

MGMT 872: Psychometrics & Measurement Spring 2019

Instructor: Dr. Robert E. Ployhart

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Class Hours: Tuesday 9:00-12:00

Room: DMS 401i

Class Website: on Blackboard

Office Hours: Tuesday 12:30-2:30; or by appointment

“Build good measures before you test theories using those measures.”

Pat Smith, Bowling Green State University, 1994

“Imagine if everyone in our field picked one construct, and spent their career trying to improve the measurement of that construct.”

Rick DeShon, Michigan State University, 1997

Reading Material

DeVellis, R. F. (2017). *Scale development: Theory and applications* (4th Edition). Sage.

Course Objectives

This is a course about how we use manifest measures to obtain scores that support inferences about latent constructs. This one sentence captures the essence of everything we will do in this course. Although this is a class about psychometrics and measurement, we actually don't care about the measures in and of themselves. Rather, we care about the scores that are produced by the measures, because the scores are the indicators that provide inferences about the magnitude or nature of latent constructs. The problem is that there is no perfect measure. Therefore, we must learn how to evaluate the adequacy of scores produced by a measure. The bottom line is this: the tests of our theories can be no better than the adequacy of the scores used to test those theories. Sloppy measures; sloppy science.

Learning Outcomes

Students will complete the course with:

- Knowledge of measurement principles (classical test theory and modern test theory).
- Knowledge of psychometrics, item characteristics, and scale characteristics.
- Knowledge of reliability.
- Knowledge of validity.
- Knowledge of factor analysis.

- Skill to think critically about data and results.
- Skill to develop and critique measures.

Grades

Grades will be assigned according to the traditional cut-offs used at USC. Specifically, a 90 or greater is an A, 87 up to 89.99 is a B+, 80 up to 86.99 is a B. A grade of C (or lower) will be given to those who receive less than 80 percent of the available points. Grades are based on the following percentage points:

	<u>Percent</u>
Midterm Test	10%
Reliability HW	10%
Validity HW	10%
Item Writing & Analysis HW	10%
Factor Analysis HW	10%
Written Critique	40%
Class Engagement/Participation	10%

Midterm Test. The midterm test will cover the basic nature of measurement, reliability, and validity. These are the foundational concepts that apply to everyone. You absolutely must know this information if you are to appropriately interpret, develop, and apply psychological measures. More details about the test will be provided at the appropriate time.

Homework. There are four homework assignments. Each homework should be completed independently. The one exception is the item writing and analysis homework—this will require the class to write items, collect the data, and analyze the item characteristics so that you develop a scale that produces reliable and valid scores. More details about each homework, including the deadlines, will be provided when each assignment is introduced.

Written critique. For this assignment you are to review the history and psychometric evidence for a given measure (or construct) that is central to your area of research. Maybe it's the most widely used measure in your main area of research (e.g., the most common measure of job satisfaction), or maybe it's the only measure that's used. Alternatively, you might want to compare and contrast a few different popular measures. The key point is that you critique the quality of measurement in your given area, evaluate the evidence, identify strengths and limitations, and offer specific directions for improving the quality of measurement. You will also provide a brief presentation to the class, about what you learned. Details about the deliverables and grading will be provided at the appropriate time.

Class Engagement and Participation. Active participation is obviously important and I expect you to meaningfully contribute each and every class. This goes without saying, but I expect perfect attendance except for good reasons (e.g., conference attendance). Class will also start and

end promptly, so please show up a few minutes early. Whenever possible, please give advance notice if you will not be able to attend a class. I follow USC's attendance policy, which states "...Absence from more than 10 percent of the scheduled class sessions, whether excused or unexcused, is excessive..." This means the final grade will be dropped an entire grade if you are absent from more than 10% of the classes (unless we have made prior arrangements). For more information, go to:

http://bulletin.sc.edu/content.php?catoid=66&navoid=1813&hl=%22attendance%22&returnto=search#Attendance_Policy

It is important you read the articles/chapters *before* coming to class. There will be several articles/chapters assigned for each week. There will be a 10% grade reduction for every day a deliverable is turned in late.

University of South Carolina Honor Code

"It is the responsibility of every student at the University of South Carolina Columbia to adhere steadfastly to truthfulness and to avoid dishonesty, fraud, or deceit of any type in connection with any academic program. Any student who violates this Honor Code or who knowingly assists another to violate this Honor Code shall be subject to discipline." For more information, go to: <http://www.sc.edu/academicintegrity/>

Students with Disabilities

The University of South Carolina provides high-quality services to students with disabilities, and we encourage you to take advantage of them. Students with disabilities needing academic accommodations should: (1) Register with and provide documentation to the Student Disability Resource Center in LeConte College Room 112A, and (2) Discuss with the instructor the type of academic or physical accommodations you need. Please do this as soon as possible. ***All course materials are available in alternative format upon request.*** For more information, go to: https://sc.edu/about/offices_and_divisions/student_disability_resource_center/for_faculty_and_staff/classroom_accessibility/index.php

A Note about the Course Schedule

Although we will try to stick to the course schedule, I feel it's important that we devote sufficient time to review and ensure understanding. Therefore, I've designed some slack into the course schedule. The course schedule dates are therefore tentative and they will likely change as we go through the semester. We may also add/drop readings as the class evolves (you'll receive notice of this in advance). The general sequence of topics is unlikely to change, however.

Course Outline

Week of:			Deliverables
1	January 15	Introduction, Review, & Historical Context DeVellis Chapter 1 M&D (Chapter 1 pp. 1-11) Correlation review (skim Cohen et al., Ch 2 & 3) Ployhart (correlation & regression notes) Ployhart (Motivation chapter) https://www.newyorker.com/magazine/2005/01/24/measure-for-measure-5 https://www.vox.com/science-and-health/2018/11/14/18072368/kilogram-kibble-redefine-weight-science	
2	January 22	Latent Variables & Classical Test Theory DeVellis Chapter 2 McDonald (Chapters 3 & 4) M&D (Chapter 3)	
3	January 29	Reliability I DeVellis Chapter 3 McDonald (Chapter 5-7) M&D (Chapter 6) Schmidt, F. L., & Hunter, J. E. (1996). Measurement error in psychological research: Lessons from 26 research scenarios. <i>Psychological Methods, 1</i> (2), 199-223. Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. <i>Journal of applied psychology, 78</i> (1), 98.	
4	February 5	Reliability II; Validity DeVellis Chapter 4 McDonald (Chapter 10) Messick, S. (1995). Validity of psychological assessment: Validation of inferences from persons' responses and performances as scientific inquiry into score meaning. <i>American Psychologist, 50</i> (9), 741-749. M&D (Chapters 7 & 8)	Reliability HW
5	February 12	Validity (continued) Brannick et al. (2010). What is method variance and how can we cope with it? A panel discussion. <i>Organizational Research Methods, 13</i> , 407-420. Podsakoff et al. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. <i>Journal of Applied Psychology, 88</i> , 879-903. Schmitt, N. (1994). Method bias: The importance of theory and measurement. <i>Journal of Organizational Behavior, 15</i> , 393-398. Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall job satisfaction: How good are single-item measures? <i>Journal of Applied Psychology, 82</i> , 247-252.	
6	February 19	Integration/Review	Validity HW

Week of:			Deliverables
7	February 26	Item Writing & Scale Construction DeVellis Chapter 5 Hinkin, T. R. (1998). A brief tutorial on the development of measures for use in survey questionnaires. <i>Organizational Research Methods, 1</i> , 104-121. McDonald (Chapter 2)	Exam
	March 5	Design and Psychological Response Considerations Tourangeau chapters Tourangeau, R., & Yan, T. (2007). Sensitive questions in surveys. <i>Psychological Bulletin, 133</i> , 859-883. Ployhart (Chapter 5). The predictor response-process model. Couper, M. P. (2017). New developments in survey data collection. <i>Annual Review of Sociology, 43</i> , 121-145. Krosnick, J. A. (1999). Survey research. <i>Annual Review of Psychology, 50</i> , 537-567. Morrel-Samuels, P. (2002). Getting the truth into workplace surveys, <i>Harvard Business Review</i> .	
8	March 12		Spring Break
9	March 19	Item Analysis McDonald (Chapter 11) M&D (Chapter 9)	
10	March 26	Factor Analysis I DeVellis Chapter 6 McDonald (Chapter 9)	Item Writing HW
11	April 2	Factor Analysis II	
12	April 9	Test Bias & Fairness; Item Response Theory; Relative Importance, Criterion-Referenced Measures, Cut Scores (whew!) DeVellis Chapter 7 (skim) M&D (Chapter 4)	Factor Analysis HW
13	April 16	Integration & Conclusion DeVellis Chapter 8	Open Day??
14	April 23	Student Presentations	Last Day of Class
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Note: Course sequence and readings will change! It is your responsibility to stay current.