



Department of Psychology
Psychology 739.06 (L01) – Seminar in Industrial/Organizational Psychology:
Measurement and Statistical Issues
Fall Session 2009

Instructor:	Theresa Kline	Lecture Location:	A135A
Phone:	(403) 220-3469	Lecture Days/Time:	Tues/Thurs 11:00 a.m. – 12:15 p.m.
Email:	babbitt@ucalgary.ca		
Office:	A 135B		
Office Hours:	TBA		

Course Description and Goals

Application of psychological principles and methods to business, industry and other organizational settings.

1. Understand how tests are developed and items constructed.
2. Be clear on the bases for knowledge claims about test item bias.
3. Understand how classical and modern test theories differ and contribute to psychometrics.
4. Understand the various types of and how to assess test reliability.
5. Know how generalizability theory and reliability work together.
6. Understand the various types of and how to assess test validity.
7. Be familiar with the evolution of what has been meant by “test validation.”
8. Know what validity generalizability is and how it is used.
9. Know how to refine a tests based on its psychometric properties.
10. Assess a test based on its psychometric properties.
11. Understand professional and ethical issues in testing.

These are topics with which students in the Industrial-Organizational Psychology stream of the Graduate Program will be expected to be familiar upon graduating with a Ph.D. The readings in the course will be primarily from the I-O literature, but this does not in any way preclude interested students from other areas in or outside of the Department from taking this course.

Prerequisites

Psychology 617 – Advanced Research Design and Analysis II

Required Text and Readings

Kline, T.J.B. (2005). *Psychological Testing: A Practical Approach to Design and Evaluation*. Thousand Oaks, CA: Sage. Available from the University of Calgary Bookstore.

Readings are required as part of this course. Available from the instructor or on-line.

Evaluation

Students are expected to attend **all** lectures. They should read all assigned material prior to coming to class and be active class participants. Grades for this course will be based on two oral presentations of test reviews and the written reports to accompany them. Students will evaluate their own as well as the other students' presentations. Evaluation forms will be provided. There will also be a final presentation and report on an applied project.

Distribution of Credit for Final Grade:

Test Review 1: 30% (10% oral and 20% written)
Tests Review 2: 30% (10% oral and 20% written)
Applied Project: 40% (20% oral and 20% written)

Oral and written Test Review Presentations: You will each be assigned two tests to assess its psychometric properties. You will write up the assessment and present your findings orally to the class. Applied Project: You will be developing or evaluating assessment tools in groups. You will follow the guidelines for test development and validation. You will present your procedure and outcomes to the class. Details of the context and expectations will be made during the first couple of weeks of class.

Tentative Lecture Schedule

Date/Week	Topic
Sept. 8	1. Introduction/expectations/item creation
Sept. 15	2. Item Response Theory (Theory)
Sept. 22	3. Item Response Theory (Practice)
Sept. 29	4. Reliability (tests)
Oct. 6	5. Reliability (raters)
Oct. 13	TEST REVIEW #1 PAPER & PRESENTATIONS
Oct. 20	6. Validity (Part I)
Oct. 27	7. Validity (Part II)
Nov. 3	8. Factor Analysis (exploratory/confirmatory)
Nov. 10	9. Analysis of Change Scores
Nov. 17	TEST REVIEW #2 PAPER & PRESENTATIONS
Nov. 24	Legal/ethical/practical Issues in Testing
Dec. 1-8	APPLIED PROJECT & PRESENTATIONS

Grading Scale

A+	96-100%	B+	80-84%	C+	67-71%	D+	54-58%
A	90-95%	B	76-79%	C	63-66%	D	50-53%
A-	85-89%	B-	72-75%	C-	59-62%	F	0-49%

As stated in the University Calendar, it is at the instructor's discretion to round off either upward or downward to determine a final grade when the average of term work and final examinations is between two letter grades. To determine final letter grades, final percentage grades will be rounded up to the nearest whole percentage (e.g., 89.4% will be rounded up to 90%, etc.).

Reappraisal of Grades

A student who feels that a piece of graded term work (e.g., term paper, essay, test) has been unfairly graded, may have the work re-graded as follows. The student shall discuss the work with the instructor within 15 days of being notified about the mark or of the item's return to the class. If not satisfied, the student shall immediately take the matter to the Head of the department offering the course, who will arrange for a reassessment of the work within the next 15 days. The reappraisal of term work may cause the grade to be raised, lowered, or to remain the same. If the student is not satisfied with the decision and wishes to appeal, the student shall address a letter of appeal to the Dean of the faculty offering the course within 15 days of the unfavourable decision. In the letter, the student must clearly and fully state the decision being appealed, the grounds for appeal, and the remedies being sought, along with any special circumstances that warrant an appeal of the reappraisal. The student should include as much written documentation as possible.

Plagiarism and Other Academic Misconduct

Intellectual honesty is the cornerstone of the development and acquisition of knowledge and requires that the contribution of others be acknowledged. Consequently, plagiarism or cheating on any assignment is regarded as an extremely serious academic offense. Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Students should examine sections of the University Calendar that present a Statement of Intellectual honesty and definitions and penalties associated with Plagiarism/Cheating/Other Academic Misconduct.

Academic Accommodation

It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 220-8237. Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than 14 days after the start of this course.

Absence From A Test

Makeup tests/exams are NOT an option without an official University medical excuse (see the University Calendar). A completed Physician/Counselor Statement will be required to confirm absence from a test/exam for health reasons; the student will be required to pay any cost associated with this Statement. Students who miss a test/exam have 48 hours to contact the instructor and to schedule a makeup test/exam. Students who do not schedule a makeup test/exam with the instructor within this 48-hour period forfeit the right to a makeup test/exam. At the instructor's discretion, a makeup test/exam may differ significantly (in form and/or content) from a regularly scheduled test/exam. Except in extenuating circumstances (documented by an official University medical excuse), a makeup test/exam must be written within 2 weeks of the missed test/exam.

Important Dates

The last day to drop this course and **still receive a fee refund** is **Sep 21st, 2009**. The last day to withdraw from this course is **Dec 8th, 2009**.

READINGS

1. Introduction/expectations/item creation

Kline, T.J.B. (2005) Psychological Testing. Chapters 1, 2, 3, 4

Nunnally, J.C., & Bernstein, I.H. (1994). Psychometric Theory (3rd ed.). Chapter 8, Construction of Conventional Tests (pp. 293-337). New York: McGraw-Hill.

3. Item Analysis and Item Response Theory (Theory)

Kline, T.J.B. (2005) Psychological Testing. Chapters 5 & 6.

Embretson, S.E. & Reise, S.P. (2000). Item Response Theory for Psychologists Chapters 1-3, pp. 3-61). Mahwah, NJ: Lawrence Erlbaum Associates.

Nunnally, J.C., & Bernstein, I.H. (1994). Psychometric Theory (3rd ed.). Chapter 10, Recent Developments in Test Theory (pp. 393-442). New York: McGraw-Hill.

4. Item Response Theory (Practice)

“Hands on” week: Using IRT programs

5. Reliability (Tests)

Kline, T.J.B. (2005) Psychological Testing. Chapter 7.

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

Cronbach, L.J. (2004). My current thoughts on coefficient alpha and successor procedures. Educational and Psychological Measurement, 64, 391-418.

Hogan, T.P., Benjamin, A., & Brezinski, K.L. (2000). Reliability methods: A note on the frequency of use of various methods. Educational and Psychological Measurement, 60, 523-531.

Nunnally, J.C., & Bernstein, I.H. (1994). Psychometric Theory (3rd ed.). Chapter 6, The Theory of Measurement Errors (pp. 209-247), Chapter 7, The Assessment of Reliability (pp. 248-292). New York: McGraw-Hill.

6. Reliability (Raters)

Kline, T.J.B. (2005) Psychological Testing. Chapter 8.

Cardinet, J., Tourneur, Y., & Allal, L. (1976). The symmetry of generalizability theory: Applications to educational measurement. Journal of Educational Measurement, 13, 119-135.

LeBreton, J. M., & Senter, J. L. (2008). Answers to twenty questions about interrater reliability and interrater agreement. *Organizational Research Methods*, *11*, 815-852.

Shavelson, R.J., Webb, N.M., & Rowley, G.L. (1989). Generalizability theory. *American Psychologist*, *44*, 922-932.

Vacha-Haase, T. (1998). Reliability generalization: Exploring variance in measurement error affecting score reliability across studies. *Educational and Psychological Measurement*, *58*, 6-20.

Mitchell, S.K. (1979). Interobserver agreement, reliability, and generalizability of data collection in observational studies, *Psychological Bulletin*, *86*, 376-390.

Shrout, P.E., & Fleiss, J.L. (1979). Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin*, *86*, 420-428.

7. Validity (Part I)

Kline, T.J.B. (2005) *Psychological Testing*. Chapters 9 & 10.

Binning, J.F., & Barrett, G.V. (1989). Validity and personnel decisions: A conceptual analysis of the inferential and evidential bases. *Journal of Applied Psychology*, *74*, 478-494.

Nunnally, J.C., & Bernstein, I.H. (1994). *Psychometric Theory* (3rd ed.). Chapter 3, Validity (pp. 83-113). New York: McGraw-Hill.

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

Meyer, G.J., Finn, S.E., Eyde, L.D., Kay, G.G., Moreland, K.L., Dies, R.R., Eisman, E.J., Kubiszyn, T.W., & Reed, G.M. (2001). Psychological testing and psychological assessment. *American Psychologist*, *56*, 128-165.

8. Validity (Part II)

Algera, J.A., Jansen, P.G.W., Roe, R.A., & Vijn, P. (1984). Validity generalization: Some critical remarks on the Schmidt-Hunter procedure. *Journal of Occupational Psychology*, *57*, 197-210.

Schmidt, F.L., & Hunter, J.E. (1977). Development of a general solution to the problem of validity generalization. *Journal of Applied Psychology*, *62*, 529-540.

Schmidt, F.L., Hunter, J.E., & Pearlman, K. (1982). Progress in validity generalization: Comments on Callender and Osburn and further developments. *Journal of Applied Psychology*, *67*, 835-845.

Barrett, G.V., Phillips, J.S., & Alexander, R.A. (1981) Concurrent and predictive validity designs: A critical reanalysis. *Journal of Applied Psychology*, *66*. 1-6.

Hollenbeck, J.R., & Whitener, E.M. (1988). Criterion-related validation for small sample contexts: An integrated approach to synthetic validity. Journal of Applied Psychology, 73, 536-544.

Mossholder, K.W., & Arvey, R.D. (1984). Synthetic validity: A conceptual and comparative review. Journal of Applied Psychology, 69, 322-333.

9. Factor Analysis (exploratory/confirmatory)

“Hands on” week – using exploratory and confirmatory factor analyses

Tabachnick, B.G., & Fidell, L.S. (2007) Using Multivariate Statistics (5th ed.). Chapter 13 (Principal Components and Factor Analysis). Boston, MA: Pearson.

Ullman, J.B. (2007). Structural Equation Modeling. In B.G. Tabachnick & L.S. Fidell Using Multivariate Statistics (5th ed.) Chapter 14. Boston, MA: Pearson.

10. Analysis of Change Scores

Arvey, R.D., & Cole, D.A. (1989). Evaluating change due to training, (p. 89-117). In I. Goldstein (Ed.), Training and development in work organizations: Frontiers of industrial and organizational psychology. San Francisco: Jossey-Bass.

Bedian, A.G., Day, D.V., Edwards, J.R., Tisak, J., & Smith, C.S. (1994). Point/counterpoint Difference scores: Rationale, formulation, and interpretation. Journal of Management, 20, 673-698.

Williams, R.H., & Zimmerman, D.W. (1996). Are simple gain scores obsolete? Applied Psychological Measurement, 20, 59-69.

Collins, L.M. (1996) Is reliability obsolete? A commentary on "Are simple gain scores obsolete?". Applied Psychological Measurement, 20, 289-292.

Humphreys, L.G. (1996). Linear dependence of gain scores on their components imposes constraints on their use and interpretation: Comment on "Are simple gain scores obsolete?". Applied Psychological Measurement, 20, 293-294.

Williams, R.H., & Zimmerman, D.W. (1996). Commentary on the commentaries of Collins and Humphreys. Applied Psychological Measurement, 20, 295-297.

Johns, G. (1981). Difference score measures of organizational behavior variables: A critique. Organizational Behavior and Human Performance, 27, 443-463.

Rogosa, D., Willett, J. (1983). Demonstrating the reliability of the difference score in the measurement of change. Journal of Educational Measurement, 20, 335-343.

Edwards, J.R., & Cooper, C.L. (1990). The person-environment fit approach to stress: Recurring problems and some suggested solutions. Journal of Organizational Behavior, 11, 293-307.

Edwards, J.R. (1993). Problems with the use of profile similarity indices in the study of congruence in organizational research. Personnel Psychology, 46, 641-665.

Zuckerman, M., Gagne, M., Nafshi, I., Knee, C.R., & Kieffer, S.C. (2002). Testing discrepancy effects: A critique, a suggestion, and an illustration. Behavior Research, Methods, Instruments, & Computers, 34, 291-303.

Zumbo, B.D. (1999). The simple difference score as an inherently poor measure of change. Advances in Social Science Methodology, 5, 269-304.

11. Legal/Ethical/Practical Issues in Testing

Kline, T.J.B. (2005) Psychological Testing. Chapters 11 & 12.

American Psychological Association (2000). Report of the Task Force on Test user Qualifications. Washington, DC: Author.

Camilli, G, & Shepard, L.A. (1994). Methods for Identifying Biased Test Items. (pp. 46-101) Thousand Oaks, CA: Sage

Meyer, G. J. Finn, S. E. Eyde, L. D. Kay, G. G., Moreland, K. L., Dies, R. R., Eisman, E. J., Kubiszyn, T. W., & Read, G. M. (2001), Psychological testing and psychological assessment: A review of evidence and issues. American Psychologist, 56. 128-165.

Naglieri, J. A., Drasgow, F., Schmit, M., Handler, L., Prifitera, A., Margolis, A., & Velasquez, R. (2004). Psychological Testing on the Internet: New Problems, Old Issues. American Psychologist, 59. 150-162.

Sackett, P.R., Schmitt, N., Ellingson, J.E., & Kabin, M.B. (2001). High-stakes testing in employment, credentialing, and higher education: Prospects in a post-affirmative-action world. American Psychologist, 56, 302-318.

Society for Industrial and Organizational Psychology Inc. (2003) Principles for the validation and use of personnel selection procedures (4th ed.). Bowling Green, OH: Author
http://www.siop.org/_Principles/principlesdefault.htm.

Tippins, N.T. (2009). Where is the unproctored internet testing train headed now? Industrial and Organizational Psychology: Perspectives on Science and Practice, 2, 69-76.