

FCHD 6032: **RESEARCH II - MEASUREMENT (Fall, 2016)**, Gunshed: T, 11:30 – 2:00

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Office Hours: M W 7:00 - 9:00 am (FL221)

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Required Text: In addition to the assigned reading (pp. 3-5), you will also locate and review published journal articles that address conceptual and operational definitions specific to the construct that you choose for your Final Project.

Attendance: Attendance will be beneficial to your education and your grade in this class.

Course Objectives: This course is designed to increase your understanding of measurement within the social sciences, including relevant statistical and methodological tools, reliability, validity, classical test theory (CTT), item response theory (IRT), and issues that affect measurement. Students who complete this course will have the statistical and methodological tools which are necessary for evaluating the measurement strategies that have been used in existing research, making informed decisions when selecting measurement strategies to include in their own research, and developing reliable and valid measurement strategies for use in future research.

Physical Impairments: If a student has any physical disabilities or other problems that will likely require accommodation by the instructor, these must be made known to the instructor during the first week of the course. Requests for special considerations relating to attendance, pedagogy, taking of examinations, etc. must be discussed with and approved by the instructor prior to completion of the second class session. In cooperation with the Disability Resource Center, course

Honor Code Policy: The Utah State University code states: "Each student has the right and duty to pursue his or her academic experience free of dishonesty. The Honor System is designed to re-enforce the higher level of conduct expected and required of all Utah State University students." When you were admitted to Utah State University you agreed to abide by this Honor Code by signing the Honor Pledge, which reads: "I pledge, on my honor, to conduct myself with the foremost level of academic integrity." I expect that you will honor this commitment as you complete this course. Cheating on exams or plagiarizing written assignments will result in a failing grade and may result in further action as per University policy.

Grading: Grades for FCHD 6932 are a composite of your participation in class (which includes classroom discussions that you will lead), your performance on five Quizzes, all five sections of your Final Project, and the Paper Presentation. The point value for each of these activities are as follows:

Participation	30
Quizzes (5 @ 20pts each)	100
Final Project (1 @ 100pts)	100
Paper Presentation (1 @ 25pts)	25
Total	255

Letter grades for the course will be assigned as follows:

240-255 = A	223-229 = B+	199-203 = C+	173-178 = D	0-152 = F
230-249 = A-	214-237 = B	189-198 = C	163-172 = D	
	204-213 = B-	179-188 = C-	153-162 = D-	

DEFINITIONS

PARTICIPATION IN CLASS: In order to optimize your benefit from completing this course, all students are expected to contribute to during class by leading a discussion (assigned reading) and by participating in all of the class discussions. Primarily, these discussion points (20 points) will be assigned to the discussions that you lead. However, your participation in all of the class discussions will be rewarded as well (10 points).

QUIZ (Q) You will complete five quizzes throughout the semester. These quizzes will cover the reading material that is assigned leading up to the quiz, as well as information obtained from your own efforts to acquire and master materials that are relevant to the topic that coincides with the day of the quiz. The quiz consists of T/F, M/C, and "short answer" questions. Quizzes are announced in advance (see pp. 3-5 of the syllabus).

REQUIRED READING (RR): Reading assignments have been scheduled (see pp. 3-4). If you fail to complete the assigned reading you will have difficulty participating in class discussions and completing the quizzes.

FINAL PROJECT: The final project is designed so you can demonstrate everything you have learned in this course. The final project is a brief, original, review (using APA guidelines) that includes the following sections:

GUIDELINES FOR YOUR FINAL PROJECT

Identify a **dependent variable** that will maintain your interest throughout the semester. Ideally, this variable will be couched in theory and/or recent research and it will be a variable that you may wish to use as a DEPENDENT VARIABLE in your own (thesis/dissertation) research.

- Section 1: Create a conceptual definition for the variable from theory and/or recent scholarly literature (8 - 10 pages, including references).
- Section 2: Review existing measures (at least 3) of the construct: describe each measure, cite evidence of reliability and validity for each measure, and briefly describe characteristics of each measure to justify your opinions about how adequately each of the three measures "captures" the variable that you defined in your Section 1 paper (5 - 6 pages, including references).
- Section 3: Compare the content of each measure that you selected for Section 2 with the conceptual definition that you developed for Section 1. Cite strengths and weaknesses for each of the 3 measures IN THE CONTEXT OF your conceptual definition (2-3 pages & references if appropriate).
- Section 4: Make a case (focus on reliability and validity, and especially content validity) for selecting (preferring) one of the 3 measures (over the other two) to use in future research (2-3 pages).
- Section 5: Focusing on the measure that you selected for Section 4, outline a "research program" that could be used to improve the selected measure (i.e., additional research studies that could be done to improve the measurement in the context of your conceptual definition (3 - 5 pages).

PAPER PRESENTATION: Each student will develop and deliver a 15-20 minute presentation that addresses all five sections of the Final Project: Conceptual definition, psychometric evidence for each of three measures, content comparisons all three measures, your logic in selecting (preferring) one over the other two, 2-3 studies that could be done to improve the measure.

FCHD-6032: MEASUREMENT

Fall, 2016

08/30 INTRODUCTIONS, COURSE OVERVIEW, COURSE REQUIREMENTS

Conceptual and operational definitions

09/06 BASIC MEASUREMENT CONCEPTS (Review)

Observed vs. latent variables
Dependent vs. independent variables
Continuous vs. discrete (& binary variables)
Variable distributions & population parameters
Variance, standard deviations, & z scores
Correlation & covariance

09/13 MEASUREMENT IN THE SOCIAL SCIENCES

(Q1) 2 students

Gynther, M.D., & Green, S.B. (1982). Methodological problems in research with self-report inventories. P.C. Kendall & J.N. Butcher (Eds). *Handbook of Research Methods in Clinical Psychology*. New York, NY: John Wiley & Sons, Inc. (pp. 355-386).

2 students

Cone, J.D., & Foster, S.L. (1982). Direct observation in clinical psychology. P.C. Kendall & J.N. Butcher (Eds). *Handbook of Research Methods in Clinical Psychology*. New York, NY: John Wiley & Sons, Inc. (pp. 311-354).

Measurement error
Issues (challenges) with measurement in the social sciences
Test scores vs. composite scores
Instrument construction (process)

09/20 RELIABILITY

Section 1 due today

(Q3) 2 students

Plan to summarize (5 - 10 minutes) your conceptual overview during class
Cronbach, L.J. (1951). Coefficient alpha and the internal consistency of tests. *Psychometrika*, 16, 297-334.

1 student

Cortina, J.M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, 78, 98-104.

for parallel tests
for composite scales (Spearman-Brown)
for composite scales (Coefficient Alpha)

09/27 RELIABILITY (continued)

Test-retest reliability & test-retest reliability with alternative forms
Split-half estimates
Coefficient Alpha, Kuder-Richardson-20, Hoyt's method
Coefficient Alpha (what it is, what it is not)
Factors that affect reliability estimates and coefficients (including sample characteristics, time, test length)
Boot-strapping, Attenuation

10/04 VALIDITY

(Q4)

2 students

Content Validity & Criterion Validity
Construct Validity & Confirmatory Factor Analysis
Moss, P.A. (1992). Shifting conceptions of validity in educational measurement: Implications for performance assessment. *Review of Educational Research*, 62(3), 229-258.

10/11 VALIDITY (continued)

2 students

Campbell, D.T. & Fiske, D.W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56, 81-105.

10/18 FACTOR ANALYSIS

2 students

Briggs, S.R., & Cheek, J.M. (1986). The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality*, 54 (1), 106-148

1 student

Hensen, R.K., & Roberts, J.K. (2006). Use of exploratory factor analysis in published research: Common errors and some comment on improved practice. *Educational and Psychological Measurement*, 66 (3), 393-416.

Costello, A.B. & Osborne, J.W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, 10(7), 1-9.

Factors

Factor loadings

Extracting factors from a correlation matrix

Factor analysis vs. principal component analysis

Rotation: orthogonal vs oblique (& purpose for each)

Simple structure

h² (communality), specificity, and random error

Eigenvalues & scree plots (number of factors)

10/25 CONFIRMATORY FACTOR ANALYSIS AND LATENT VARIABLE MODELING

Section 2 due today

Exploratory and Confirmatory factor analysis

Dyer, W.J. (2015). The vital role of measurement equivalence in family research. *Journal of Family Theory & Review*, 7, 415-431..

Q2

Find a one or more factor analysis Tables for one of the three measures that you have identified in your Section 2 paper. Bring Tables (& copies for each of your classmates) to class!

11/01 FACTOR ANALYSIS CONTINUED (interpretation of SPSS factor analysis output)

11/08 CLASSICAL TEST THEORY

Section 3 due today

Measurement error (systematic & random)

True-score & error score

Classical test theory (misconceptions)

Classical item analysis (item difficulty, inter-item relationships)

Classical item analysis (item-total relationships)

11/15 GENERALIZABILITY THEORY

Section 4 due today

(Q5)

1 student

Cronbach, L.J., & Shavelson, R.J. (2004). My current thoughts on coefficient alpha and successor procedures. *Educational and Psychological Measurement*, 64, 391-418. <http://epm.sagepub.com/content/64/3/391.full.pdf+html>

11/22 Student Presentations (Final Project)

11/29 Student Presentations (Final Project)

Section 5 due today