Comparing Three Modern Approaches to Longitudinal Data Analysis:

An Examination of a Single Developmental Sample

Chair: Patrick J. Curran


Discussant: C. Hendricks Brown

All Supporting documentation and raw data available to download from:

http://www.unc.edu/~curran/
The Bridging of Quantitative Methodology and Applied Developmental Research:

An Introduction

by

Patrick J. Curran

University of North Carolina
Recent Statements about Developmental Psychopathology

· "To establish the development of pathology, an entire profile of developmental lines or pathways needs to be examined and compared to normal development for each line of functioning" (Loeber et al., 1993, p. 104).

· "We believe that changes in developmental trajectories are likely to be determined by multiple factors, often from multiple system areas, which probably will not combine as simple additive linear functions..." (Costello & Angold, 1993, p. 95).

· "...there is still little that we can say with confidence about...why antisocial trajectories develop, why they broaden and deepen with development in some children yet taper off in others, and why they are so difficult to deflect once stabilized (Richters & Cicchetti, 1993, p. 3).
Theoretical Model of Developmental Psychopathology

Testable Hypothesis about the Development of Antisocial Behavior

Statistical Model to Empirically Evaluate Research Hypothesis
Recent Developments in Longitudinal Models

- Latent Curve Analysis
- Hierarchical Linear Modeling
- Generalized Estimating Equation
- Mixed Modeling
- Random Coefficients Modeling
- Exploratory Data Analysis

- Difficult to select optimal approach
- Many common elements
- Many important differences
- Statistical model selection is not software selection
Low Parental Emotional and Cognitive Support

Lower Level of School Readiness

Higher Level of Academic Deficiencies

Rejection by Peers, Teachers & Parents

Alienation from Positive Socializing Agents

Continued Development of Antisocial Behavior
Subjects

- Subjects drawn from U.S. Department of Labor *Children of the National Longitudinal Survey of Youth* (NLSY)

- NLSY started in 1979; 12,686 subjects aged 14 to 21 years.

- In 1986, 6283 children of female NLSY respondents interviewed

- Child assessments administered every other year since 1986

- Children selected for current sample based on:
  (1) aged 6 to 8 years
  (2) complete data on all measures *at first wave of assessment*
  (3) only one biological child considered for each mother

- Based upon these criteria, sample of N=405 children selected
Sample Characteristics

- N=405 children reported complete data at Time 1
  - N=374 (92%) were interviewed at Time 2
  - N=297 (73%) were interviewed at Time 3
  - N=294 (72%) were interviewed at Time 4
  - N=221 (55%) were interviewed at all four time periods

- Of the total sample of N=405
  - 50% female
    - average child's age was 6.9 years (sd=.64)
    - average mother's age was 25.6 years (sd=1.66)

- Of the sub-sample of N=221 with complete data
  - 48% female
    - average child's age was 6.9 years (sd=.62)
    - average mother's age was 25.5 years (sd=1.87)
Measures

· Antisocial Behavior (Times 1, 2, 3 & 4):
  · Mother's report on 6-items from Behavior Problems Index with response options ranging from 0 to 2.
  · A single score was formed by summing all six items

· Reading Recognition (Times 1, 2, 3 & 4):
  · Child's performance on 84-item reading recognition subtest of the Peabody Individual Achievement Test
  · A single score was formed by summing all correct responses

· Emotional Support (Time 1):
  · Mother's and Interviewer's report on 13 dichotomous items from the Home Observation for Measurement of the Environment Short Form (HOMESF)
  · A single score was formed by summing all 13 items

· Cognitive Stimulation (Time 1):
  · Mother's report on 14 dichotomous items from HOMESF
  · A single score was formed by summing all 14 items

· Mother's Age & Child's Age:
  · Age in years at Time 1

· Child's Gender:
  · Child's gender, coded 0=female, 1=male
Suggested Areas of Substantive Research Questions

· *Individual variability in developmental trajectories of reading recognition and antisocial behavior*

· *Inter-relations between developmental trajectories of reading recognition and antisocial behavior*

· *Predictability of individual differences in developmental trajectories of reading recognition and antisocial behavior*

· *Possible implications for prevention & intervention programs targeted at antisocial behavior in children*

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