

FEDERATION METHODS AND STATISTICS EXAM

Federated Graduate Sociology Program of:
Texas Woman's University
University of North Texas

Fall, 2002

August 13, 2002

GENERAL INSTRUCTIONS FOR TAKING EXAM

Before you begin the exam, it is advisable that you read through all the questions. Plan your time wisely. You have until 5:00 pm to complete the exam.

Please **WRITE ONLY ON EVERY OTHER LINE on ONE SIDE** of the paper. Please answer each question thoroughly. Answer in complete sentences. Write as neatly as possible--you will not get credit for what can not be read!

DO NOT PUT YOUR NAME ON THE PAPER

PUT ONLY YOUR ASSIGNED NUMBER _____

Part 1: FEDERATION METHODS

(Fall 2002)

(Remember: WRITE ONLY ON EVERY OTHER LINE on ONE SIDE OF THE PAPER)

- A. Discuss three of the following problems encountered in doing research and discuss ways of minimizing each problem selected.
- a. Hawthorne effect
 - b. Ecological fallacy
 - c. Researcher bias
 - d. Low response/return rate on mailed questionnaire
 - e. Sampling attrition/mortality
 - f. Accidental/availability/convenience sample

- B. Choose ONE of the following:

1. Describe three threats to internal validity and three threats to external validity
 - a. How should these threats be addressed in an experimental design?
 - b. Are these threats to validity a concern for researchers of non-experimental studies? If so, how are these threats dealt with in non-experimental research?

OR

2. Define reliability and validity
 - a. Discuss the relationship between reliability and validity
 - b. Describe two specific ways that both reliability and validity can be evaluated, and what are possible ways to maximize each in a research study?

- C. List and describe the steps in either a qualitative or quantitative study. Then select a specific research question of interest to you to illustrate these steps. Be as specific as possible in demonstrating your knowledge of the qualitative or quantitative research process.

Part 2: FEDERATION STATISTICS**(Fall 2002)**

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- A. For six of the following pairs discuss what factor(s) must be taken into consideration in choosing between these two statistical techniques for use in the analyses of data.
1. T and z test
 2. Chi-square test and lambda
 3. Chi-square test and F test
 4. PRE and non-PRE measures of association
 5. Pearson's r and Spearman's rho
 6. Loglinear path analysis and regression path analysis
 7. Eta and r
 8. Lambda and tau-b
 9. r and partial r
 10. Path analysis and multiple regression
 11. Discriminant analysis and loglinear analysis
- B. **Answer question 1 OR question 2**
1. a.
 - (1) State an hypothesis that could be tested using Table la.
 - (2) What is the independent variable?
 - (3) What is the dependent variable?
 - (4) Is your hypothesis confirmed or rejected?
 - b. State a hypothesis that could be tested using Table lb, assuming that the control variable is a specific variable. Interpret the appropriate gammas and indicate if the specific hypothesis is confirmed or rejected
 - c. State a hypothesis that could be tested using Table lb, assuming that the control variable is a suppressor variable. Interpret the appropriate gammas to determine if the suppressor hypothesis is confirmed or rejected.

Table 1a. Percentage Distribution of Permissiveness Attitudes By Social Class For the Student Sample

<i>Sexual Permissiveness Attitudes</i>	<i>Social Class</i>			
	High	Medium	Low	Total
High	50	46	49	49
Low	50	54	51	51
	100	100	100	100
	(225)	(189)	(383)	(797)

Gamma=+.01 (p<.05)

Table 1b. Percentage Distribution of Permissiveness Attitudes By Social Class And Church Attendance For the Student Sample

<i>HIGH CHURCH ATTENDANCE</i>				
<i>Sexual Permissiveness Attitudes</i>	<i>Social Class</i>			
	High	Medium	Low	Total
High	23	26	42	34
Low	<u>77</u>	<u>74</u>	<u>58</u>	<u>66</u>
	100	100	100	100
	(102)	(98)	(262)	(462)

Gamma= -.35 (p<.05)

<i>LOW CHURCH ATTENDANCE</i>				
<i>Sexual Permissiveness Attitudes</i>	<i>Social Class</i>			
	High	Medium	Low	Total
High	72	67	64	68
Low	<u>28</u>	<u>33</u>	<u>36</u>	<u>32</u>
	100	100	100	100
	(119)	(89)	(113)	(321)

Gamma=+.14 (p<.05)

OR

- Write a brief essay substantively interpreting the table. Pay particular attention to the interpretations of logistic regression coefficients and/or odds ratios, as well as model fit statistics.

Table 2: Logistic Regression Estimates for Predicting Frequent Internet Use

<u>Predictor</u>	<u>Model 1</u>		<u>Model 2</u>	
	B	Odds ratio	B	Odds ratio
Age	-2.285** (.063)	.751	-.331** (.065)	.718
Male	1.181**	3.258	1.136**	3.116
Income			-.369**	.691
Sport Activities			.023	1.023
Leisure Activities			.305*	1.356
Constant	1.273	3.572	1.090	2.974
-2 log likelihood	1,115		1,037	
Model χ^2	143.0		168.3	
df	2		5	
N	927		927	

* p<.05 ** p<.01

Notes: The dependent variable is dichotomous (frequent internet use=1, non-frequent internet use=0). Standard errors are in parentheses.

C. Answer the following questions about Table 3 below.

- a. What assumptions must be made to use regression analysis in the analysis of data?
- b. What does each of the following tell us?
 1. Unstandardized regression coefficients (b)
 2. Standardized regression coefficients Beta)
 3. Level of significance (p)
 4. Coefficient of determination (R^2)
- c. Write a brief essay substantively interpreting the table.

TABLE 2. Regression Model Relating to Reporting Physical Symptoms in 1977

Variables	Beta
Teachers' rating of child's stoicism	-.12*
Number of family and personal problems reported by mother in 1961	.05
Days absent from school in 1959-62	.04
Respondents' educational level (in 1977)	-.03
Retrospective report of major illness in childhood	.09*
Parents concerned about child's health	-.12
Parents expressed negative affect toward child	.04
Eysenck's Neuroticism Scale	.18
Worry about life problems scale	.10
Locus of control over health (1-E)	.00
Number of chronic problems	.23*
Assessment of poorer physical health	.21*
Reports getting sick easily	.12*
Higher on drinking scale	.16*
Exercise	-.11*
	$R^2=.45$

* $p < .05$