Appalachian Aspirations

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Guiding Research Questions

• AMSP #3: What factors influence rural students to enter and remain in mathematics and science teaching or to select and remain in mathematics and science majors in higher education?

• How do beliefs about knowledge—personal epistemologies—affect educational decisions?

• How do differences within the region—political economies—affect this decision making process?
Background: What contributes to academic aspirations?

- School environment (McDonough, 1994, Plucker, 1996; Plucker & Quaglia, 1998; Wilson & Wilson, 1992),
- Peer culture (Gandara, Gutiérrez, and O'Hara, 2001),
- Family characteristics (Beyer, 1995; Hossler & Stage, 1992; Paulson, 1989)?
- Community variables (McDonough, 1994).
Historically a majority of Appalachian students have chosen not to continue their education after high school.

Appalachian educational achievement has lagged far behind national averages but has been improving in regional centers.

This reflects a “rich get richer” trend

Haaga, 2004
Background: Epistemological Beliefs

How do you know what you know?

- Four quasi-independent constructs (Marlene Schommer-Aikins, 2004): certainty, simplicity, source, justification.
- Constructed through interactions with others and life experiences—common sense (Kitchener, 2002).
- Epistemological beliefs have indirect effects on students' use of learning and self-regulatory strategies (Paulsen & Gentry, 1995; Pintrich & Schrauben, 1992).
- May be domain specific, particularly “certainty of knowledge” (Hofer, 2004; Paulsen & Feldman, 1999; Paulsen & Wells, 1998) which influences motivation to learn in some fields of study but not in others.
Characteristics of this Research

• Examines within region differences of rural Appalachia
• Explores cultural values for education and their relation to locale: a sense of place
• Includes personal epistemology as a measure of motivation to study particular subjects
• Uses qualitative methods for fine grained analysis.
Why Qualitative?

• We don’t know what we don’t know.
• Getting into the heads of young people is hard.
• Schools spend a lot of time reporting students’ progress, but rarely do we sit down with them and ask their opinions.
• Theory building rather than theory testing.
Methodology

- Community Study: informational interviews, participant observation, lots of driving around.
- Series of Interviews with 8-10 students planning on attending college from two schools. (N=18)
- Interviews with a “peer” and an adult “mentor” identified by most students (N=32)
- Alternative data sources: census, Department of Education, on-line alumni discussion forums, “Facebook”, etc.
Two Communities: One Coalfield

“Dogwood City”

“Valley View”
Differently located in a shared economic heritage

• "Dogwood City", the county seat, has with a population of 6,196 and a median household income of $22,026 USD.

• “Valley View” is located 40 minutes from Dogwood City with a combined population of 5,700 and a median household income of $23,125 USD.

• "Dogwood City" has a hospital, a college with a medical school, and is a banking center for the region.

• “Valley View” is a collection of road-side communities whose major employment source is coal mining and commuting to service positions including teaching and nursing.
Dogwood City
Two Schools: One Coalfield

Dogwood City High School
- 85% or more of Dogwood City High School graduates have gone to post-secondary schools over the last five years.
- Dogwood City is one of the five top performing high schools in the State with options for dual credit in math and chemistry.

Valley View High School
- 30% of Valley View graduates have attended post-secondary schools over the last five years, mostly two year schools.
- Valley View is the smallest high school in the County School District and Participates in federal GEAR UP programs.
- Only one AP course in statistics.
Selection of Participants

Dogwood City
80 Seniors/79 with college plans—recruiting matrix:
- STEM & Non-STEM
- Level of Parental Ed
- Gender
- Baccalaureate plans

10 Students consented

Valley View
45 Seniors/9 with Baccalaureate plans—recruited:
- All students with Baccalaureate plans
- One student with 2+2 plans

9 Students consented, one later declined to continue.
Data Collection

- Participant Observation in both communities and schools ongoing throughout project.
- Introductory interview with each student.
- “Going to College” interview with each student.
- Epistemological Belief interview (students completed instrument prior to interview).
- Interviews with identified peer and mentor.
- Facebook and email communications throughout first year.
- Follow up interviews following first year (ongoing).
Analytic Methods

- Iterative analysis at each stage
- Preliminary analysis of epistemological beliefs instrument and narrative interview relative to college going plans
- Open coding of all data including alternative sources.
- Closed coding and development of ideas relative to existing literature & data.
## Final Choice of College

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<th>College or University</th>
<th>Dogwood City</th>
<th>Valley View</th>
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Themes

• Epistemological Beliefs and Naiveté: “It just comes easy to me.”

• Freedom and Adulthood: “I just want to make money and be happy.”

• Local Knowledge and Credentialing: “She gets real good grades.”
Summary

• Epistemological Beliefs worth studying further...developmental as much as cultural.
• First Generation...parental education & community knowledge of college material important to consider.
• Social Reproduction...aspirations influence curricular offerings that influence aspirations...and yes, it’s the money.