FEDERATION METHODS AND STATISTICS COMPREHENSIVE EXAM

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

Spring, 2005

GENERAL INSTRUCTIONS FOR TAKING THE 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 p.m. 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 cannot be read!

DO NOT PUT YOUR NAME ON THE PAPER

PUT ONLY YOUR ASSIGNED NUMBER _____

Part 1: FEDERATION METHODS COMPREHENSIVE EXAM Spring, 2005

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

A. Answer **one** question: question 1 **or** question 2.

1. Choose one concept from the list below and: [1] define the concept and discuss how you would measure the variable; [2] discuss relevant testing techniques of validation and reliability you would employ; and [3] indicate what level of measurement you would obtain.
   a. deviance
   b. health
   c. industrialization
   d. job commitment
   e. poverty
   f. social support

OR

2. Compare and contrast the use of cross-sectional and longitudinal designs in survey research. What are the advantages/disadvantages of each of the designs? What are some problems encountered in using each of the designs?

B. Select a research problem of your choice and then use this research problem as an example to illustrate how quantitative research and qualitative research differ in conceptualization, operationalization, data collection, and data analysis.

Part 2: FEDERATION STATISTICS COMPREHENSIVE EXAM Spring, 2005

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

A. Answer both questions.

1. Distinguish between measures of association and tests of statistical significance.

2. For **four** of the following seven pairs of variables, assuming random sampling, indicate clearly the most appropriate measure of association and test of statistical significance. (The categories of each variable are given in parentheses). Justify your choices.

   a. degree of confidence in people running medical institutions in the country (Hardly any at all, Only some, A great deal) and degree of confidence in people running educational institutions in the country (Hardly any at all, Only some, A great deal)

   b. literacy of child's household head (Can read, Cannot read) and child employment status (Not working, Working in agriculture, Working outside of agriculture)

   c. mother's perception of her family's income compared to others when she was 16 years old (Below average, Average, Above average) and how often she spanked her child in the past week (Not at all, Once, Two times or more)

   d. counselor A's ranking of students at-risk for dropping out of school from the best to the worst candidate (1, 2, 3, 4, etc.) for a new mentoring program with a limited number of slots designed to address the problem and counselor B's ranking of the same group of students from the best to the worst candidate (1, 2, 3, 4, etc.) for the same program

   e. total annual married couple's earnings (in dollars) and wife's time spent per week on housework (in hours)

   f. position of country in world system (Core, Periphery, Semi-periphery) and level of income inequality in the country (measured by the Gini coefficient x 100, i.e., ranging from 000.0 to 100.0)

   g. religious affiliation at age 18 (Catholic, Fundamentalist Protestant, Nonfundamentalist Protestant, Other, None) and level of agreement with the statement "it's all right for a couple to live together without planning to get married" (Disagree, Neither disagree nor agree, Agree) at age 23

B. Answer **one** question: question 1 **or** question 2.

1.

a. State a hypothesis that could be tested using Table 1a. What is the independent variable? What is the dependent variable? How are the two variables related? Is your hypothesis confirmed or rejected? Explain. Cite appropriate percentages and interpret relevant statistics to support your answer.

b. Table 1b is an example of elaboration analysis. In elaboration analysis, the relationship between an independent variable and a dependent variable is examined, holding another variable, the "control" variable, constant. The roles that the control variable can take in this type of analysis include "suppressor" variable, "specification" (or interacting) variable, and "intervening" (or mediating) variable. Briefly describe each of these three potential roles. What is the control variable in Table 1b? Which, if any, of the three roles (i.e., suppressor, specification, intervening) does it play in Table 1b? Explain, citing appropriate percentages from Table 1b and interpreting the accompanying relevant statistics.

OR

2. Write a brief essay substantively interpreting the path analyses presented in Figures 2a and 2b.

C. Answer the following questions about Table 3.

1. List and briefly explain the assumptions that must be made to use ordinary least squares multiple regression analysis.

2. What does each of the following tell us?
    a. unstandardized regression coefficient estimate (b)
    b. standardized regression coefficient estimate (Beta or β or b^*)
    c. level of significance (α or alpha)
    d. coefficient of determination (R^2)

3. Write a brief essay substantively interpreting the table.

Table 1a. Number of siblings and graduation from college/university among United States four-year college/university students (N=1,850).

	Graduated from College/University		
Number of Siblings	**No**	**Yes**	**Total**
0-1	51.0%	49.0	100.0% (983)
2 or more	63.0%	37.0	100.0% (867)

χ^2 = 27.0471, *df* = 1, p < .001; Phi = 0.1209

Table 1b. Receipt of parental financial support, number of siblings, and graduation from college/university among United States four-year college/university students (N=1,850).

No or Little Financial Support from Parents

	Graduated from College/University		
Number of Siblings	**No**	**Yes**	**Total**
0-1	85.0%	15.0	100.0% (157)
2 or more	86.0%	14.0	100.0% (389)

χ^2 = 0.1803, *df* = 1, p > .05; Phi = 0.0182

Some Financial Support from Parents

	Graduated from College/University		
Number of Siblings	**No**	**Yes**	**Total**
0-1	53.0%	47.0	100.0% (617)
2 or more	53.0%	47.0	100.0% (338)

χ^2 = 0.0001, *df* = 1, p > .05; Phi = 0.0004

A Lot of Financial Support from Parents

	Graduated from College/University		
Number of Siblings	**No**	**Yes**	**Total**
0-1	24.0%	76.0	100.0% (209)
2 or more	26.0%	74.0	100.0% (140)

χ^2 = 0.14480, *df* = 1, p > .05; Phi = 0.0204

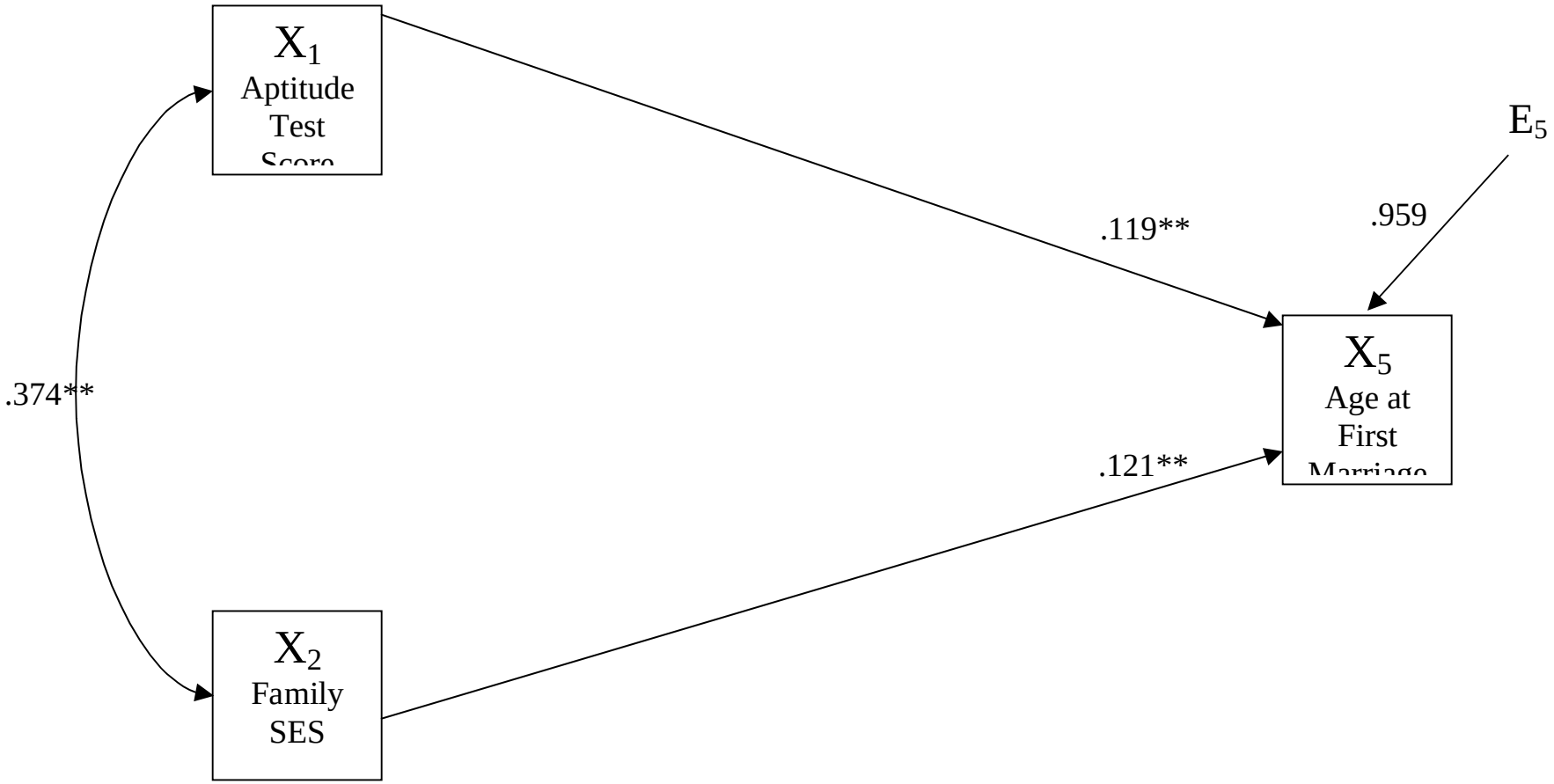

Figure 2a. Path diagram linking womens' ages at first marriage (X_5) to both their aptitude test scores (X_1) and their families' socioeconomic status (SES) (X_2) as seniors in high school. Higher scores on each of the variables represent more of the characteristic.

*p ≤ .10; **p ≤ .05 (two-tailed tests).

Note: Adapted from Bayer, Alan E. 1969. "Life Plans and Marriage Age: An Application of Path Analysis." *Journal of Marriage and the*

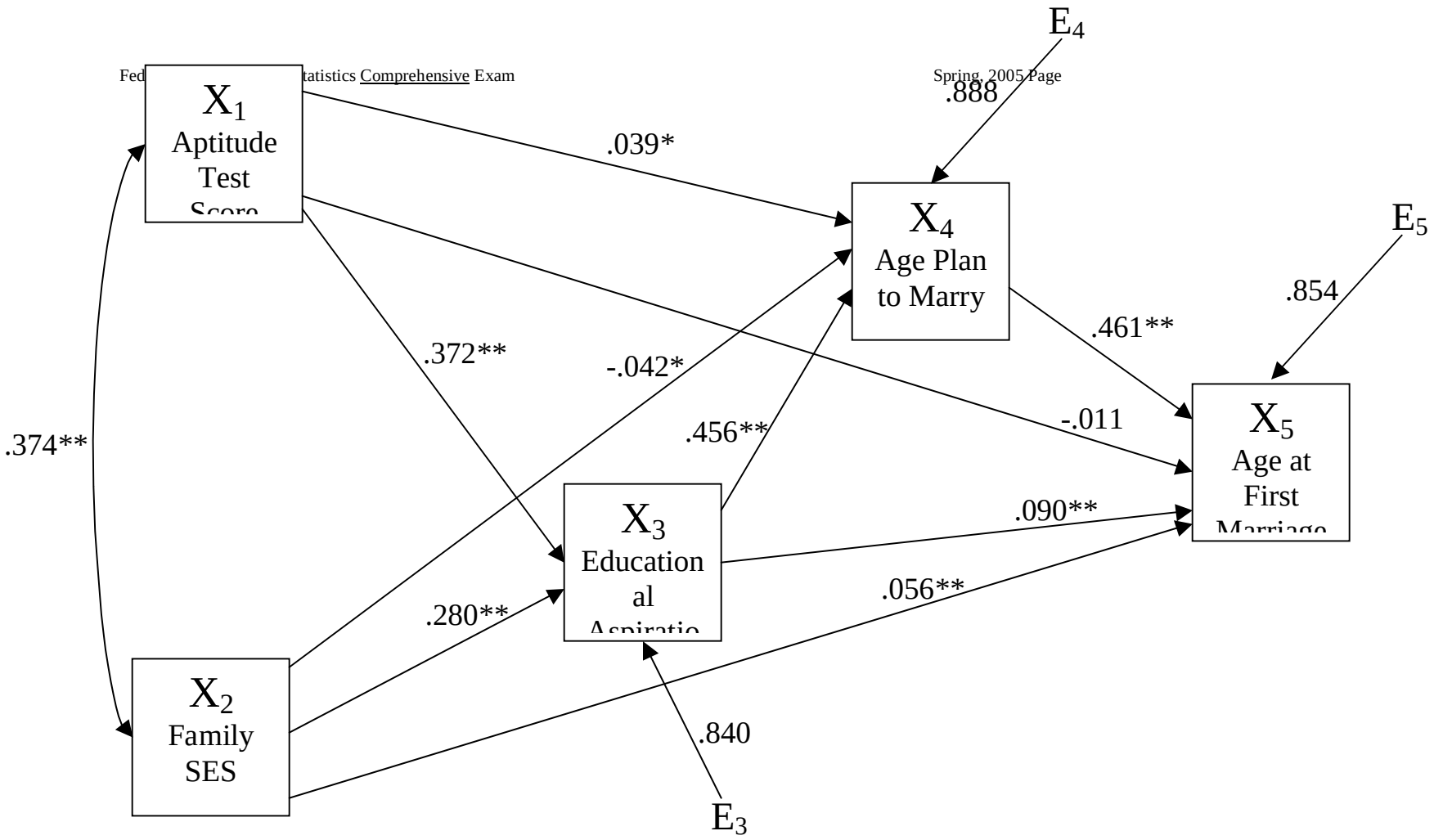

Figure 2b. Path diagram linking womens' ages at first marriage (X_5) to their aptitude test scores (X_1), their families' socioeconomic status (SES) (X_2), and their educational and marriage aspirations (X_3 and X_4, respectively) as seniors in high school. Higher scores on each of the variables represent more of the characteristic.

*p ≤ .10; **p ≤ .05 (two-tailed tests).

Note: Adapted from Bayer, Alan E. 1969. "Life Plans and Marriage Age: An Application of Path Analysis." *Journal of Marriage and the*

Table 3. Results of ordinary least squares regressions of level of involvement in local community social service and civil rights activities[a] on predominant race of membership[b] and other characteristics[c] for a sample of United States religious congregations (N=1,200).

Variable	Model 1 b	Model 1 βor b*	Model 2 b	Model 2 βor b*	Model 3 b	Model 3 βor b*
Mostly Black[b]			0.73**	0.09	0.67***	0.09
Size[c]					0.09***	0.12
Revenue (logged)[c]					0.27**	0.08
Located in Large City[c]					0.11	0.03
Located in South[c]					-0.08	-0.03
Founded Post-1960[c]					-0.08	-0.03
Mostly Black x Founded Post-1960[c]						
Constant			1.57***		0.06	
R^2			0.01		0.05	

*p < 0.10; **p < 0.05; ***p < 0.01 (two-tailed tests).

[a]Measured by a count of the congregation's participation in four local community social service and civil rights activities, ranging from 0=does not participate in any of the four activities to 4=participates in all four of the activities.

[b]Dummy variable, coded 1 for a congregation if at least 80 percent of its membership is Black and coded 0 for a congregation if at least 80 percent of its membership is White. More racially-mixed congregations, as well as predominantly Hispanic, Asian, or American Indian congregations, were not included in the study.

[c]These characteristics include two resource variables: size and revenue. Size is measured by a nine-level indicator of the number of families/households in the congregation, ranging from 1=less than 100 to 9=more than 3,000. Revenue is measured by dollars generated in the year prior to survey logged. Higher scores on each of these variables indicate more of the given resource. The next three measures in the table are dummy variables, each of which is coded 1 for a congregation with the indicated characteristic and coded 0 otherwise. The last measure is an interaction term, constructed by multiplying the "Mostly Black" dummy variable by the "Founded Post-1960" dummy variable.

Note: Adapted from Chaves, Mark and Lynn M. Higgins. 1992. "Comparing the Community Involvement of Black and White Congregations." *Journal for the Scientific Study of Religion* 31(4):425-440.