



# **What Aspects of Schooling are Important? School Effects on Tertiary Entrance Performance**

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# Overview of presentation

- Motivation
- Literature on School Differences & School Effects
- Data (Longitudinal based on Australian PISA 2006)
- Outcome measure
  - University entrance performance
- Student-level measures
- School-level measures
- Methods
- Results
- Conclusions

# Motivation

- Role of Schools
  - Most logical sites to enact policies to:
    - Improve outcomes
    - Reduce socioeconomic inequalities
- Arguments
  - Effects of Schools limited, school differences largely reflect student intake characteristics
  - Schools are important

Note: But variation within schools > variation between schools esp. net of intake characteristics

# School or Contextual Effects

- Compositional
  - Socioeconomic mix •
  - Academic mix •
  - Gender /ethnic mix
- Structural
  - School size
  - School resources •
  - Teacher student ratios
- Practices and Processes •
  - Eg. Academic Press
  - Teacher Morale
  - Teacher Efficacy

# Compositional Effects 1

## Socioeconomic Context

- School SES effects must be mediated by school practices and processes.
- Such processes involve achievement
- Effects of school SES ambiguous
  - Evidence inconsistent
  - Ecological fallacy
  - Due to unmeasured/unspecified individual-level effects
  - Especially presence of school level prior achievement or ability
  - Effect of school SES • the *less* reliable the measure
  - Depends heavily on model specification

# Compositional Effects 2

## Academic Context

- Usually measured by aggregated school-level prior achievement or ability
- Low achieving students performing better in high achieving schools and vice versa
- Process through
  - Teachers' standards on what students are capable of
  - Students' norm referencing
- No consensus on the existence of effects for academic context
  - Predominate over school-SES effects

# School Resources

- Hanushek vs. Hedges. Conclusion that the effects of resources are not strong
- Qualified teachers – some evidence here

# School Climate

- Cooperative school environment, 'communitarian' research. Phillips (1997) found no evidence in US schools.
- Teacher participation in decision making, teacher empowerment.
- Positive attitudes to school and teachers. Identified at student level and at school level but effects are moderate.
- Generally there are small differences between schools in students' attitudes to school, teachers and learning experiences. Usually smaller than between-differences in achievement
- Academic press has a stronger presence in the literature
- Disciplinary climate also has effects
- Teacher efficacy – claims of a strong effect

# Methodological Issues

- To identify school effects need:
  - Large sample
  - Observations from at least two time points
  - Reliable measures of SES and prior achievement
  - Proper control variables
- School effects may be misidentified due to:
  - Poor measures
  - Absence of appropriate student-level measures
  - Model specification, especially at school-level since school level variables tend to be intercorrelated

# Purpose of Study

- To identify school effects on students' tertiary entrance performance (ENTER)
  - Important for post-school pathways

## Study uses:

- Longitudinal data (large sample)
- Observations at 2 points in time
- Reliable measures of SES and achievement
- A range of student- & school-level influences

# Data

- Longitudinal Surveys of Australian Youth
- Original PISA 2003 sample
- 2003-2006 data waves
- Original Sample of 11,448
- Analysis on 7,772 respondents
- Data weighted for student & school non-response, differences between sample and population on certain variables PLUS attrition weights.

# Major measures

## *Outcome*

- *ENTER score, percentile ranking from 30 to 99.95*

## *Major Predictors*

- *Socioeconomic background* is the PISA ESC status composite of father's or mother's SEI, education, educational and cultural resources (and books in the home).
- *Prior-Achievement* measured by mean performance in PISA tests at age 15

# Other Student-Level Variables

- Gender
  - Male, Female\*
- Location
  - Metropolitan\*, Other Urban, Regional Remote
- Ethnicity (based on father's country of birth)
  - Australia\*, English-Speaking Countries, Non-English Spk
- Family type
  - Traditional\*, Single parent, Mixed, Other
- Family size
  - Number of siblings

\* Reference Category

# School-Level Variables

- Socioeconomic Context
- Academic Context
- School resources
- Communitarian ethos
- School climate
- Teacher Efficacy

# School-Level Variables

- Socioeconomic Context
  - School mean ESC Status\*
- Academic Context
  - School Mean PISA achievement\*
- School resources
  - material resources P
  - educational resources P
  - teacher shortage P

Also measured and modelled at student-level

P = From Principal Questionnaire

# School-Level Variables

- Communitarian ethos
  - Teacher morale and commitment P
  - Teacher behaviour to students P
  - Teacher participation in decision-making P
- School climate
  - Student attitudes to school \*
  - Student morale P
  - Student behaviour P
  - Academic press\*
  - Disciplinary climate\*
- Teacher Efficacy\*

\*Also measured and modelled at student-level

P = From Principal Questionnaire

# Methods

For analyses of ENTER score

- Sequential OLS regression models
  - Table 2 only student level variables
- Multilevel for analysis for school effects
  - Table 3 student + School Level variables
- For both groups of analyses
  - Standard errors adjusted for two-stage sample design, allow for clustering of students within schools.
  - R square or pseudo R square for measure of fit

# Student-Level Effects

## Table 2

- Some socio-demographic differences
  - Gender, locality, ethnicity, family type & family size
- Add ESC status (model 2) R sq increases to 12 %
- Adding PISA test score (model 3) increases R sq to 40 %
  - A 1 SD difference in ESCS = 6 ENTER points
  - A 1 SD difference in PISA score = 12 ENTER points
- Small effects for +ve *attitudes to school* and +ve *disciplinary climate*.
- These variables make no difference to R sq
- *Academic Press* has a small negative effect in school model

# School-Level Effects

## Table 3

- Intraclass correlation halves with addition of student-level factors
- Declines only slightly with the addition of school-level variables
- School Mean has an effect but disappears with mean school achievement
- Few School Effects:
  - Teacher shortage
  - Teacher participation in decision making ( $P < .10$ )
  - Academic Press
  - Teacher Efficacy
- NO effects at school-level for material resources, educational resources, teacher morale, teacher behaviour, +ve attitudes to school, student morale and student behaviour

# Summary

## School Level

- No effect for school SES
- Sizable effect for academic context
- No support for school resources are important except for teacher shortage in particular subject areas
- Academic press has an effect
- Teacher efficacy

## Aspects of Schooling as perceived by students

- Positive attitudes to school
- Hindered by poor disciplinary climate
- Counterintuitive effect for academic press at student level
- No effect for teacher efficacy at student level

# Conclusions 1

- Too much emphasis on school SES, not clear what it means and its effects are probably doubtful
- Better explanation for academic context
- Importance of academic context supported by school-level effects for academic press
- Teacher efficacy implies that teacher quality is of some importance
- Overall school effects are few

# Conclusions 2

- Schools generally are not decisive for student achievement
- Low achieving students not limited to particular schools with particular characteristics
- High and low performing students found throughout school system
- Policy focus should on individual students (poor achievers or disadvantaged students) not schools