

This problem uses the data set `pset2.sav`, which is in SPSS format and consistent for use with AMOS. A version of the data in Stata format is also available on the course website and is necessary for this problem set. The variable list is attached.

The general idea for this problem set is to estimate the effects of socioeconomic status and social mobility on mental distress. The data set is a baseline assessment of residents of East Baltimore in 1982 (the sample was later followed-up and as been funded to be reassessed in 2004).

1. Begin with the measurement aspects of mental distress. For this exercise we will treat all distress variables as continuous. First, we will choose which items should be used to measure distress.

(A) (5 pts) Take a subset of about half of the 20 GHQ (q422-q441) items which you predict will split into two factors (i.e. you should choose approximately 10 items). Give names to the factors.

(B) (10 pts) Conduct a confirmatory factor analysis using AMOS by drawing a path analytic representation of the factor model that you hypothesized in selecting the GHQ items. Allow the two factors to be correlated.

(C) (10 pts) Conduct a separate CFA forcing the factors to be orthogonal by constraining the correlation between them to be zero.

(D) (20 pts) Check the estimates by conducting an exploratory factor analysis with Stata. Discuss your model and how well it does or does not agree with the exploratory factor analysis. Decide whether or not to correlate your latent variables in your final model and provide a rationale for your decision. If there is substantial disagreement between the results from your exploratory and confirmatory factor analyses, revise your original hypothesis and refit the models.

2. Defining socioeconomic status.

(A) (5 pts) Decide how you wish to represent SES in the model, and describe this in words. Be sure to include at least two indicators.

(B) (5 pts) Construct a measurement model for SES, as above.

3. Linking latent variables.

(A) (10 pts) Create a specification that links SES to distress. Include at least two factors of mental distress (these two factors are those from question 1).

(B) (5 pts) Explain in advance whether your model is identifiable or not.

(C) (10 pts) Estimate the model, then trim and adjust as appropriate.

(D) (5 pts) Print out the diagram with estimates.

(E) (10 pts) Discuss your findings. Include in your discussion your evaluation of the fit of the model.

4. Stratification by gender.

(A) (20 pts) Evaluate whether the measurement model in steps 1 and 2 are equivalent in men and women. Isolate the differences to a limited number of parameters, if possible, and statistically test for the effect of allowing them to vary between groups.

(B) (20 pts) Evaluate whether the structural equation model in step 3 is equivalent in men and women in a similar manner.

Code book for Problem Set #2

Variables beginning with the letter “q” are questions starting with: “Over the past few weeks....”

For q422 - q429:

- 1 = better than usual
- 2 = same as usual
- 3 = less than usual
- 4 = much less than usual

- q422: Have you been able to concentrate?
- q423: Have you been feeling reasonably happy, all things considered?
- q424: Have you been full of energy?
- q425: Have you been managing to keep yourself busy and occupied?
- q426: Have you been getting out of the house as much as usual?
- q427: Have you felt on the whole that you were doing things well?
- q428: Have you felt that you are playing a useful part in things?
- q429: Have you felt capable of making decisions about things?

For q430 - q441:

- 1 = not at all
- 2 = no more than usual
- 3 = more than usual
- 4 = much more

- q430: Have you felt constantly under strain?
- q431: Have you felt you couldn't overcome your difficulties?
- q432: Have you been able to enjoy your normal day-to-day activities as much as usual?
- q433: Have you been taking things hard?
- q434: Have you been able to face up to your problems?
- q435: Have you found everything getting too much for you?
- q436: Have you been feeling unhappy and depressed?
- q437: Have you been losing confidence in yourself?
- q438: Have you been thinking of yourself as a worthless person?
- q439: Have you felt that life is entirely hopeless?
- q440: Have you been losing sleep because of worry?
- q441: Have you been feeling nervous and strung-up all the time?

Fathed: Father's educational attainment, in years of schooling achieved

Fathocc: Father's occupational attainment, measured in a percentile prestige score of schooling

Grade: Respondent's educational attainment in years of schooling

Firstjob: Occupational attainment score of the child's first job

Jobnow: Child's eventual occupational attainment.

Income: Income of the household of the respondent, in 22 ordinal categories from less than \$1,000 to \$150,000 or more

Age: Age of respondent in years

Sex: 0 = male, 1 = female