

SLST-S600: Quantitative Research for Language Study

Fall 2012

M & W, 2:30 am – 3:45 pm, Ballantine Hall 107

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Description

This course will cover basic research design, measurement, and statistical analyses used in L1/L2 quantitative research methodology, with a focus on interpreting and applying statistical procedures and on using SPSS program to run proper statistics. Topics will include; 1) the organization of a quantitative research report; 2) the generation of research questions and strategies for gathering, organizing, and analyzing data; 3) the understanding of appropriate statistical application to address research questions. By the end of the semester, students will be better equipped with useful and practical knowledge of statistical analyses to explore various L1/L2 issues using quantitative research methodology.

Statistics covered in this course

- Descriptive statistics & Standardized scores
- T-tests and similar non-parametric Tests (Comparing means of two groups)
- Analysis of Variance (ANOVA) (Comparing means of more than two groups)
- Cross Tabulation & χ^2 (Chi)-Square test (Relationships in nominal data)
- Correlation and Regressions (Multiple and Logistic Regressions)
- Exploratory Factor Analysis
- Measures of Reliability

Required Text

Larson-Hall, J. (2010). *A Guide to Doing Statistics in Second Language Research Using SPSS (Second Language Acquisition Research Series)* (Paperback). New York: Routledge. ISBN-10: 0805861866

Required Articles

1. Brown, J. D. (1991). Statistics as a foreign language. Part 1: More things to look for in reading statistical language studies. *TESOL Quarterly*, 25, 569-586.
2. Brown, J. D. (1992). Statistics as a foreign language. Part 2: More things to look for in reading statistical language studies. *TESOL Quarterly*, 26, 629-664.
3. Brown, J. D. (2005). Publishing without perishing. *Journal of the African Language Teachers Association*, 6, 1-16.
4. Carr, N.T. (2000). A comparison of the effects of analytic and holistic rating scale types in the context of composition tests. *Issues in Applied Linguistics*, 11(2), 207-241.

5. Chapelle, C., & Duff, P. (2003). Some guidelines for conducting quantitative and qualitative research in TESOL. *TESOL Quarterly*, 37(1), 157-178.
6. Chang, A.C-S., & Read, J. (2006). The effects of listening support on the listening performance of EFL learners. *TESOL Quarterly*, 40(2), 375-397.
7. Ellis, R. (1995). Modified input and the acquisition of word meanings. *Applied Linguistics*, 16, 409-441.
8. Ellis, R., & Yuan, F. (2004). The effects of planning on fluency, complexity, and accuracy in second language narrative writing. *Studies in Second Language Acquisition*, 26(1), 59-84.
9. Fazio, L. L., & Stevens, F. (1994). Using multiple regression to predict minority children's second language performance. *Applied Linguistics*, 15(4), 421-441.
10. Flege, J.E., Yeni-Komshina, G., & Liu, S. (1999). Age constraints on second language acquisition. *Journal of Memory and Language*, 41, 78-104.
11. French, L.M., & O'Brien, I. (2008). Phonological memory and children's second language grammar learning. *Applied Psycholinguistics*, 29(3), 463-487.
12. Geeslin, K. & Guijarro-Fuentes, P. (2006). The Second Language Acquisition of Variable Structures in Spanish by Portuguese Speakers. *Language Learning* 56 (1), 53-107.
13. Lafrance A. & Gottardo, A. (2005). A longitudinal study of phonological processing skills and reading in bilingual children. *Applied Psycholinguistics* , 26, 559-578.
14. Larson-Hall, J. (2008). Weighing the benefits of studying a foreign language at a younger starting age in a minimal input situation. *Second Language Research*, 24(1), 35-63.
15. Larson-Hall, J. & Herrington, R. (2009). Improving data analysis in second language acquisition by utilizing modern developments in applied statistics. *Applied Linguistics*, 31(3), 368-390.
16. Leow, R.P., & Morgan-Short, K. (2004). To think aloud or not to think aloud. *Studies in Second Language Acquisition*, 26(1), 35-57.
17. Lyster, R. (2004). Differential effects of prompts and recasts in form-focused instruction. *Studies in Second Language Acquisition*, 26(4), 399-432.
18. Mackey, A., & Silver, R.E. (2005). Interactional tasks and English L2 learning by immigrant children in Singapore. *System*, 33(2), 239-260.
19. Pearl, J. (2000). Epilogue: The art and science of cause and effect. In Pearl, J. *Causality: Models, reasoning, and inference*. Cambridge: Cambridge University Press.
20. Smith, B. (2004). Computer-mediated negotiated interaction and lexical acquisition. *Studies in Second Language Acquisition*, 26(3), 365-398.
21. Vandergrift, L. Goh, C.C.M., Mareschal, C., & Tafaghodtari, M. H. (2006). The Metacognitive Awareness Listening Questionnaire (MALQ): Development and Validation. *Language Learning*, 56(3), 431-462.
22. Wainer, H. & Robison, D.H. (2003). Shaping up the practice of null hypothesis Significance Testing. *Research News and Comment*, 32(7), 22-30.

Required statistical software: SPSS 20

Recommended Texts

- Bachman, L.F. (2004). *Statistical Analyses for Language Assessment*. Cambridge: Cambridge University Press.
- Black, Thomas R. (1999). *Doing quantitative research in the social sciences: An integrated approach to research design, measurement, and statistics*. Thousand Oaks, CA: Sage.
- Brown, J. D. (2004). Research methods for applied linguistics: Scope, characteristics, and standards. In A. Davies & C. Elder (Eds.), *The handbook of applied linguistics* (pp. 476-500).
- Brown, J. D., & Rodgers, T. S. (2002). *Doing second language research*. Oxford: Oxford University Press.
- Field, A. & Hole, G. (2003). *How to design and report experiments*. Thousand Oaks, CA: Sage.
- Field, A. (2005). *Discovering Statistics Using SPSS*. Thousand Oaks, CA: Sage.
- Hatch, E., & Lazaraton, A. (1991). *The research manual: Design and statistics for applied linguists*. Rowley, MA: Newbury House.
- Mackey, A., & Gass, S. (2005). *Second language research: Methodology and design*. Mahwah, NJ: Erlbaum.
- Norris, J. M., & Ortega, L. (2003). Defining and measuring SLA. In C. Doughty, & M. H. Long, (Eds.), *Handbook of second language acquisition* (pp. 716-761). London: Blackwell.
- Porte, G. K. (2002). *Appraising research in second language learning: A practical approach to critical analysis of quantitative research*. Philadelphia: John Benjamins.

Requirements

Attendance & Participation (15%)

Participation will be taken very seriously in this course. You are all expected to arrive on time in class sessions, attend class regularly, actively participate in class discussions and activities, including pair or group work, and complete all reading and other assignments on time in the manner specified. Failure to do so WILL affect your grade.

Homework Exercises (30%)

Three SPSS exercises will be assigned occasionally. These will be demonstrated and explained the week before they are due. You should submit these through emails using MS word program with file name *HW 1(or 2, or 3)_Your last name*.

Oral Presentation - Term quantitative research project (25%)

This will be your in-class oral presentation on the term projects. The purpose will be to share your ideas with classmates, and get feedback from other students. The oral report should be **15-20 minutes** (with an additional **5 minutes** for Qs & As). Please use Powerpoint slides and provide a handout to make the presentation more efficient. For this project, you can either conduct 1) **your own quantitative research** during the course (including Introduction, Methods, Results, and Discussion/Conclusion sections) or 2) **a clearly outlined proposal for quantitative research** which includes; (a) Introduction (Literature Review, Purpose, and Research questions); (b) Methods (Participants, Materials, Procedures, Analyses); (c) Expected Results; (d) Implications; and (e) Limitations sections.

Quantitative article critique (30%)

Towards the end of the semester, you will be asked to select a L1/L2 article based on a quantitative empirical research study published in a peer-reviewed journal, and critically examine and evaluate it. The resulting reviews should be short and concise (**3000-5000 words, excluding references and appendix**). You should read Chapelle & Duff (2003) very carefully, which guides you to review/criticize a quantitative research paper. You need to submit both your critique and the original article that you've reviewed electronically.

Grading Distribution

Grades (%) will be awarded as follows:

A+: 100 – 97 / A: 96-93 / A-: 92-88

B+: 87 – 84 / B: 83-80 / B-: 79-75

C: 74 - 65

D: 64 – 55

F: 54 or below

Important

1. All course requirements must be completed on time. Late work is not accepted in this class. If you must miss class, either send your work in with a friend or email it so that I will receive it before class meets on the due date. Grades on late assignments will be reduced and should be no more than one week late.
2. All written materials should be typed in 12 point-font **Times New Roman** and 1.5-spaced, with one inch margins unless otherwise noted.
3. Always use **APA guidelines** and cite all sources.
4. Bring your textbook and relevant articles to class every week.

Course Schedule

(Subject to change)

Part I. Planning a Research Project

WEEK 1

8/20 Introduction

Readings The nature of research (What is research) by JD Brown

Activity Defining “What is research?”: in-class

8/22 Describing Variables

Readings Brown (1991 & 1992); Larson-Hall (LH) Chap. 2

Activity Generating research questions & Describing your variables (Due by 8/27)

WEEK 2

8/27 Research Design Construction – Selecting an appropriate statistical test

Readings Brown (1991 & 1992); Brown (2005); & LH Chap. 2 & 5

Activity Identifying the functions and measurement levels of your variables: in-class

Part II. Describing & Interpreting Data

8/29 Descriptive Statistics & Standardized test scores

Readings LH Chap. 1& 3

Activity Calculating Standard Deviation and standardized test scores: in-class

WEEK 3

9/3 No class – Labor Day

9/5 Inferential Statistics

Readings LH Chap.4 and 5; Wainer & Robinson (2003); & Larson-Hall & Herrington (2009)

Activity 1. Computing exercises

2. SPSS Homework I – Due on Sunday 9 September, 11:59PM

Part III. Comparing Groups

WEEK 4

9/10 Independent T-test

Readings LH Chap. 9; and Leow & Morgan-Short (2004)

Activity Application exercise – Interpretation of SPSS independent t-test output: in-class

9/12 Paired-Samples T-test

Readings LH Chap. 9; and French & O’Brien (2008)

Activity Application exercise – Interpretation of SPSS paired samples t-test output: in-class

WEEK 5

9/17 Nonparametric Mann-Whitney and Wilcoxon Test & One-way ANOVA

Readings LH Chap. 10; and Ellis & Yuan (2004)

9/19 Planned Comparison & Repeated-measures ANOVA

Readings LH Chap. 12; & Lyster (2004)

WEEK 6

9/24 Two-way (Factorial) ANOVA

Readings LH Chap. 11; and Chang & Read (2006)

9/26 ANCOVA

Readings LH Chap. 13; & Larson-Hall (2008)

WEEK 7

10/1 Mixed ANOVA (Split-plot Factorial Design)

Readings LH Chap. 12; & Lyster (2004)

10/3	Summary in ANOVAs
Activity	SPSS Homework II – Due on Wednesday 3 October
Part IV. Describing Relationships	
WEEK 8	
10/8	Chi-square (χ^2) test (Relationships in nominal data)
Readings	LH Chap. 8; Mackey & Silver (2005); & Smith (2004)
Activity	Application exercise – Running and Interpreting Chi-square test in SPSS: in-class
WEEK 9	
10/10	Correlation I
Readings	LH Chap.6; Pearl (2000); and Flege <i>et al.</i> (1999)
Activity	SPSS Homework II Due – 11:59pm, Saturday, Oct. 13 th
WEEK 9	
10/15	Correlation II & Simple Regression
Readings	LH Chap. 7; Pearl (2000); and Flege <i>et al.</i> (1999)
WEEK 10	
10/17	Simple Regression
Readings	LH Chap. 7
WEEK 10	
10/22	Multiple Regression
Readings	LH Chap.7; and Fazio & Stevens (1994)
WEEK 10	
10/24	Multiple Regression – Hierarchical & Stepwise Regression
Readings	LH Chap. 7; Lafrance & Gottardo (2005); & Ellis (1995)
Activity	Multiple Regression on SPSS
WEEK 11	
10/29	Logistic Regression
Readings	Geeslin & Guijarro-Fuentes (2006)
WEEK 11	
10/31	Summary in Regression Analyses
Activity	SPSS Homework III – Due on Wednesday 31 October
WEEK 12	
11/5	Principal Component Analysis (PCA) & Exploratory Factor Analysis (EFA)
Readings	Factor Analysis in SPSS; Carr (2000); & Vandergrift <i>et al.</i> (2006)
Activity	
WEEK 12	
11/7	Factor Analysis & Reliability
Activity	Practice using SPSS for Factor analysis using sample data
WEEK 13	
11/12	Term research project oral presentation I: Rob & Gibran
11/14	Term research project oral presentation II: Silvina & Avizia
WEEK 14	
No class – Thanksgiving Recess	
WEEK 15	
11/26	Term research project oral presentation III: Yeonjoo; Ryan
11/28	Term research project oral presentation IV:JungEun; Patrick
WEEK 16	
12/3	Term research project oral presentation V: Diana; Aileen; Bea
12/5	Term research project oral presentation VI: Juyeon; Senyung; Shao Yu Quantitative article critique – Due by Dec. 12 th

Evaluation Criteria for Oral Presentation

1. Introduction

- Is the purpose of the study clearly explained?
- Is the rationale for each research question or hypothesis well made?

1 - 2 - 3 - 4 - 5

2. Method

- Are the characteristics of a population and participants well explained?
- If instruments (tests, questionnaires, rating scales, etc) are involved, are there any descriptions about them? Will they be reliable and valid for the purposes of the study?

1 - 2 - 3 - 4 - 5

3. Procedure

- Are variables (IVs, DV) well defined?
- Does research design address the research questions or hypothesis raised in the study?
- Are the potential confounding factors taken into consideration? If any, will they be controlled for either by research design or statistically?

1 - 2 - 3 - 4 - 5

4. Statistical knowledge regarding the quantitative research methodology (i.e., Independent ANOVA, repeated-measure ANOVA, mixed ANOVA, multiple regression, chi-square, and factor analysis, etc.)

- Does the presenter know the assumptions to be checked?
- Does s/he know what results to be reported and how they are interpreted?

1 - 2 - 3 - 4 - 5

5. Presentational Skill (Delivery)

- Does each ppt slide contain too much information (Does s/he minimize text)?
- Can s/he explain his/her study in plain English so that everyone can understand?
- Does s/he avoid reading written work and maintain eye contact with the audience?

1 - 2 - 3 - 4 - 5

Total score: 25(%)

Article Critique (30%)

The article critique should be typed in 12-point font size and 1.5-spaced, with one inch margins, and **3000-5000 words** in length. The top of the first page should have the full article citation in APA format. Only 1-2 pages of the critique should be a direct summary of the article. You should turn in **your critique and the article** that you've reviewed as an email attachment. You may want to consider the following questions when evaluating your article (remember that a critique may include both positive and negative evaluations – try to focus more on the statistical issues that have been covered in this class):

Introduction

- Does the researcher identify a specific problem area?
- Is the general purpose of the study clear?
- Does the researcher provide sufficient rationale for the study, i.e., is it clear the study will make some sort of practical or theoretical contribution to the field?

Literature Review

- Does the review contain current and relevant studies?
- Is there a critical review beyond a summary of the findings?
- Does the review relate previous studies to the current research problem?

Research Question

- Is the problem or hypothesis clear and concise?
- Does the problem or hypothesis communicate the variables, type of research, and population?
- Are variables (IVs and DV) well defined?
- Does research question address the research questions or hypothesis?

Participants

- Are the target and study populations well described?
- Is the method of sample selection clear?
- Is the overall size of the sample adequate?
- Is there a possibility of bias either due to the method of selection or less than perfect response/participation rate? Does the researcher explicitly discuss this?

Instruments, measurements and procedures

- Does the researcher present adequate evidence for measurement validity and reliability?
- Is there a clear description of the instrument and how it was used?
- If two or more groups were compared, were individuals assigned at random to the groups?
- Are the “treatments” described in sufficient detail?

Results

- Are the findings presented clearly?
- Is the sufficient descriptive information provided to interpret the results?
- Does the researcher check the assumptions regarding the research methods they’ve chosen?
- Does the researcher refer back to the original research hypothesis?
- If difference is statistically significant but practically small, has the research noted that?

Discussion and conclusion

- Is there an adequate interpretation of the findings and discussion based on the research problem?
- Are the results discussed in relation to previous studies?
- Does the author note any limitations due to the methodology?
- Are specific implications for practice and policy discussed?
- Overall, is the conclusion clearly stated and based on the results?
- Is the conclusion reasonable?