

Academic Growth Patterns of First-Generation College Students in Grades 8 to 12 by Parental Education and Gender

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A recent study examined academic growth patterns for first-generation students by parent education levels, based on the ACT college and career readiness system of assessments from grades 8 to 12.¹ Across subject areas, the average ACT Explore[®], ACT Plan[®], and ACT[®] test scores increased with parent education level (Table 1).^{2,3,4} While many of the growth differences were not statistically significant, or statistically significant but small in magnitude, some differences were more striking (Figures 1-3).

- In general, growth in English and reading tended to be higher for females than males across all parental education levels. That is, females and males both had negative residual values at lower parental education levels but females still had higher growth values as compared to males (with the exception of grade 8 to grade 11/12 growth in reading for males).
- Among students whose parent had at least a bachelor's degree, both males and females experienced above-average growth in English and reading. The only exception was the growth results between grades 8 to 10 for male students whose parents had a bachelor's degree.
- In general, male students consistently experienced at or above-average expected growth in mathematics and science, while female students typically experienced less-than-expected growth in both subject areas. The only exception was in mathematics between grades 10 to 11/12 and 8 to 11/12, where female students whose parent had a graduate degree had above-average growth. ■

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Table 1. Summary Statistics of ACT Explore, ACT Plan, and ACT Scores⁵

Group	N	Test	Subject Area			
			English	Mathematics	Reading	Science
			Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Parental Education						
No College	56,162	ACT Explore	14.7 (1.6)	15.4 (1.4)	14.4 (1.3)	16.6 (1.1)
		ACT Plan	16.6 (1.7)	17.8 (1.9)	17.0 (1.8)	18.0 (1.6)
		ACT	19.3 (2.6)	19.5 (2.2)	19.8 (2.4)	19.8 (2.1)
Some College	76,265	ACT Explore	15.3 (1.5)	15.8 (1.4)	14.9 (1.3)	16.9 (1.1)
		ACT Plan	17.2 (1.6)	18.4 (1.9)	17.7 (1.7)	18.6 (1.5)
		ACT	20.3 (2.6)	20.3 (2.3)	20.7 (2.4)	20.6 (2.1)
Bachelor's Degree	65,493	ACT Explore	16.0 (1.5)	16.4 (1.3)	15.4 (1.3)	17.4 (1.1)
		ACT Plan	18.0 (1.6)	19.3 (2.0)	18.5 (1.7)	19.3 (1.5)
		ACT	21.6 (2.7)	21.5 (2.5)	21.9 (2.4)	21.7 (2.2)
Graduate Degree	45,954	ACT Explore	16.4 (1.5)	16.7 (1.3)	15.7 (1.3)	17.7 (1.1)
		ACT Plan	18.4 (1.6)	19.9 (2.0)	18.9 (1.7)	19.8 (1.6)
		ACT	22.5 (2.8)	22.3 (2.5)	22.7 (2.5)	22.3 (2.2)

Note: Of the total sample of 281,854 students, 37,980 students (13%) didn't report their parent's education level.

Notes

- 1 Bassiri, D (2016). *Academic Growth Patterns of First-Generation College Students in Grades 8 to 12* (ACT Research Report 2016-6). Iowa City, IA: ACT.
- 2 The average ACT Explore scores difference between first- and non-first-generation whose parents had some college experience, bachelor's degree, or graduate degree were 0.6, 1.3, and 1.7, respectively in English; 0.4, 1.0, and 1.3 in mathematics; 0.5, 1.0, and 1.3 in reading; and 0.3, 0.8, and 1.1 in science.
- 3 The average ACT Plan scores difference between first- and non-first-generation whose parents had some college experience,

- bachelor's degree, or graduate degree were 0.6, 1.4, and 1.8, respectively in English; 0.6, 1.5, and 2.1 in mathematics; 0.7, 1.5, and 1.9 in reading; and 0.6, 1.3, and 1.8 in science.
- 4 The average ACT scores difference between first- and non-first-generation whose parents had some college experience, bachelor's degree, or graduate degree were 1.0, 2.3, and 3.2, respectively in English; 0.8, 2.0, and 2.8 in mathematics; 0.9, 2.1, and 2.9 in reading; and 0.8, 1.9, and 2.5 in science.
- 5 Until 2015, the ACT college and career readiness system of assessments included ACT Explore (for 8th graders), ACT Plan (for 10th graders), and the ACT (for 11th and 12th graders). The three assessments shared

a common score scale, with different score ceilings. ACT Explore scores ranged from 1–25, ACT Plan scores ranged from 1–32, and ACT scores range from 1–36. ACT Explore and ACT Plan contained multiple-choice tests in English, mathematics, reading, and science, as the ACT does. For each assessment, the Composite score is calculated as the mean of the four subject area scores. All three assessments measure academic skills necessary for education and work after high school, respective to the curriculum of the grade level for which it is intended, and use a common score scale. The ACT Aspire[®] assessment system has replaced ACT Explore and ACT Plan.

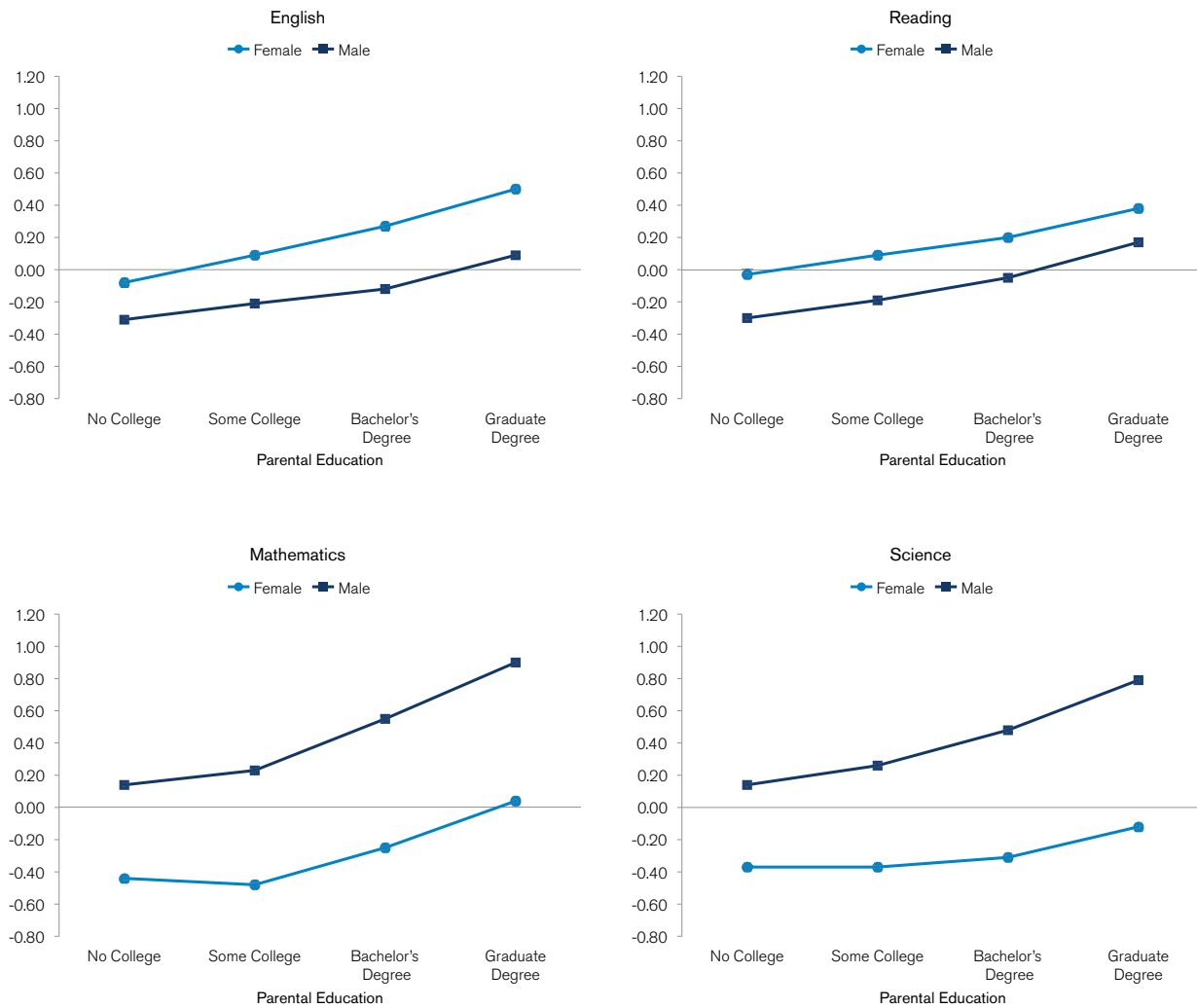


Figure 1. Mean residual scores from ACT Explore to ACT Plan

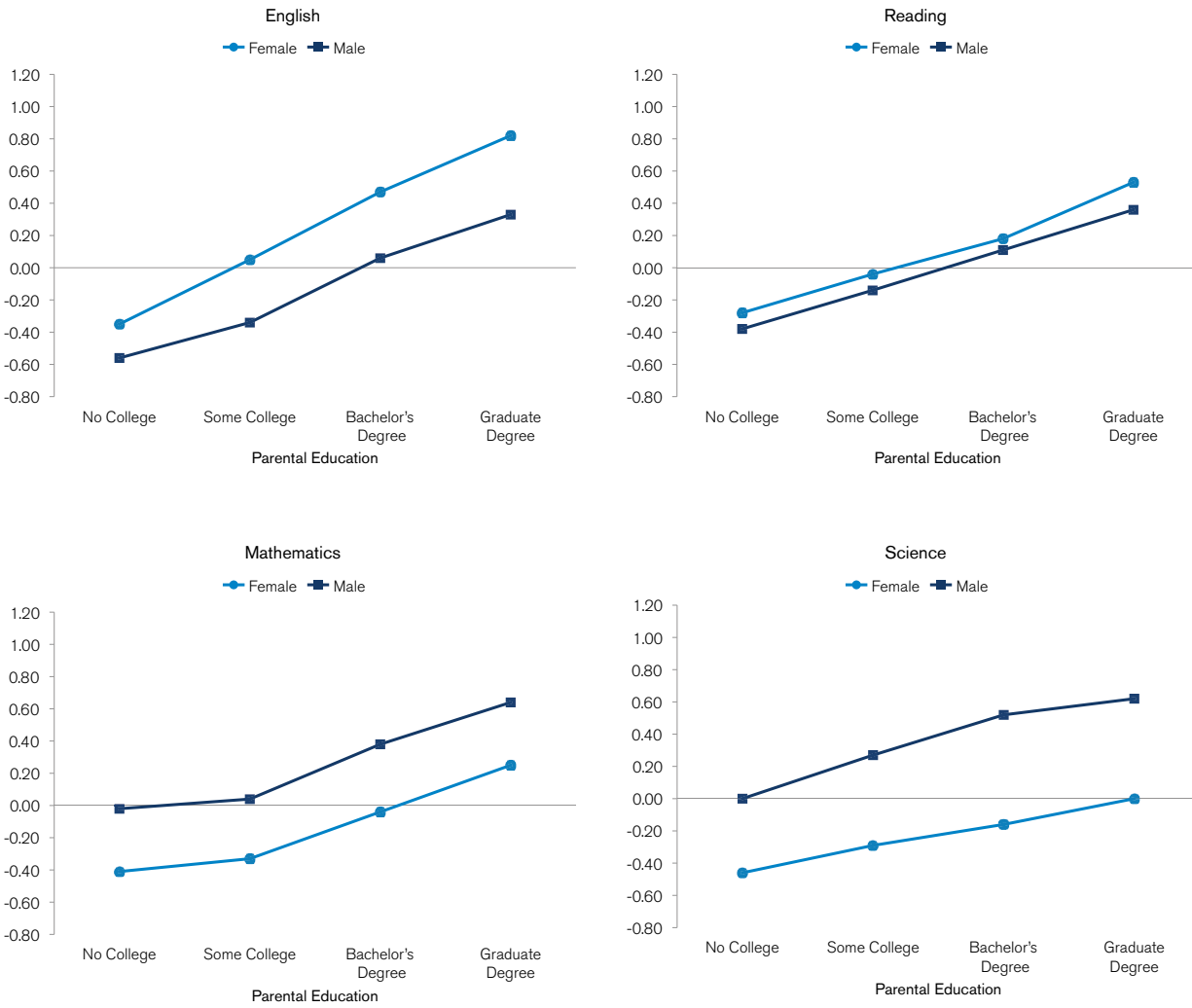


Figure 2. Mean residual scores from ACT Plan to the ACT

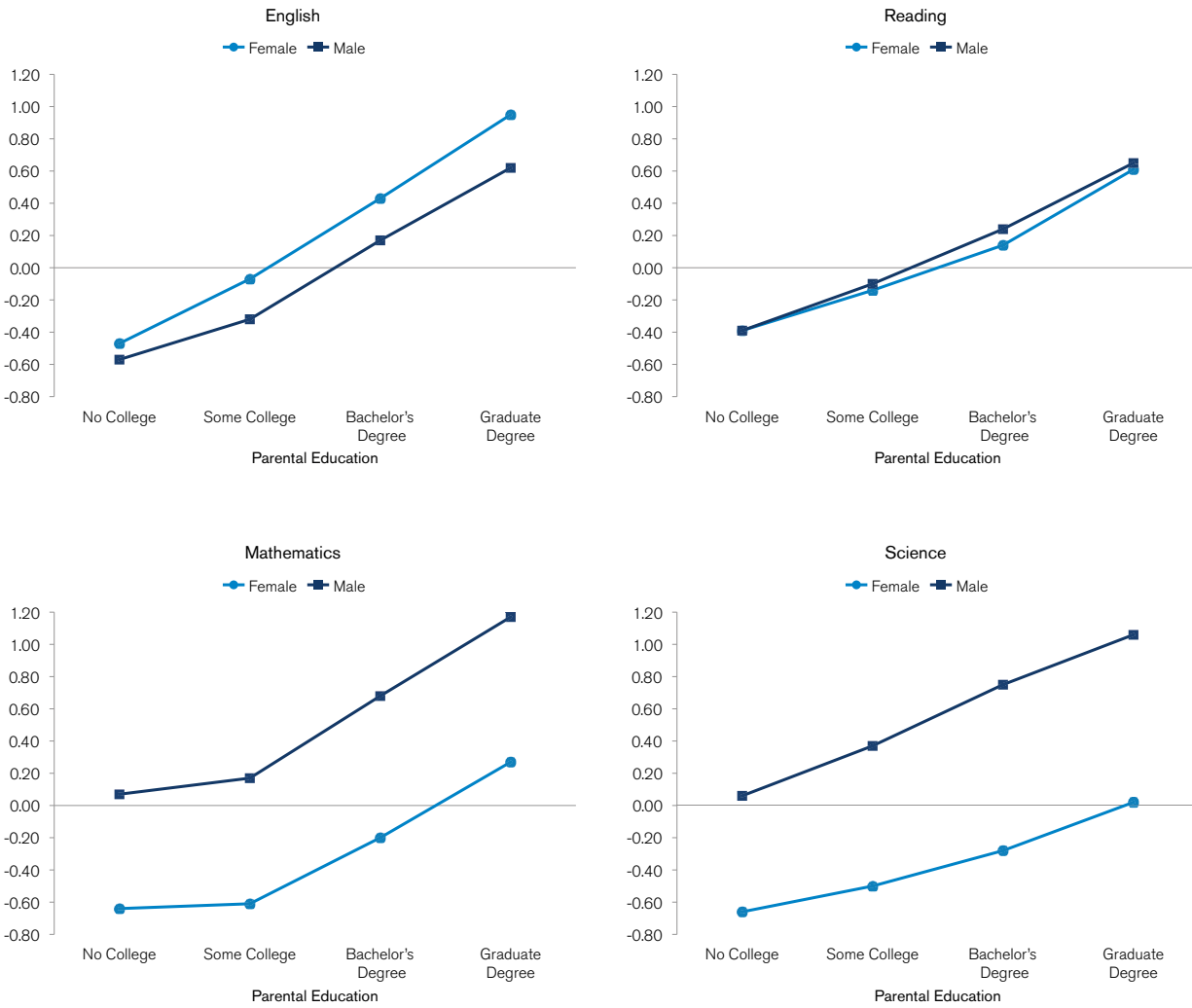


Figure 3. Mean residual scores from ACT Explore to the ACT