

# School of Social Work

*Fall 2018*

## Measurement

Course

**#:16:910:655:01**

**CREDIT HOURS: 3**

**INSTRUCTOR: Dr. Nower**

**OFFICE: 117**

**ROOM: 2<sup>nd</sup> Floor Conference Room**

**CLASS TIME: Thurs. 12:30 p.m.-3:10 p.m.      PHONE: 848-932-5361**

**E-MAIL: lnower@rutgers.edu**

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### **GENERAL INTRODUCTION AND COURSE OVERVIEW**

This course introduces students to concepts in psychometric measurement and the importance of measurement in scientific inquiry. The course will review the basic principles and procedures of measurement theory. Students will learn to identify and operationalize latent variables in conceptual models and, based on theoretical and practical considerations, generate items, construct and format questions, and begin to develop a scale that can be tested for reliability and validity and generalized across populations. Students will also learn to minimize respondent bias, address measurement error, and consider other threats to the utility and statistical strength of their measure. The course will also examine the impact of individual differences (i.e. gender, culture/ethnicity, age) on instrument development and validation.

### **COURSE OBJECTIVES**

#### **Knowledge:**

1. Understand the purpose of measurement in social work and social science research and the theoretical relationship between measures and latent constructs in a conceptual framework.
2. Identify pertinent research questions that tap constructs for measurement and consider alternative meanings for those questions.
3. Explore theories of measurement and their application to instrument development.
4. Learn to generate items that reflect the latent constructs for measurement.

#### **Values:**

1. Understand the theoretical cohesion of building a conceptual framework that is testable and, conversely, testing an established framework with measures that validly and reliably measure all facets of the construct.

2. Learn the sources and implications of measurement error.
3. Understand how different perspectives on measurement affect the measurement outcome.
4. Anticipate the potential effects of individual differences on response bias.

**Skills:**

1. Learn to identify latent variables within a conceptual model and potential relationships among variables.
2. Assess sources of response bias and how to design and evaluation survey questions that account for factors such as acquiescence, social desirability, inattention, impression versus expression response-bias, order effects, malingering and guessing, and individualism versus collectivism in responding.
3. Demonstrate how to evaluate measures for feasibility, generalizability, applicability to various samples, and sensitivity in detecting differences among groups over time.
4. Learn to evaluate and generate items from different theoretical perspectives that accurately measure the underlying construct(s).

**BIBLIOGRAPHY (COURSE TEXT AND READINGS)**

**Required Texts**

DeVellis, R.F. (2016). *Scale development: Theory and Applications* (4<sup>th</sup> Ed.). Thousand Oaks, CA: Sage.

Fowler, F.J. (1995). *Improving survey questions: Design and evaluation*. Thousand Oaks, CA: Sage.

Viswanathan, M. (2005). *Measurement error and research design*. Thousand Oaks, CA: Sage.

**Required Readings (in Resource library)**

Embretson, S.E. & Reise, S.P. (2000). *Item response theory for psychologists*. Mahwah, NJ: Laurence Erlbaum & Associates.

- Ch. 1: Introduction
- Ch. 2: The new rules of measurement
- Ch. 3: Item Response Theory as model-based measurement
- Ch. 5: Polytomous IRT Models

Furr, R.M., & Bacharach, V.R. (2013). *Psychometrics: An introduction*. Thousand Oaks, CA: Sage.

Netemeyer, R.G., Bearden, W.O., & Sharman, S. (2003). *Scaling procedures: Issues and Applications*. Thousand Oaks, CA: Sage.

- Ch. 2: Dimensionality
- Ch. 3: Validity
- Ch. 4: Reliability

## **COURSE REQUIREMENTS AND EVALUATION CRITERIA**

- Students will complete five written and one oral assignment, outlined below. Each assignment must be completed and deposited in the assignment drop box on Sakai **by the final due date** to be counted. Students should also bring a copy of their assignment to class to use for discussion. Total: Six (6) units.

Students must complete all assignments to receive credit in the course. Grading and Communication with Instructor: Customarily, assignments will be graded within one week of the final due date, though the instructor may require additional time if extensive feedback is required on a large proportion of assignments. The instructor will attempt to answer emails or other communication within 24 to 48 hours; communication on a Friday will typically be returned on Monday.

- Class Participation and Attendance: Students are required to attend class and to participate meaningfully in class discussion, demonstrating that they have fully read all the assigned material prior to class. Each week, students will present one of the assigned articles to the group for discussion. See additional clarification below. Total: (1) unit.

Each unit is graded as Pass/Fail. There are a total of 7 units for the course. To Pass a unit, the student must obtain a score of 70% or above. Final grades will be based on the total number of "Pass" grades for the semester.

A=7 passes

B=6 passes

C=5 passes

Fail=4 passes and below

### **Class Participation, Attendance, and Make-Up Policy:**

**A key tenet of social work is respect for other people. In order to optimize the learning experience, it is important that everyone is at class on time and actively participating. For that reason, class attendance and punctuality, as well as informed participation are required. If students believe they will be absent or more than 10 minutes late for class, please let the instructor know in advance. Students who miss more than two classes may not receive a Pass for one unit of the class. Similarly, students are expected to participate meaningfully in class, to demonstrate they have thoroughly read all the assigned material prior to class, and to thoughtfully present weekly articles. Failure to demonstrate adequate preparation and participation may likewise result in failing one unit of the course.**

**Assignments will be accepted electronically in the assignment drop box for a one-week period, beginning with the "due date" stated on the syllabus. No assignments will be accepted by paper or email. No late paper assignments will be accepted for any reason; there are no make-up or extra credit assignments in this class. Once you post your assignment, please print off the screen that indicates that you have**

**successfully uploaded in case your assignment does not appear and you believe you have uploaded in time. I encourage students to upload early in case you encounter problems and need assistance from the Sakai office or the instructor prior to the final due date. In addition, after you submit, please check to ensure that your assignment is visible. If you encounter a problem, attempt to upload again; if that is unsuccessful, contact me or the Sakai office for assistance. Understand that this process must be completed before the final date closes for submission.**

## **ACADEMIC INTEGRITY**

All work submitted in a graduate course must be your own.

It is unethical and a violation of the University's Academic Integrity Policy to present the ideas or words of another without clearly and fully identifying the source. Inadequate citations will be construed as an attempt to misrepresent the cited material as your own. Use the APA citation style which is described in the Publication manual of the American Psychological Association, 6<sup>th</sup> edition.

Plagiarism is the representation of the words or ideas of another as one's own in any academic exercise. To avoid plagiarism, every direct quotation must be identified by quotation marks or by appropriate indentation and must be properly cited in the text or footnote. Acknowledgement is required when material from another source is stored in print, electronic, or other medium and is paraphrased or summarized in whole or in part in one's own words. To acknowledge a paraphrase properly, one might state: "to paraphrase Plato's comment..." and conclude with a footnote identifying the exact reference. A footnote acknowledging only a directly quoted statement does not suffice to notify the reader of any preceding or succeeding paraphrased material. Information which is common knowledge, such as names of leaders of prominent nations, basic scientific laws, etc., need not be footnoted; however, all facts or information obtained in reading or research that are not common knowledge among students in the course must be acknowledged. In addition to materials specifically cited in the text, only materials that contribute to one's general understanding of the subject may be acknowledged in the bibliography. Plagiarism can, in some cases, be a subtle issue. Any question about what constitutes plagiarism should be discussed with the faculty member.

Plagiarism as described in the University's Academic Integrity Policy is as follows: **"Plagiarism:** Plagiarism is the use of another person's words, ideas, or results without giving that person appropriate credit. To avoid plagiarism, every direct quotation must be identified by quotation marks or appropriate indentation and both direct quotation and paraphrasing must be cited properly according to the accepted format for the particular discipline or as required by the instructor in a course. Some common examples of plagiarism are:

-Copying word for word (i.e. quoting directly) from an oral, printed, or electronic source without proper attribution.

- Paraphrasing without proper attribution, i.e., presenting in one's own words another person's written words or ideas as if they were one's own.
- Submitting a purchased or downloaded term paper or other materials to satisfy a course requirement.
- Incorporating into one's work graphs, drawings, photographs, diagrams, tables, spreadsheets, computer programs, or other non-textual material from other sources without proper attribution".

Plagiarism along with any and all other violations of academic integrity by graduate and professional students will normally be penalized more severely than violations by undergraduate students. Since all violations of academic integrity by a graduate or professional student are potentially separable under the Academic Integrity Policy, faculty members should not adjudicate alleged academic integrity violations by graduate and professional students, but should refer such allegations to the appropriate Academic Integrity Facilitator (AIF) or to the Office of Student Conduct. The AIF that you should contact is Antoinette Y. Farmer, 848.932.5358. The student shall be notified in writing, by email or hand delivery, of the alleged violation and of the fact that the matter has been referred to the AIF for adjudication. This notification shall be done within 10 days of identifying the alleged violation. Once the student has been notified of the allegation, the student may not drop the course or withdraw from the school until the adjudication process is complete. A TZ or incomplete grade shall be assigned until the case is resolved. For more information regarding the Rutgers Academic Integrity Policies and Procedures, see: <http://academicintegrity.rutgers.edu/academic-integrity-at-rutgers>.

It has been recommended by the Office of Student Conduct that the honor pledge below be written on all examinations and major course assignments.

To promote a strong culture of academic integrity, Rutgers has adopted the following honor pledge to be written and signed on examinations and major course assignments submitted for grading: ***On my honor, I have neither received nor given any unauthorized assistance on this examination.***

### **DISABILITY ACCOMMODATION**

Please Note: Any student who believes that s/he may need an accommodation in this class due to a disability should contact the University Office of Disability Services, Lucy Stone Hall, Livingston Campus 54 Joyce Kilmer Avenue, Suite A145, Piscataway, NJ

08854-8045, email address: [dsoffice@rci.rutgers](mailto:dsoffice@rci.rutgers), Phone: (848) 445-6800, fax: (732) 445-3388, for a letter of accommodation. (Undergraduate New Brunswick students should contact the Coordinator for Students with Disabilities for their College.) Students who are taken courses in Camden should contact Mr. Tim S. Pure, Assistant Director/Disability Services Coordinator, Rutgers-Camden Learning Center, Armitage, Hall, Room 231, 311 N. 5<sup>th</sup> Street, Camden, NJ 08102, email

address: [tpure@camden.rutgers.edu](mailto:tpure@camden.rutgers.edu). Students who are taken courses in Newark should contact Ms. Genevieve Sumski, Disability Services Coordinator, Robeson Campus

Center-Newark, 350 ML King, Jr. Boulevard, Newark, NJ 07102-1898.. Any student, who has already received a letter of accommodation, should contact the instructor privately to discuss implementation of his/her accommodations immediately. Failure to discuss implementation of accommodations with the instructor promptly may result in denial of your accommodations.

### COURSE OUTLINE

Following are the dates, topics and assigned chapters in required text. Other reading assignments will be provided on a weekly basis.

Date	Topic	Content and Assignments
Week 1	What is Measurement?  Concepts in Measurement	DeVellis Ch. 1 (Intro)  Understanding Latent Variables <ul style="list-style-type: none"> <li>• DeVellis Ch. 2</li> <li>• Teglasi, H., Simcox, A.G. &amp; Kim, N.Y. (2007). Personality constructs and measures. <i>Psychology in the Schools</i>, 44(3), 215-228.</li> </ul> Dimensionality <ul style="list-style-type: none"> <li>• Netemeyer et al. Ch. 2</li> </ul>
Week 2	Concepts in Measurement [No Class – prepare readings; do lit review to isolate constructs]	Reliability <ul style="list-style-type: none"> <li>• DeVellis, Ch. 3</li> <li>• Netemeyer et al. Ch. 3</li> </ul> Validity <ul style="list-style-type: none"> <li>• DeVellis, Ch. 4</li> <li>• Netemeyer et al. Ch. 4</li> </ul>
Week 3	Validity (cont.)	<ul style="list-style-type: none"> <li>• Krause, M.S. (2012). Measurement validity is fundamentally a matter of definition, not correlation. <i>Review of General Psychology</i>, 16(4), 391-400.</li> <li>• Cronbach, L.J. &amp; Miehle, P.E. (1955). Construct validity in psychological tests. <i>Psychological Bulletin</i>, 52(4), 281-302.</li> <li>• Sijtsma, K. (2009). On the use, the misuse, and the very limited usefulness of Cronbach's alpha. <i>Psychometrika</i>, 74,(1), 107-120.</li> <li>• Clark, L.A. &amp; Watson, D. (1995). Constructing validity: Basic issues in objective scale development. <i>Psychological Assessment</i>, 7(3), 309-319.</li> <li>• Smith, G.T. (2005). On construct</li> </ul>

		<p>validity: Issues of method and measurement. <i>Psychological Assessment</i>, 17(4), 396-408.</p> <p><b>Assignment 1 due in drop-box between: 8 a.m. Thursday, September 26 and 11:00 p.m. Wednesday October 3.</b></p>
Week 4	How do Measures Differ?	<p>Stimulus-centered vs Respondent-centered Formative vs Reflective Questions</p> <ul style="list-style-type: none"> <li>• Viswanathan Ch. 7</li> <li>• Jarvis, C.B., Mackenzie, S.B. &amp; Podsakoff, P.M. (2003). A critical review of construct indicators and measurement model misspecification in marketing and consumer research. <i>Journal of Consumer Research</i>, 30, 199-218.</li> <li>• Diamantopoulos, A., Riefler, P., &amp; Roth, K.P. (2008). Advancing formative measurement models. <i>Journal of Business Research</i>, 61(12), 1203-1218.</li> <li>• Edwards, J.R. (2011). The fallacy of formative measurement. <i>Organizational Research Methods</i>, 14(2), 370-388.</li> </ul>
Week 5:	Scaling & Scale Development	<p>Types of scales Determining concepts to measure Generating an item pool</p> <ul style="list-style-type: none"> <li>• DeVellis, Ch. 5</li> </ul> <p><b>Assignment 2 due in drop box between: 8 a.m. Thurs. October 10 and 11:00 p.m. Wednesday October 16.</b></p>
Week 6:	Scaling (cont.)	<p>What is a good question? Characteristics that affect measurement</p> <ul style="list-style-type: none"> <li>• Fowler, Ch. 1</li> <li>• Schwarz, N. (1999). Self-reports – How the questions shape the answers. <i>American Psychologist</i>, 54(2), 93-105.</li> <li>• Krosnick, J.A. (1999). Maximizing questionnaire quality. In J.P. Robinson, P.R. Shaver, &amp; L.S. Wrightsman (eds.), <i>Measures of political attitudes</i> (pp. 37-57). San Diego: Academic Press.</li> </ul> <p>Questions to gather factual data, to measure subjective states</p>

		<ul style="list-style-type: none"> <li>• Fowler, Chs. 2,3</li> </ul>
Week 7:	Scaling (cont.)	<p>General rules for good survey instruments</p> <ul style="list-style-type: none"> <li>• Fowler, Ch. 4</li> <li>• Schaeffer, N.C. &amp; Presser, S. (2003). The science of asking questions. <i>Annual Review of Sociology</i>, 29, 65-88.</li> <li>• Schwarz, N. &amp; Oyserman, D. (2001). Asking questions about behavior: Cognition, communication, and questionnaire construction, <i>American Journal of Evaluation</i>, 22(2), 127-160.</li> </ul>
Week 8:	Scaling (cont.)	<p>Question formats, item response categories, scale length, expert review, validation items, administration</p> <ul style="list-style-type: none"> <li>• Fowler Ch. 6</li> <li>• DeVellis, Ch. 5</li> <li>• O’Muircheartaigh, C.O., Krosnick, J.A., &amp; Helic, A. (2000). Middle alternatives, acquiescence, and the quality of questionnaire data. Unpublished paper.</li> <li>• Smits, N. &amp; Vorst, H.C.M. (2007). Reducing the length of questionnaires through structurally incomplete designs: An illustration. <i>Learning and Individual Differences</i>, 17(1), 25-23.</li> <li>• Stanton, J.M., Sinar, E.F., Balzer, W.K. &amp; Smith, P.C. (2002). Issues and strategies for reducing the length of self-report scales. <i>Personnel Psychology</i>, 55(1), 167-194.</li> </ul> <p><b>Assignment 3 due in drop box between: 8 a.m. Thurs. October 31 and 11:00 p.m. Wed. November 6</b></p>



Week 9:	Scaling (cont.)	<p>Test dimensionality and factor analysis</p> <ul style="list-style-type: none"> <li>• DeVellis, Ch. 6</li> <li>• Furr &amp; Bacharach, Ch. 4</li> </ul>
Week 10:	Measurement Error	<p>Types and causes of measurement error</p> <ul style="list-style-type: none"> <li>• Viswanathan, Chs. 2, 3</li> </ul> <p>Response biases, types and methods for addressing</p> <ul style="list-style-type: none"> <li>• Furr &amp; Bacharach Ch. 10</li> <li>• Dolnicar, S. &amp; Grun, B. (2009). Does one size fit all? The suitability of answer formats for different constructs measured. <i>Australasian Marketing Journal</i>, 17(1), 58-64.</li> </ul> <p><b>Assignment 4 due in drop box between: 8 a.m. Thurs. November 14 and 11:00 p.m. Wed. November 20</b></p>
Week 11:	Measurement Error (cont.)	<p>Empirical procedures to identify measurement error</p> <ul style="list-style-type: none"> <li>• Viswanathan, Ch. 4, 5, 6</li> </ul>
Week 12:	Item Response Theory	<p>Classical Theory vs IRT</p> <ul style="list-style-type: none"> <li>• Embretson, Ch. 1,2</li> <li>• DeVellis, Ch. 7</li> <li>• Furr &amp; Bacharach, Ch. 13</li> </ul> <p><b>Assignment 5 due in drop box between: 8 a.m. Thurs. December 5 and 11:00 p.m. Wed. December 11.</b></p>

Week 13:	Measurement Issues in Social Work	<ul style="list-style-type: none"> <li>• Nower, L., &amp; Blaszczynski, A. (2017). Development and validation of the Gambling Pathways Questionnaire (GPQ). <i>Psychology of Addictive Behaviors</i>, 31(1), 95.</li> <li>• D. R., &amp; Gillespie, D. F. (2007). Phrase completion scales: A better measurement approach than Likert scales? <i>Journal of Social Service Research</i>, 33(4), 1-12.</li> <li>• Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., &amp; Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. <i>Journal of Applied Psychology</i>, 88(5), 879.</li> <li>• Rubio, D. M., Berg-Weger, M., Tebb, S. S., Lee, E. S., &amp; Rauch, S. (2003). Objectifying content validity: Conducting a content validity study in social work research. <i>Social work research</i>, 27(2), 94-104.</li> </ul>
Week 14:		<b>Assignment 6: Presentations</b>
Week 15:		<b>Assignment 6: Presentations</b>

**Written Assignments:**

All assignments should be saved as Word documents ONLY and submitted as one file through the assignment drop-box on Sakai.

**Assignment 1:**

Identify one or two related constructs of interest. You should select constructs you believe are important to your area of research interest but which have not been adequately operationalized in a measurement instrument. Conduct a thorough literature review of the constructs and identify and obtain relevant articles.

Your search should address the following questions:

- (a) Are there various facets (dimensions) of the construct(s)? If yes, how are they defined by various authors?
- (b) What alternate definitions or related facets are missing? Why is it important to measure these facets?

Please submit: 1) a **three to five-page summary** that includes: (a) a brief explanation of the constructs you are studying and why they are important for your research; (c) target population (Adults over 18 only? Hispanic males only? etc.); and (b) a summary of existing instruments that purport to tap those constructs (include references to each instrument in APA format and definitions of facets of those constructs measured by each instrument). Also, please attach a **list of relevant abstracts**, pasted into a Word document, with Web of Science references as explained in class. **Both items must be in the drop box on time to receive credit for this assignment.**

## **Assignment 2**

Interview 6 to 8 students regarding alternate meanings and interpretations of the current instrument questions. Identify areas of ambiguity and alternative interpretations for each existing question. Write a two- to three-page summary of discrepancies and ambiguity you uncovered in your interviews.

Generate a pool of items (list of questions) that you believe could tap each facet (dimension) of the construct you are exploring. Write formative and reflective questions (i.e. questions designed to test each dimension as a subscale with one or more facets/dimensions and questions that are reflective of the overall construct), and questions that parallel other questions in existing instruments you could use to establish concurrent validity. Write as many questions as you want with alternate wording, and group questions together by sub-scales and facets of each sub-scale. Group them by type of question within each facet (dimension) and submit the overall scale.

Please submit 1) your summary and 2) full question list into the drop box. **Both items must be in the drop box on time to receive credit for this assignment.**

## **Assignment 3**

Ask two or three “experts” in your area of study to review your questions, which should be grouped by subscale and facets (dimension) within those sub-scales. Experts can be: (a) professors or (b) graduate students within social work.

On the form provided, ask the experts to:

- Comment on the wording of the question for each facet (dimension).
- Suggest alternate wording for questions.
- Suggest questions and/or facets you have missed or omitted.
- Highlight ambiguous or confusing questions.
- Circle questions they feel are particularly “good” and place an “x” next to questions they believe are the weakest in the group.

Revise your questions based on the expert feedback and submit: 1) completed feedback forms; 2) original and revised instruments; and 3) a **two to three-page summary** of the revisions you made for each facet and why. **All three items must be in the drop box on time to receive credit for this assignment.**

#### **Assignment 4**

Consider alternate response formats for your instrument (i.e. yes/no, Likert, multiple choice etc.). Create an instrument using your preferred response format and/or several alternate formats. Questions should remain grouped by subscale and facet/dimension. If you can't decide between two formats, create separate instruments for each.

Alternatively, if you have decided on a Likert-type scale but are undecided about the number of response categories, vary the response format by sub-scale (for example, use a 7-point, numerical Likert with anchors centered for one subscale, a 6 point Likert with descriptor boxes for another etc.).

Administer the scale to five (5) students outside social work. Ask them to answer each question and to indicate which questions were difficult (mark "H" next to question) or easy (mark "E" next to question) to answer. Also ask them which format they felt: (a) best reflected their true answer; and (b) was easiest for them to complete in a timely fashion.

Debrief your participants regarding the reasons for the markings in each case and, once again, obtain feedback regarding ambiguous wording, questions that evoked discomfort, etc. Revise your instrument. Ideally, you should have between 15 and 50 questions; as a rule, you will need five subjects per question to validate your instrument.

Please submit: 1) original and revised instrument; and 2) a **three to five-page summary** of participant feedback, reasons for your revisions, and formatting considerations, including the justification of the final format you selected. **Both items must be in the drop box on time to receive credit for this assignment.**

#### **Assignment 5**

Consider issues of response bias (i.e. acquiescence, social desirability, etc.) that would contribute to measurement error and limit generalizability of both the current instrument and your instrument. For each issue: (a) outline the issue of concern; and (b) identify alternate ways of addressing this concern. You may want to write alternate ways of posing your questions to test whether this would affect the answers you receive and which wording would make responses more "valid."

Administer your instrument, including the validation items, to a diverse pool of five (5) subjects. You might include older adults, individuals with disabilities, people of color, gays/lesbians etc. and, if appropriate, ensure you have largely equal representation by gender. Compare the validation items to your original questions. Where they differ, debrief your participants regarding these differential responses. Finalize your instrument.

Please submit: 1) original and revised instrument; and 2) a three to five-page summary of participant feedback and reasons for your revisions. **Both items must be in the drop box on time to receive credit for this assignment.**

## **Oral Assignment**

### **Assignment 6**

Prepare a 10-minute Powerpoint presentation of your final instrument. Your presentation should outline: (a) the targeted constructs including subscales and facets/dimensions of each subscale; (b) initial item pool; (c) results of your expert review and subsequent refinements; (d) potential measurement error and how you anticipated it; (e) subsequent revisions after each test administration; and (f) final instrument and future plans. Please distribute handouts to the class for the presentation.

### **Weekly Article Presentations**

Each week, one (or two) students will be assigned to “teach” an article for the coming week. The student(s) should be prepared to summarize key points in the article and to ask three questions of the class. The first question should be: “What confused or surprised you about this article?” And the other two questions should be developed by the presenter. Class participation grades will be determined **both** by your presentation and by your involvement in class discussions on all articles.