Peer Effects

Concepts and Background

Peer Effects and Economics?

- **Primary/Secondary Education**
  - **“Streaming” vs. “Tracking”**
  - **Do better peers help weak students more than weaker peers hurt strong students?**
  - **Some early evidence said “yes”**
- **Higher Education**
  - **Peer effects and merit-based financial aid**
  - **Rothschild and White (1995): Students are input to education. Efficient to pay them in measure to their contribution.**

Students as Peers

- **Student peer interactions take place in many contexts**
  - **Classroom (classmates, lab partners)**
  - **Residential (roommates, dormmates)**
  - **Social (friends, romantic partners)**
  - **Activities (teammates, fellow musicians, club members)**
  - **Schoolmates (play role in setting standards, norms, expectations)**
- **Many student characteristics may affect peers**
  - **“Aptitude”**
  - **“Attitude”**

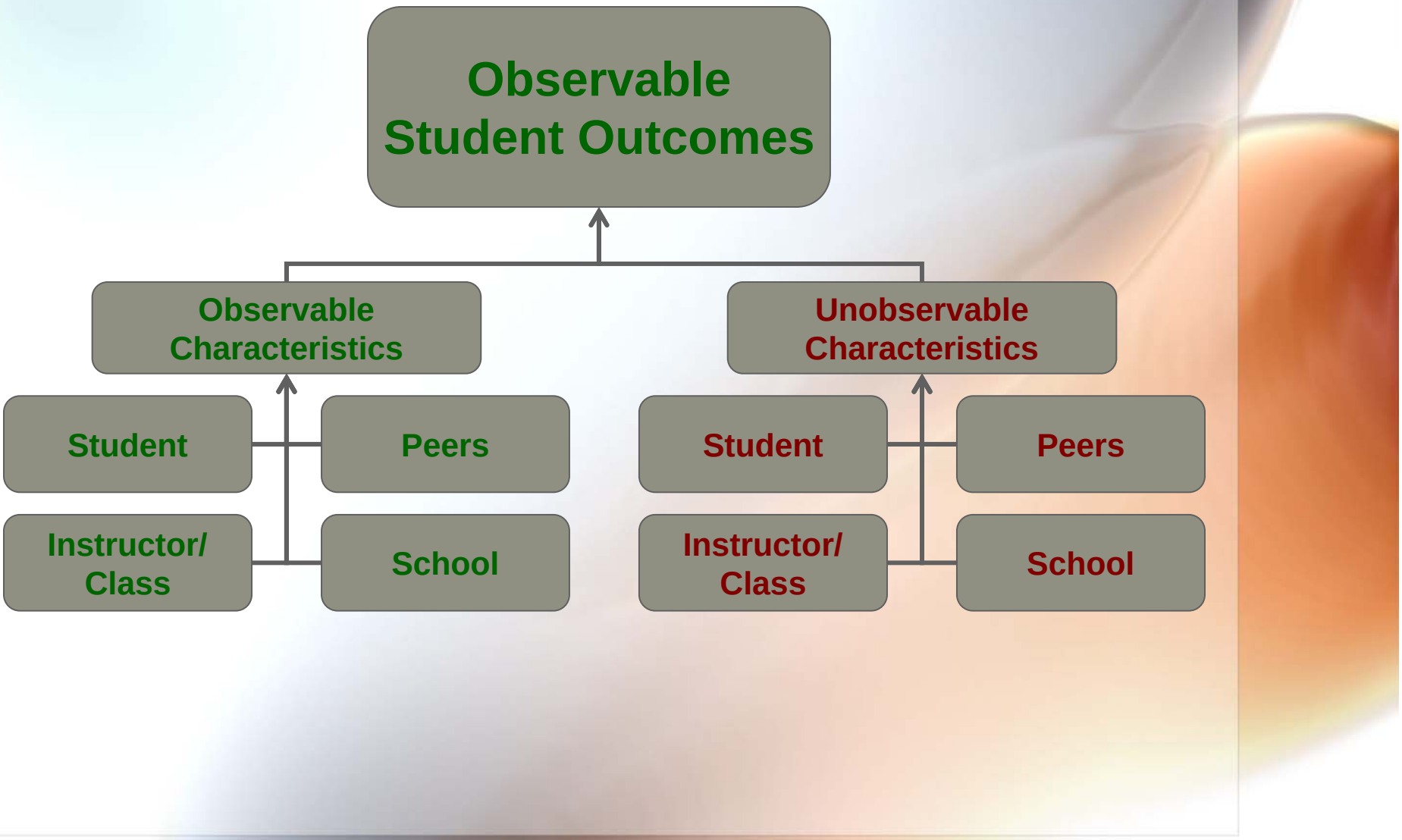
Dimensions of Peer Effect Studies

	Aptitude	Attitude
Classroom		
Residential		
Activities		
Social		
Schoolmates		

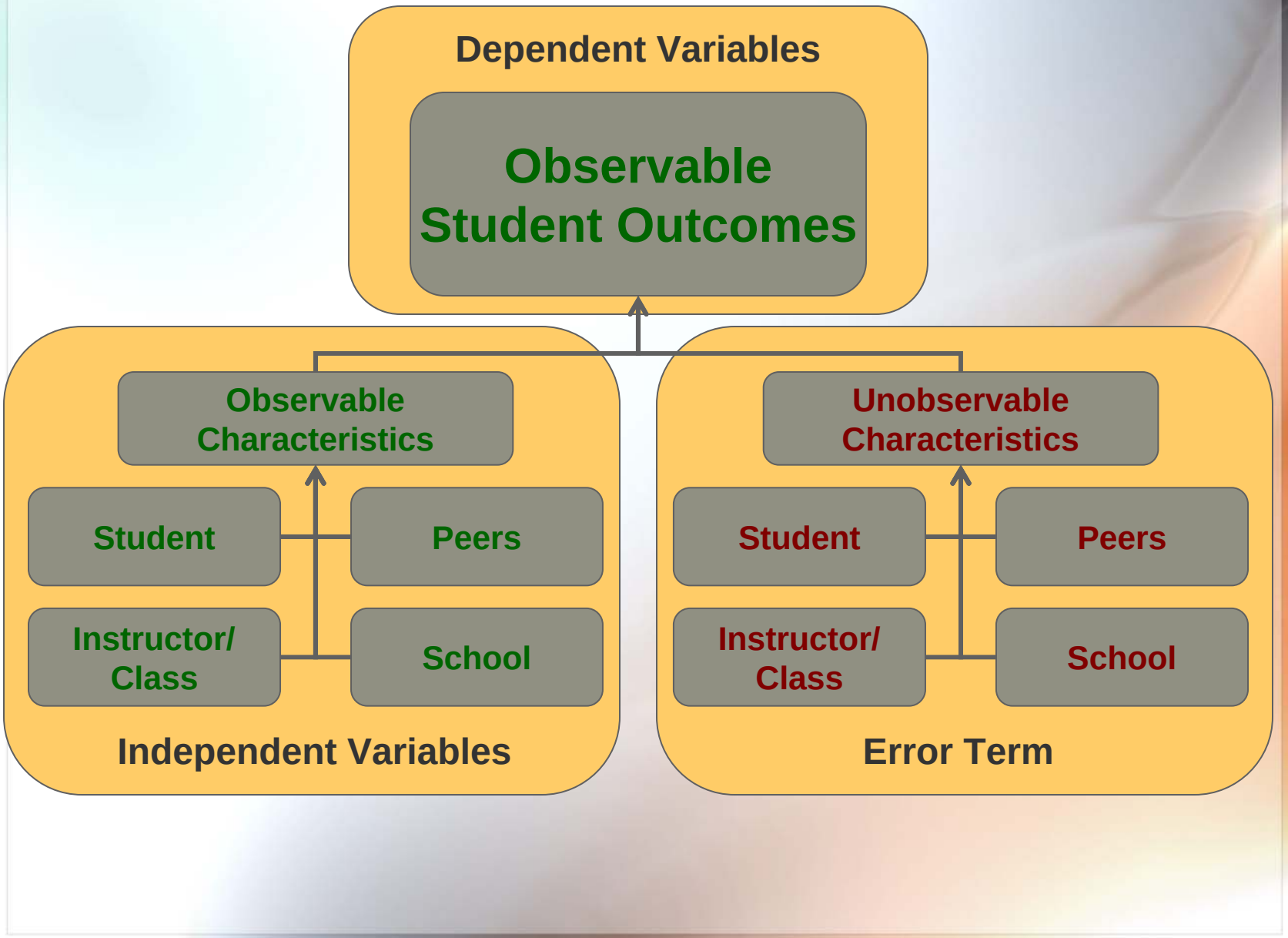
Dimensions of Peer Effect Studies

	Aptitude	Attitude
Classroom	**Our central focus**	Would need psychological data on students
Residential	Alternative focus	
Activities	Interesting possibility	
Social	Lack of data on social peers	
Schoolmates	Lack of comparable outcome measures	

Peer-Effects Studies



Peer-Effects Studies



The Reflection Problem

- **Students usually choose own peers either explicitly or implicitly (by making similar choices).**
  - **Friends**
  - **Roommates/Dormmates**
  - **Classmates**
  - **Fellow members of organizations**
- **Peers are often much like students in observable and unobservable characteristics.**

Statistical difficulties

- **Due to reflection problem**
  - **Non-identification of individual vs. peer effects if individuals and peers are alike**
  - **Endogeneity of peer variables if individuals choose peers**
- **Due to presence of student and peer in same sample**
  - **Correlation of error terms across peers**
- **Due to unobservable characteristics**
  - **Bias in estimated effects of observed "proxy" variables if correlated with unobserved characteristics**

Natural Experiments

Situations in which peers are chosen randomly or by observable factors

- **Random classroom assignment in primary schools**
- **Quasi-random assignment of first-year roommates (when relevant assignment variables can be observed)**
- **Random assignment of students into sections of gateway courses at Lewis & Clark, Reed, and Whitman**

Peer Effect Outcomes

- "Success"
  - Grades (current and subsequent classes)
  - Retention
  - Completion of degree
  - Future life attainment
- Direction
  - Choice of major
  - Choice of career
  - Choice of life-style, social group

Selected Results

- **Primary schools**
  - **The Coleman Report (1966)**
  - **Henderson, Mieszkowski, and Sauvageau (1976)**
  - **Many more recent studies**
- **Findings**
  - **Mean peer ability often has statistically significant positive effect on student achievement.**
  - **Effect is usually quite small and often insignificant.**
  - **Some studies find larger positive effect for weaker students, arguing in favor of “streaming” vs. “tracking” and school integration.**

Higher education studies

- Sacerdote (Dartmouth, 2001), Zimmerman (Williams, 2003), and Winston & Zimmerman (C&B schools, 2004)
  - All look at first-year roommate effects
  - Some evidence that high-ability roommate (SAT scores or admission rating) raises achievement
  - Effects are small and inconsistent across schools, levels of students
- No work on classroom peer effects

The Task at Hand

Teagle Foundation Project
2006-2008

Finding a Testable Hypothesis

- **Central question: How does the ability distribution of gateway classmates affect each student's learning?**
- **How to measure a student's learning in gateway course?**
  - **Grade in gateway course (subject to "curve" effects)**
  - **Grades on assignments/exams that are graded on common scale across sections (not usually available)**
  - **Success in other academic work (GPA, GPA in related courses, persistence to graduation, etc.)**

Quantitative Analysis

- **Advantages**
  - –Allows formal statistical testing
  - –Not reliant on anecdotal or impressionistic evidence
  - –Follows methodology of existing studies in literature
  - –Positive result would be very strong evidence for peer effects
- **Shortcomings**
  - –Weak measures of peer quality
  - –Can't measure obvious indicator of peer effects: learning in gateway course itself
  - –Gateway-course learning may not translate in obvious way into grades in other courses
  - –Misses subtleties of teaching/learning environment

Interview Study

- **Complement to quantitative analysis**
- **Allows us to learn about peer effects from those who observe them in the classroom**
- **May yield richer understanding of how peers interact positively and negatively**
- **May yield hypotheses that can be analyzed quantitatively with existing or newly collected data**

Project Staff

- **Reed, Lewis & Clark, Whitman**
  - **Economist**
    - **Central role in quantitative modeling**
    - **Interface with others on campus**
  - **Core-course coordinator**
    - **Core-course expertise**
    - **Central role in interviewing**
  - **Institutional research staff**
    - **Knowledge of available student data**
    - **Expertise in interview design and implementation**
  - **Student research assistants**

Possible Staff Additions

- **Educational psychologist**
  - **Help give us theoretical understanding of peer interaction in educational setting**
  - **Aid in designing interview protocol for instructors**
- **Economic/statistical consultant**
  - **External validation of methodology**
  - **Possible suggestions for improving quantitative analysis**
- **Others???**

Project Timeline

Year 1: 2006-07

- Organizational meeting
- Collect data for quantitative analysis
- Begin statistical work
- Begin planning for interviews
  - Plan interviewers and interviewees
  - Start developing interview protocol

Year 2: 2007-08

- Complete statistical analysis
- Finalize interview protocol and conduct interviews
- Formulate conclusions based on interviews and quantitative study
- Plan format of concluding conference

Project Timeline

Year 3: Summer/Fall 2008

- **Final conference**
  - **All staff and interviewees**
  - **Teagle representatives**
  - **Selected scholars**
  - **Representatives of other liberal-arts colleges**
- **Dissemination and discussion of results**

Dissemination

- Conference
- Project Web site
  - Should be up in July
  - Need pictures of staff
- Travel to conferences
  - Economics conferences
  - Education conferences
  - Core-course association
- Publication
  - Economics journals
  - Higher-education journals

How I’m Approaching this Study

- **Open mind; no preconceptions**
- **Not looking for any particular outcome**
- **We may find strong effects, weak effects, or no effects.**
- **Effects may be straightforward or subtle, easily measured or impossible to quantify, similar across schools or completely different.**
- **Let the results of our research guide our conclusions.**