Talking ‘Bout My Generation: Defining ‘First-Generation Students’ in Higher Education Research

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Introduction

• Many studies have focused on whether parental education affects the postsecondary decisions of their children

• General consensus: positive association between parental education and student demand for college

• Human capital explanation: Students with highly-educated parents may themselves have higher skills and academic ability

• Social/cultural capital explanation: Students with highly-educated parents are raised in environments that enable them to go to college
First-generation College Students

• Particular focus in theoretical and empirical students on “first-generation college students”

• Argument: First-generation students face more hurdles than do non-first generation students due to having parents with less education

• Usually operationalized by grouping students into two categories: first-gen vs. not first-gen

• Many studies have found first-gen students are less likely than others to go to college
AIR FORUM POLL
Defining ‘First-generation’ Students

• No consensus on how to define ‘first-generation college students’. Options might include:
  – 1 if neither parent graduated from any college
  – 1 if neither parent graduated from 4-year college
  – 1 if neither parent attended 4-year college
  – 1 if neither parent attended any college

• May also depend on how many parents meet the criteria (“neither” vs. “at least one”)

• Rely on student responses which may not be accurate

• Unknown if the way in which first-generation status is defined affects the results of the study
Example 1: Indiana 9th Grade Survey

9. Has one or both of your parents or guardians graduated from a four-year college or university?
   - Yes
   - No
   - Don’t know

- Little flexibility for researcher (first generation if replied “No”)
- Only first generation if neither parent satisfied criteria
- Applies to either parent or guardian
- Only counts 4-year institutions
- Only counts graduating from an institution
- Relies on student response (may not know parental education)
Example 2: NH Survey of Seniors

9. What is the highest level of education completed by each of your parents?

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Mother</th>
<th>Father</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eighth grade or less (1)</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Some high school (2)</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>High school diploma (3)</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Certificate from business or technical school of less than two years (4)</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Some college (5)</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Associate’s Degree—2 years (6)</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Bachelor’s Degree—4 years (7)</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Some graduate or professional school (8)</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Graduate or professional degree (9)</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

- Lots of options for researcher to define “first-generation”
- Does not include guardian
- Not clear what option is the best option to use
- Researchers may derive different definitions of first-generation status from the same data
Other Examples

• FAFSA: “Has your father or mother earned a 4-year bachelor’s degree?”

• NCES (1998): 1st gen is someone “whose parents never enrolled in postsecondary education."

• NCES (2000): 1st gen is someone “whose parents have attained no more than a high school education.”

• College Board (2007): 1st gen is someone “whose parents did not complete a 2-year degree.”

• TRIO: 1st gen is “an individual neither of whose natural or adoptive parents received a baccalaureate degree.”

• Definition may depend on the institution (4-year may define 1st gen relative to attending/graduating 4-year institution)
Goals of This Study

1. Use ELS:2002 to determine if various measures of first-generation status affect a student’s predisposition for college and whether the student enrolled in college

2. Compare estimates to determine if the effects of first-generation status vary by way in which the variable is defined

3. Focus on level of required parental education and number of parents meeting criteria
Motivation for Study

• Need to know how to operationalize measures for first-generation status in statistical models

• Federal, state, and institutional support programs often targeted towards helping 1st gen students
  – Need to know who should receive help, and which groups of students need the most help

• Provide some consistency in how we talk about “first-generation students”
Data

• ELS: nationally-representative longitudinal survey of 10th graders in 2002, followed through 2012

• Advantage: Surveyed parents and obtained more accurate information about parental education

• Final sample ~ 6,000 cases

• Data were weighted to reflect the stratified sampling design used by ELS
Dependent Variables

1. \( Y = 1 \) if 10\textsuperscript{th} grader planned on taking SAT or ACT during high school, else 0
2. \( Y = 1 \) if student applied to at least one postsecondary institution, else 0
3. \( Y = 1 \) if student enrolled in any postsecondary institution, else 0
Dimensions in Defining First-Generation Status

1. Level of postsecondary education (2yr vs. 4yr)

2. Educational attainment (attend vs. graduate)

3. Number of parents (one vs. two)

Results in eight possible combinations of variables
First-generation Status Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>How Many Parents?</th>
<th>Graduate 4-Year</th>
<th>Attend 4-Year</th>
<th>Graduate 2-Year</th>
<th>Attend 2-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>oneG4yr</td>
<td>At least one</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>oneA4yr</td>
<td>At least one</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>oneG2yr</td>
<td>At least one</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>oneA2yr</td>
<td>At least one</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>twoG4yr</td>
<td>Both</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>twoA4yr</td>
<td>Both</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>twoG2yr</td>
<td>Both</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>twoA2yr</td>
<td>Both</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Definitions are nested within each other

Other alternatives also exist (e.g., 1 if grad 2 yr or grad 4 yr, 1 if mother is a college grad)
Examples

1. Sheldon’s mother earned a doctorate degree in psychology, his father spent one year in community college:
   
   \[ \text{oneG4yr} = 1, \text{oneA4yr} = 1, \text{oneG2yr} = 1, \text{all other measures} = 0 \]

2. Danerys’s father and mother both earned 2-year degrees but neither attended a 4-year institution:
   
   \[ \text{twoG4yr} = 1, \text{twoAyr} = 1, \text{oneG4yr} = 1, \text{oneA4yr} = 1, \text{all other measures} = 0 \]
First-gen Students by Definition

Largest = oneG4yr (77% 1st gen): 1 if one or more parents did not earn 4-yr degree
Smallest = twoA2yr (20% 1st gen): 1 if both parents did not attend 2-yr or 4-yr college
Notes on 1\textsuperscript{st} Generation Variables

- Definition changes who gets counted as 1\textsuperscript{st} gen and who gets counted as non-first gen

- Effect of the variable is the difference in outcomes for these two groups

- As 1\textsuperscript{st} gen group becomes more selective, non-first gen group becomes less selective (and vice-versa)
<table>
<thead>
<tr>
<th>1st Gen</th>
<th>Y = Plan on Taking the SAT or ACT</th>
<th>Y = Apply to College</th>
<th>Y = Enroll in College</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st Gen</td>
<td>Non-1st Gen</td>
<td>Gap</td>
</tr>
<tr>
<td>oneG4yr</td>
<td>72.8%</td>
<td>90.0%</td>
<td>-17.2%</td>
</tr>
<tr>
<td>oneA4yr</td>
<td>71.7%</td>
<td>87.3%</td>
<td>-15.6%</td>
</tr>
<tr>
<td>oneG2yr</td>
<td>69.9%</td>
<td>85.9%</td>
<td>-16.0%</td>
</tr>
<tr>
<td>oneA4yr</td>
<td>68.0%</td>
<td>84.0%</td>
<td>-16.0%</td>
</tr>
<tr>
<td>twoG4yr</td>
<td>68.8%</td>
<td>85.6%</td>
<td>-16.8%</td>
</tr>
<tr>
<td>twoA4yr</td>
<td>66.4%</td>
<td>84.1%</td>
<td>-17.7%</td>
</tr>
<tr>
<td>twoG2yr</td>
<td>64.0%</td>
<td>82.3%</td>
<td>-18.3%</td>
</tr>
<tr>
<td>twoA2yr</td>
<td>60.1%</td>
<td>81.0%</td>
<td>-20.9%</td>
</tr>
</tbody>
</table>

- Large and significant gaps across all 1st generation definitions
- Percentages for both groups fall as 1st gen category becomes smaller
- Gaps tend to rise as 1st generation category becomes smaller
- Gaps tend to be larger for “both parents” vs. “at least one parent”
- Larger gaps for college enrollment vs. aspirations
Statistical Models

\[ Y = \alpha + D\beta + A\gamma + S\delta + \theta P + \varepsilon \]

where:

- \( Y \) = dependent variable (3 measures)
- \( D \) = demographic factors (gender, race)
- \( A \) = academic ability factors (GPA)
- \( S \) = family measures (income, status, siblings)
- \( P \) = first-generation status variable
Methodological Details

- Examine aspirations for college (plan on taking SAT or ACT, apply for college) and matriculation (enrolled in college)
- Used logistic regression analysis
  - Results reported as marginal effects
  - Weighted data to account for NCES sampling design
- Estimated models two ways:
  - One first generation variable at a time
  - Combinations of variables to isolate additive effect of # parents, attend vs. graduate, level of education
Selected Results – Non 1st Gen Variables

1. Females 7% more likely than males to take SAT, apply to college, and enroll in college
2. Asian students 10% more likely than white students to aspire and enroll in college
3. Black students 6% more likely than white students to aspire to college, 3% more likely to enroll in college
4. HS grades matter: each GPA point raises probability of aspiring or enrolling by 3%
5. Income has large positive association with college aspirations and enrollment
6. Family matters: living w/both parents increases probability of going to college by 10%
7. Number of siblings does not affect aspirations, but reduces probability of enrolling in college
Effect of First-gen on Plan on Taking SAT

Marginal Effect

Each measure was statistically significant at 1% level
Disadvantage ranges from 10% to 15%
Largest estimate for oneG4yr (broadest 1st gen definition)
Effect of First-gen on Applying to College

Marginal Effect

Each measure was statistically significant at 1% level
Disadvantage ranges from 10% to 16%
Largest estimate for oneG4yr (broadest 1st gen definition)
Effect of First-gen on Enrolling in College

Marginal Effect

Each measure was statistically significant at 1% level
Disadvantage ranges from 10% to 19% (higher than aspirations)
Largest estimate for oneG4yr (broadest 1st gen definition)
Does the Number of Parents Matter?

<table>
<thead>
<tr>
<th>Variable</th>
<th>Take SAT/ACT</th>
<th>Apply to College</th>
<th>Enroll in College</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grad 4yr: One +</td>
<td>-0.099***</td>
<td>-0.103***</td>
<td>-0.107***</td>
</tr>
<tr>
<td>Grad 4yr: Two</td>
<td>-0.080***</td>
<td>-0.088***</td>
<td>-0.115***</td>
</tr>
<tr>
<td>Attend 4yr: One +</td>
<td>-0.062**</td>
<td>-0.074***</td>
<td>-0.104***</td>
</tr>
<tr>
<td>Attend 4yr: Two</td>
<td>-0.087***</td>
<td>-0.091***</td>
<td>-0.088***</td>
</tr>
<tr>
<td>Grad 2yr: One +</td>
<td>-0.066***</td>
<td>-0.070***</td>
<td>-0.113***</td>
</tr>
<tr>
<td>Grad 2yr: Two</td>
<td>-0.075***</td>
<td>-0.085***</td>
<td>-0.067***</td>
</tr>
<tr>
<td>Attend 2yr: One +</td>
<td>-0.069***</td>
<td>-0.073***</td>
<td>-0.113***</td>
</tr>
<tr>
<td>Attend 2yr: Two</td>
<td>-0.064***</td>
<td>-0.066***</td>
<td>-0.044**</td>
</tr>
</tbody>
</table>

- Having one parent w/o college credential reduces odds of aspiration & enrollment
- Students with both parents w/o college credential face double the odds against college aspiration and enrollment
Summary

1. About half of the aspiration/enrollment gaps are explained by student and family attributes.
2. Regardless of how it is measured, 1st gen students have lower probability of aspirations and enrollment than do non-1st gen.
3. Magnitude of effects varies by number of parents used in definition (more parents => larger deficit).
4. Magnitude varies by level of education and degree (4yr graduate => larger deficit).
Discussion

• More narrow definition of 1\textsuperscript{st} gen status may miss some students who also face deficits & need help
  – Ex: restricting 1\textsuperscript{st} gen services to those whose parents did not ever attend college overlooks kids whose parents went to college but did not earn a degree

• Need to pay close attention to how we collect data on first-generation status
  – Wording of questions matters
  – Best to provide more flexibility (ask for more details whenever possible)
Next Steps

• Look at course-taking patterns and other college predisposition measures, and type of college attended

• Examine impact of first-generation variables on college completion
  – Does 1st generation status matter once a student gets to college?

• Examine other aspects of parental education
  – Does having a graduate degree affect aspirations?
  – Does the particular parent (mother vs. father) matter?
  – Does living situation + parental education matter?
Final Thoughts

• More work is needed on the reasons why parental education matters:
  – Is it an indicator of intelligence/ability?
  – Does it capture wealth/ability to pay?
  – Is it related to signals (intentional and unintentional) sent by parent to children about college aspirations?