item scale adhering to the principles learned in the course. The second component will tap your knowledge of the required readings. It is a take home exam with short answer and multiple choice questions. (Please submit your assignments on time, as points will be removed for late assignments.)

Prerequisite

There is no prerequisite, but a little knowledge about questionnaire design, multi-item scales and SPSS would be of value.

Course Website

The course website will be on CANVAS which can be accessed through (<https://ctools.umich.edu/gateway/>). The website contains assigned articles (for some you need the password 'surv630cam') and pdfs of the course slides. The website is maintained by Dr. Pamela Campanelli [dr.pamela.campanelli@thesurveycoach.com]. Once the website is “published/open” . . .

- Students using a UMich e-mail can access the site instantly with their UMich e-mail address and password.
- Visiting students will be given a UMich username and password upon arrival. This is an important account as all details about the Summer Institute will come through this email.

- It is also possible for Visiting students and UMich students who wish to use a non-UMich e-mail (in addition to their UMich one) to access the course website by getting a Friend Account. A UMich Friend Account, a special kind of computer account that is used to give non-University of Michigan members access to the general University of Michigan web environment. You can use any e-mail address you want for your Friend Account, but this same e-mail address has to be entered into the CANVAS system by Dr. Campanelli in order for you to access the course materials.
- Steps to accessing the website with a non-UMich e-mail:
 1. Tell Dr. Campanelli your preferred e-mail address so this can be put in CANVAS.
 2. When you receive a reply from her that it is in, go to <https://weblogin.umich.edu/friend/> and do what it says to create a Friend Account. This is just a few simple steps.
 3. You can then go to <https://ctools.umich.edu/gateway/>, choose CANVAS and “login in” using your Friend Account username and password.
 4. This will then show you a tab for the class (and any other classes where that e-mail has been entered in CANVAS)
 5. Be sure to contact Dr. Campanelli if you have any problems.

Course Schedule

Day 1	Topic	Suggested Reading
AM	<ul style="list-style-type: none"> • Introductions and course overview • General overview of questionnaire design to inform good multi-item scale design • Workshop 1 in critiquing items • Background to multi-item scales 	<ul style="list-style-type: none"> • Krosnick and Presser (2010) • DeVellis (2017), Chapters 1, 8
PM	<ul style="list-style-type: none"> • Psychometric principles of validity and reliability • How to write multi-item scales • Workshop 2 in writing a multi-item scale 	<ul style="list-style-type: none"> • DeVellis (2017), Chapters 2-4 • Heath and Martin (1997)
Day 2		
AM	<ul style="list-style-type: none"> • Methods of testing single survey questions that can be applied to multi-item scale development • Statistical assessment of multi-item scales • Workshop 3 - Open review: Feel free to bring in a multi-item scale (it can be your own or one that is published) and get feedback from Pam and the group 	<ul style="list-style-type: none"> • DeVellis (2017), Chapters 6
PM	<ul style="list-style-type: none"> • Open review (continued) • Workshop 4 - Practice in evaluating some existing scales in a computer lab session (or your own if you have collected data) 	<ul style="list-style-type: none"> • DeVellis (2017), Chapters 7

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| | <ul style="list-style-type: none">• Introduction to item response theory | |
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Readings

Assigned Textbook – Available for purchase at the Michigan Union

DeVellis, R.F. (2017), *Scale Development: Theory and Applications*, 4th Edition, Thousand Oaks, CA: Sage. (Available at the Michigan Union bookstore.)

Assigned Reading on the Ctools Website

Heath, A. and Martin, J. (1997), Why Are There so Few Formal Measuring Instruments in Social and Political Research? in L. Lyberg, P. Biemer, M. Collins, E. de Leeuw, C. Dippo, N Schwarz, and D. Trewin (eds), *Survey Measurement and Process Quality*, New York: Wiley.

Krosnick, J. A. and Presser, S. (2010), Questionnaire Design in J. D. Wright and P.V. Marsden (eds), *Handbook of Survey Research (Second Edition)*, San Diego, CA: Elsevier.

Optional Reading on the Canvas Website

Schaeffer, N.C., and Presser, S. (2003), The Science of Asking Questions, *Annual Review of Sociology*, 29: 65-88.

Other Useful References

De Boeck, P. and Wilson, M. (2004), *Explanatory Item Response Models: A Generalized Linear and Nonlinear Approach*, New York: Springer.

Embretson, S. and Reise, S.P (2000), *Item Response Theory for Psychologists*, Mahwah, NJ: Lawrence Erlbaum Associates.

Kim, J, and Mueller, C.W. (1978), *Introduction to Factor Analysis: What It Is and How To Do It*, Thousand Oaks, CA: Sage.

Nering, M.L. and Ostini, R. (2010), *Handbook of Polytomous Item Response Theory Models*, New York: Routledge.

Spector, P.E. (1992), *Summated Rating Scale Construction: An Introduction*, Thousand Oaks, CA: Sage.

Streiner, D., and Norman, G.R. (2008), *Health Measurement Scales: A Practical Guide to Their Development and Use*, 4th Edition, Oxford: Oxford University Press