

Appendix for Online Publication

“Intergenerational and Sibling Spillovers in High School Majors”

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Appendix A: Inferring GPA Cutoffs

This appendix describes how we determine GPA cutoffs. While we observe the choice rankings for each individual and the admission decision, the GPA cutoff is not recorded in our dataset. Instead, we must infer the GPA cutoff from the data. Fortunately, the rules appear to have been strictly followed, so this is relatively straightforward.

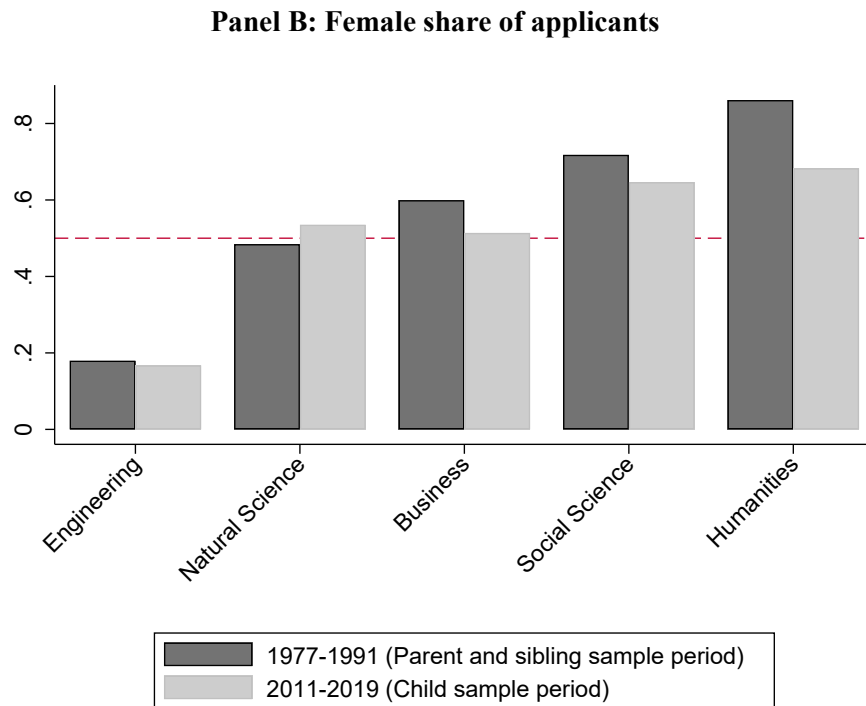
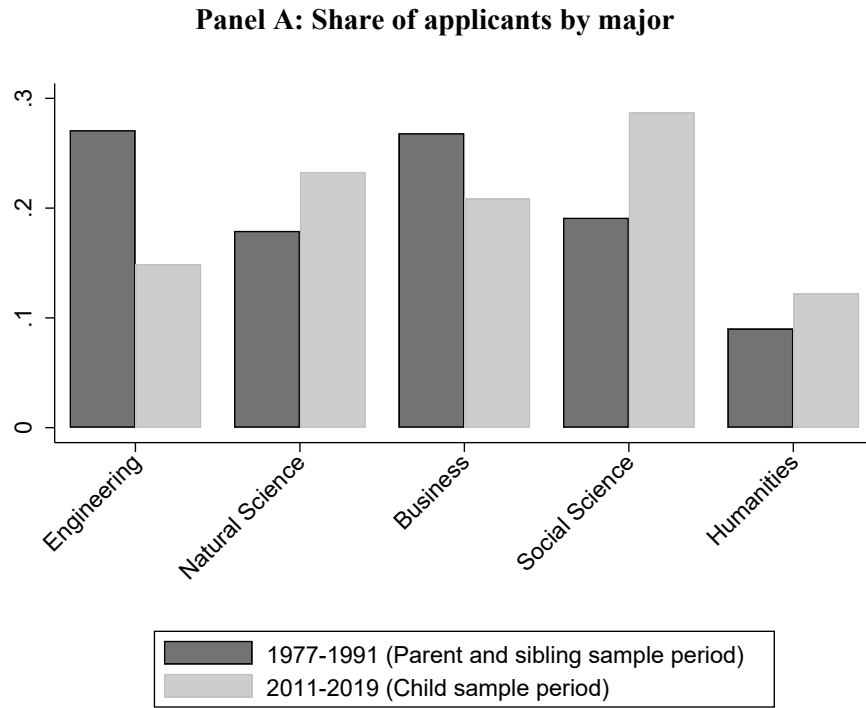
Each combination of year, school region, and major has the potential to be a competition for slots. We refer to these as “cells.” Our RD design only applies to oversubscribed majors (i.e., competitive cells). If there are more applicants than slots, the admission GPA cutoff is inferred from the data. We limit our sample to cells where there is evidence for a sharp discontinuity, that is, where everybody above the GPA cutoff is admitted to the major and everybody below the cutoff is not.³³

One complexity is that there can be a mix of accepted and non-accepted individuals at a cutoff GPA. For example, if the cutoff is 3.2 in a cell, there may only be slots for 3 out of the 5 applicants with a GPA of 3.2. Ties can happen since GPA is only recorded to the first decimal. In this case, it is important to know how people at the cutoff with the same GPA were admitted. We found some documentation which indicated admission was random, but also documentation which said that sometimes secondary criteria such as math grades were used to break ties. Since we do not know the criteria used to break ties, we discard the observations at the cutoff GPA. This should not create a problem, as we are still able to identify a sharp discontinuity above and below this mixed-cutoff GPA. Continuing with the example of a mixed cutoff at 3.2, we would drop all individuals with a GPA exactly equal to 3.2 in the cell, but define the cutoff as 3.2 for the remaining observations in the cell.

When there is not a mix of accepted and non-accepted individuals at a cutoff, we simply define the cutoff GPA as the average between the two adjacent GPAs. So for example, if everyone with a GPA of 3.3 is not admitted and everyone with a GPA of 3.4 is admitted, we define the GPA cutoff for the cell as 3.35. To enable pooling of data across regions and years, we normalize the cutoff GPA to 0 in our RD regressions.

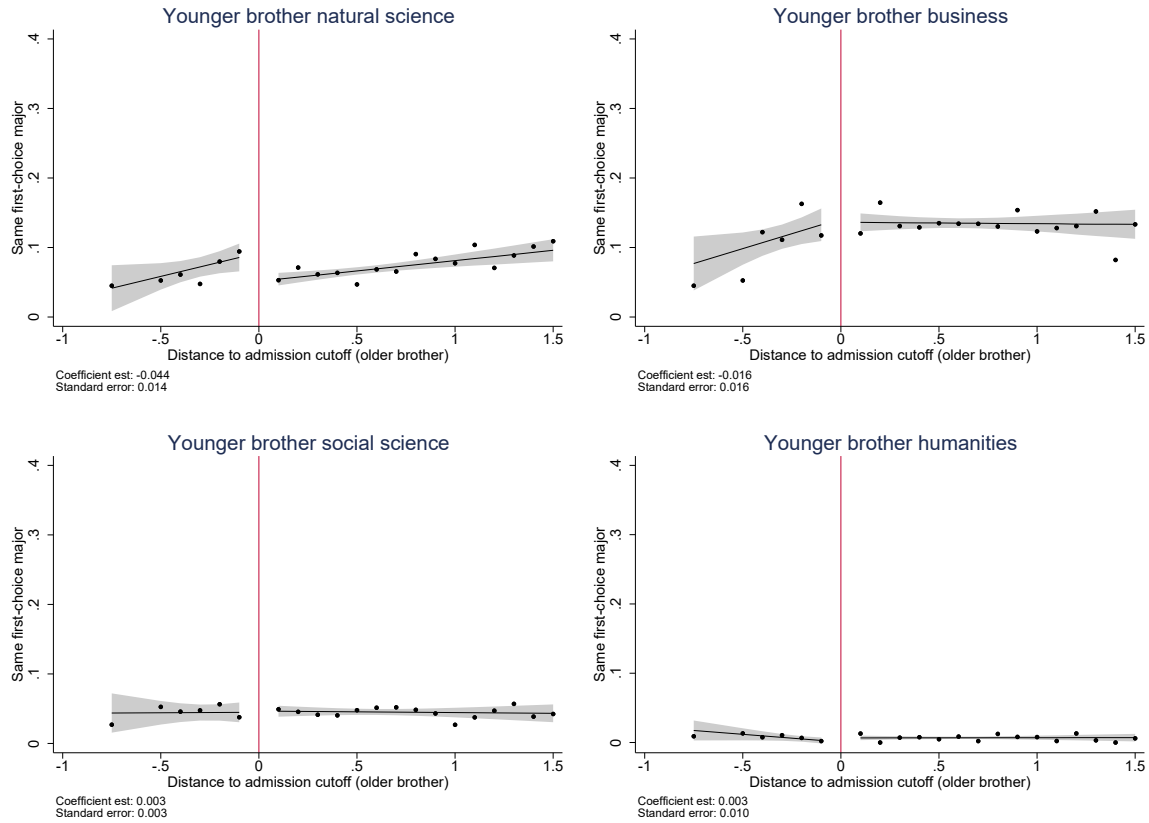
³³We allow for a small amount of noise in the data due to measurement error, which is likely during this time period since most variables were transcribed and entered by hand. For example, if one observation with a GPA of 3.8 is recorded as not admitted while all of the remaining observations higher than 3.3 are recorded as admitted, it is likely that either GPA or major was erroneously recorded. Our rule is to retain the cell if the “miscoded” observations represent less than ten percent of the observations at the given side of the cutoff. If the condition is met, we retain the cell, but drop the “miscoded” observations. This procedure drops just 0.3 percent of the data. We also require at least 25 applicants in a cell and at least 3 observations to the left of the cutoff.

Figure A1. Applications to academic high school majors, 1977-1991 and 2011-2019.



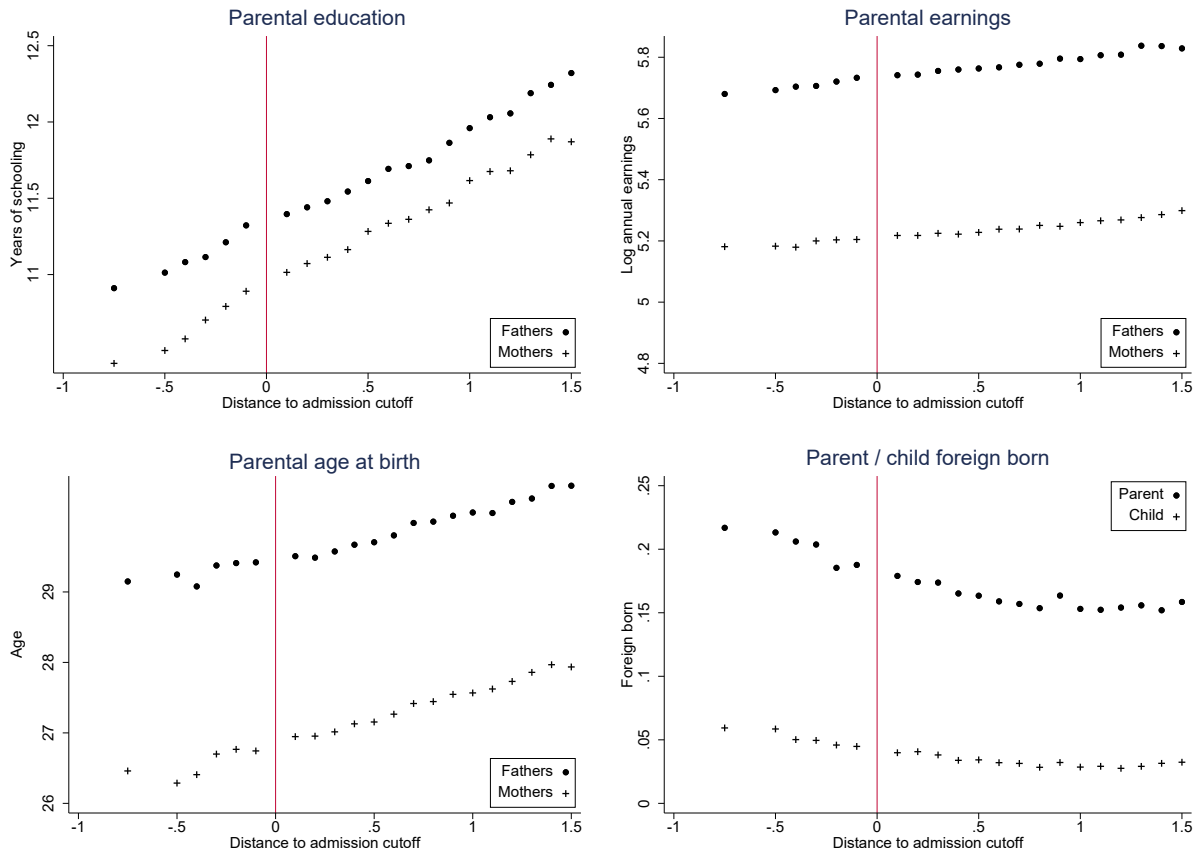
Notes: All applications to academic majors. For the years 1977-1991, N=607,767. For 2011-2019, N=558,442. The share in Humanities 2011-2019 also includes those in Arts. The dashed line marks a balanced gender composition.

Figure A2. Probability a younger brother chooses a non-Engineering major if their older brother chose Engineering.



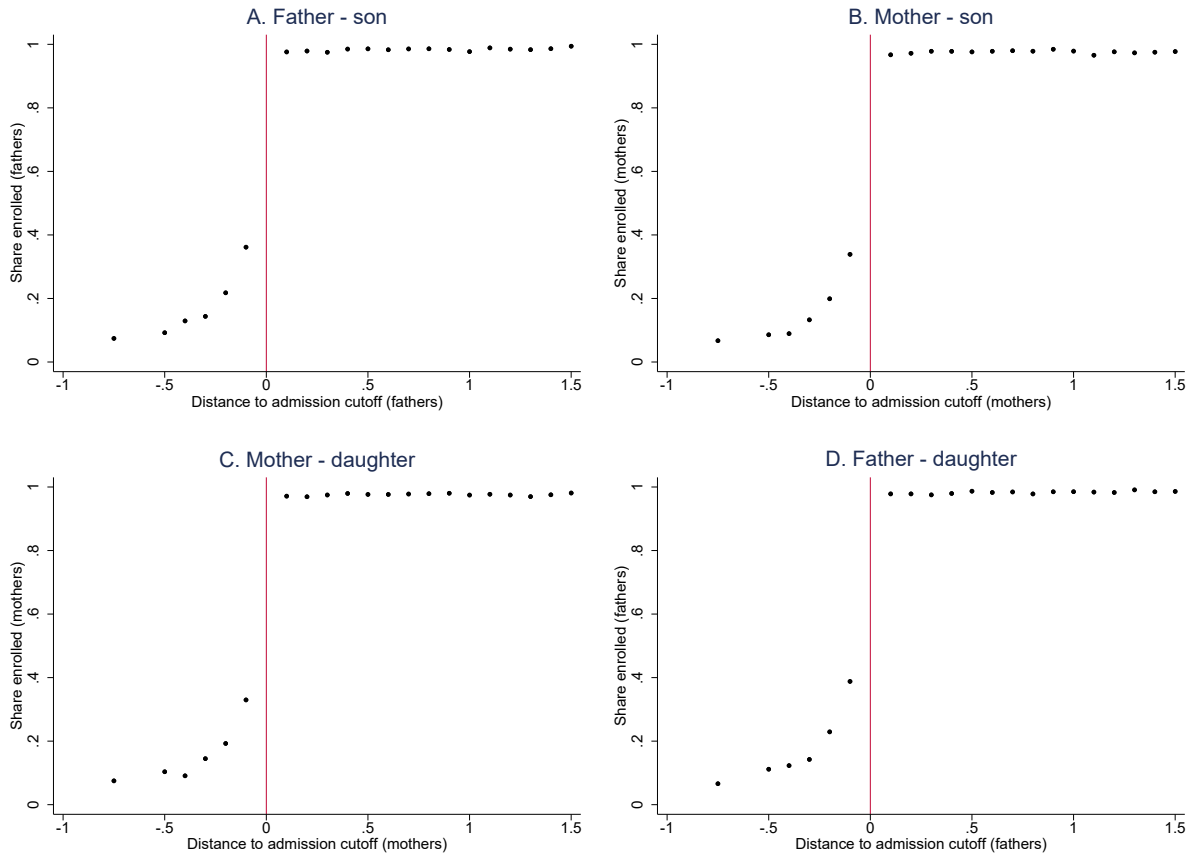
Notes: Sample limited to brother-brother pairs where the older brothers chose Engineering as their first choice. Each observation is the average share of younger brothers who choose a non-Engineering major as their first choice as a function of their older brother's GPA. Each dot is a 0.1 GPA bin, except for the leftmost dot which is a 0.5 bin due to sparsity. The vertical lines denote the admissions GPA cutoff for older brothers (normalized to 0). The estimated slopes are based on the common slope model, linear functions of GPA, a window of -1.0 to 1.5, and triangular weights. The grey shaded area denotes pointwise 95% confidence intervals. The number of observations is 11,706.

Figure A3. Smoothness of predetermined demographic variables at the cutoff.



Notes: Each marker is the average for the relevant outcome in a 0.1 GPA bin, except for the leftmost marker which is a 0.5 bin due to sparsity. The vertical lines denote the admissions GPA cutoff for individuals in oversubscribed programs between 1977-1991, (normalized to 0). Parent foreign born is a dummy for whether at least one parent is foreign born. Parents here refer to the parents of applicants during 1977-1991 (i.e., these are the grandparents of the children in our intergenerational sample).

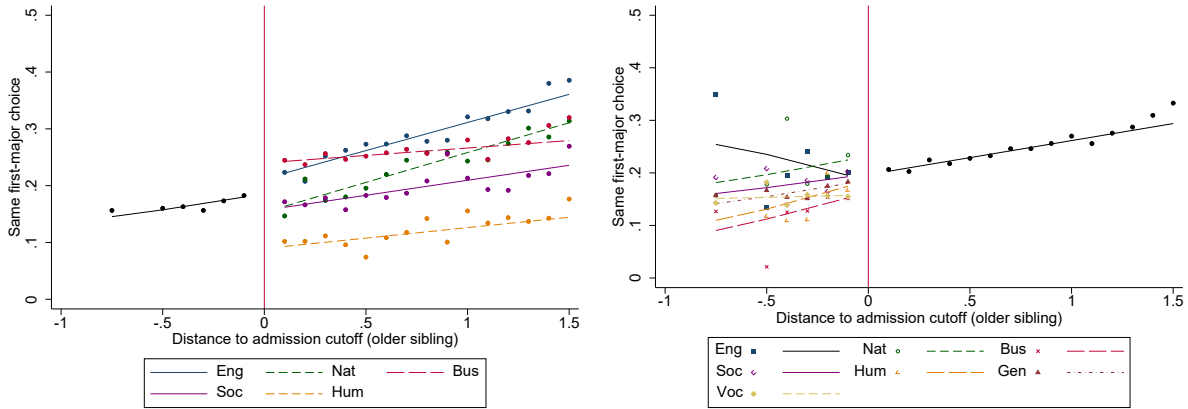
Figure A4. First stage: Share of parents enrolling in their first-choice major, by gender mix.



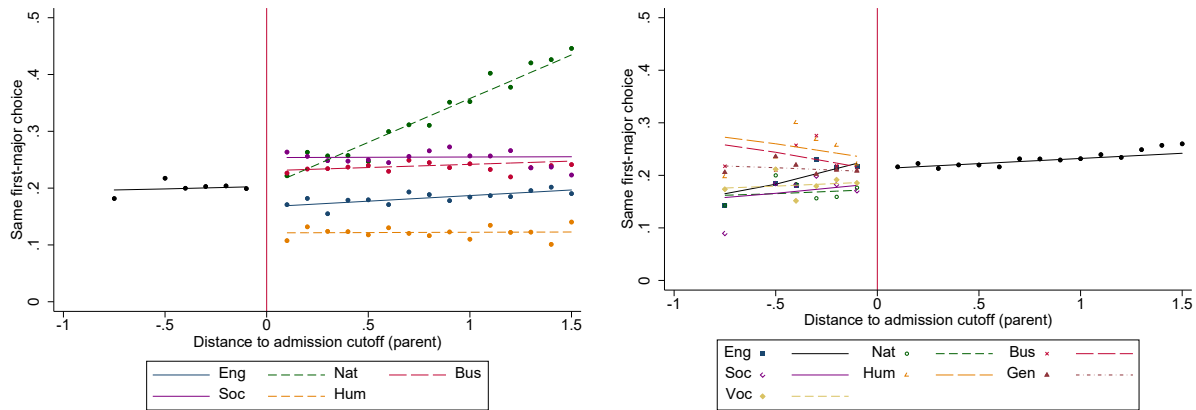
Notes: Each observation is the average share of parents who enroll in their first-best major choice as a function of their GPA. Each dot is a 0.1 GPA bin, except for the leftmost dot which is a 0.5 bin due to sparsity. The vertical lines denote the admissions GPA cutoff (normalized to 0). The number of observations in panel A is 37,390 (father-son sample), in panel B 49,057 (mother-son sample), in panel C 46,791 (mother-daughter sample), and in panel D 35,695 (father-daughter sample).

Figure A5. Comparison of the common slope versus baseline models.

Panel A: Siblings

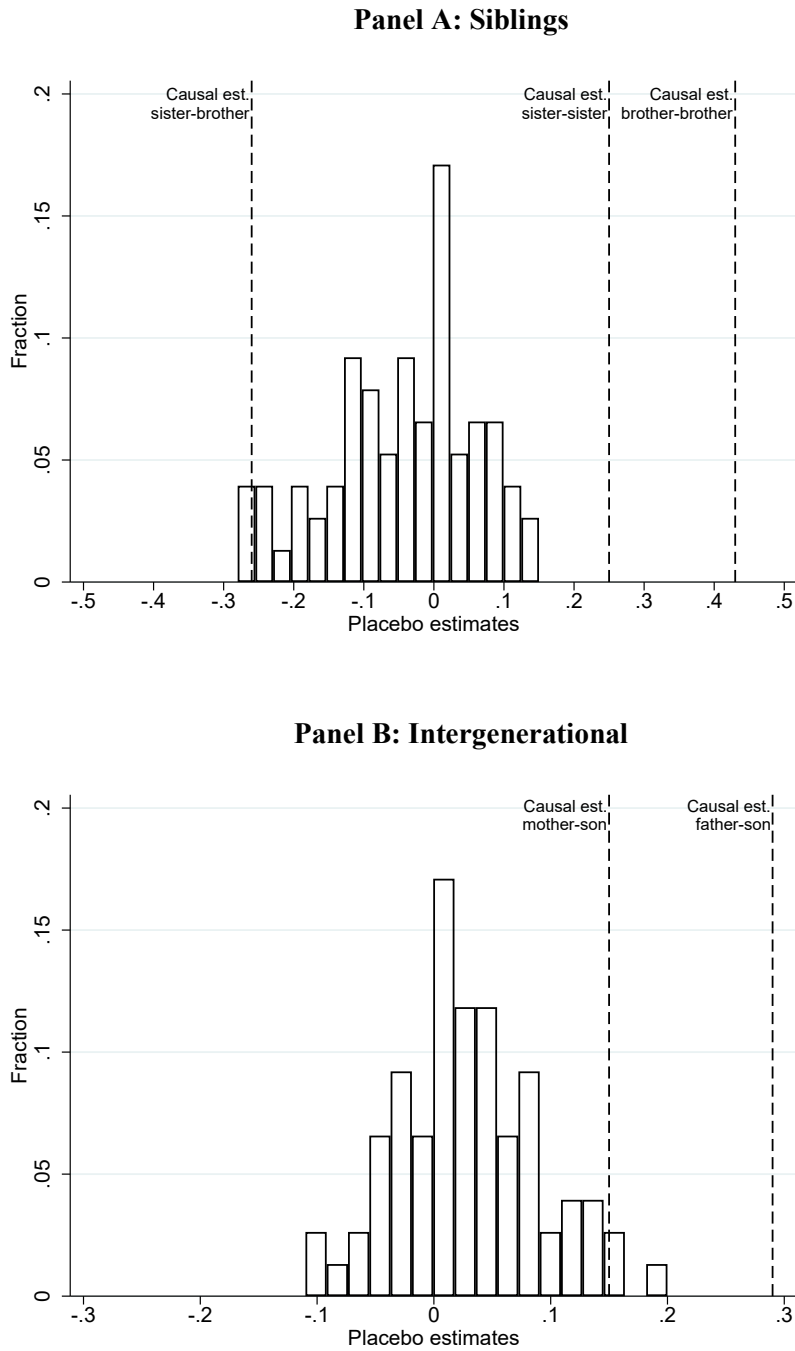


Panel B: Intergenerational



Notes: The first column plots averages of the binned outcome variable for younger siblings and children against the running variable, allowing for separate slopes for each of the five first-best choices to the right of the cutoff and a common slope to the left of the cutoff. The second column shows similar plots, but allowing separate slopes for each of the seven second-best choices to the left of the cutoff and a common slope to the right of the cutoff. The trend lines are RD estimates using the underlying data, no covariates, and triangular weights. Note that these graphs are for illustrative purposes; we never mix the common slope and multiple slope models in estimation.

Figure A6. Randomization inference.



Notes: Distribution of placebo RD estimates using “fake” cutoffs. To avoid any jump at the true cutoff affecting these placebo estimates, the placebo windows all start after the true GPA cutoff. We impose a minimum of plus or minus three-tenths of a GPA point on each side of the fake cutoff. Dashed vertical lines denote the statistically significant estimates reported in column 1 of Tables 5 and 6.

Table A1. Course requirements for each of the five academic programs.

| Classes | Weekly hours of course instruction | | | | |
|----------------------|------------------------------------|-------------------|-----------|----------------|------------|
| | Engineering | Natural Science | Business | Social Science | Humanities |
| Math | 15 ^{adv} | 15 ^{adv} | 11 | 11 | 5 |
| Natural science | 17 | 22.5 | 3 | 9 | 7 |
| Social science | 11 | 16 | 16.5 | 25.5 | 25.5 |
| Swedish | 8 | 9 | 9 | 10 | 10 |
| English | 6 | 7 | 7 | 8 | 9 |
| Additional languages | 6 | 11 | 14 | 17 | 24 |
| Art and music | - | 4 | - | 4 | 4 |
| Physical education | 7 | 8 | 7 | 8 | 8 |
| Technology related | 22.5 | - | - | - | - |
| Business related | - | - | 25 | - | - |
| Other | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| Total hours | 96 | 96 | 96 | 96 | 96 |

Notes: The total amount of 96 hours consists of 34, 32, and 30 hours per week during the first, second, and third years, respectively. Engineering has an optional fourth year of 35 hours per week of mostly technology related courses. The superscript “adv” indicates that advanced math is required for Engineering and Natural Science. Business allows the possibility to exchange 3 hours of math with business-related courses. Natural science classes include physics, chemistry, and biology, while Social science classes include history, religion, philosophy, psychology, and social studies. These curricula are mandated by law and laid out in Lgy70 (Läroplan för gymnasieskolan); they remained unchanged during our sample period (1977-1991) but were modified in 1994.

Table A2. Summary statistics for all applicants with a first-choice academic program 1977-1991.

| | Oversubscribed programs | Non-impacted programs |
|-------------------------|-------------------------|-----------------------|
| Father age | 45.77 | 46.02 |
| Mother age | 43.21 | 43.34 |
| Father schooling | 11.63 | 11.32 |
| Mother schooling | 11.25 | 10.83 |
| Father earnings | 5.77 | 5.75 |
| Mother earnings | 5.23 | 5.20 |
| Foreign born parent | 0.17 | 0.17 |
| Foreign born | 0.04 | 0.04 |
| Female | 0.52 | 0.51 |
| Age in year of applying | 16.00 | 15.99 |
| GPA | 3.86 | 3.94 |
| Observations | 263,878 | 221,397 |

Notes: Parent and child characteristics are measured in the year of application (the child’s 16th year since birth). Years of schooling inferred from highest education level. Parents here refer to the parents of applicants during 1977-1991 (i.e., these are the grandparents of the children in our intergenerational sample). Parent earnings are measured between the ages of 37-39 and are converted to year 2016 US dollars using an exchange rate of 8.5 SEK to 1 USD.

Table A3. Comparison of major cutoffs across years within the same school region.

| Major combinations | Fraction of years with a higher cutoff | | |
|------------------------------------|---|--------------|------------------|
| | 1st major | 2nd major | No difference |
| Engineering vs. Natural Science | .37 | .25 | .38 |
| Engineering vs. Business | .28 | .42 | .30 |
| Engineering vs. Social Science | .21 | .53 | .27 |
| Engineering vs. Humanities | .31 | .38 | .31 |
| Natural Science vs. Business | .24 | .46 | .30 |
| Natural Science vs. Social Science | .18 | .51 | .31 |
| Natural Science vs. Humanities | .24 | .38 | .39 |
| Business vs. Social Science | .24 | .48 | .28 |
| Business vs. Humanities | .37 | .32 | .31 |
| Social Science vs. Humanities | .47 | .21 | .32 |

Notes: The table reports the average fraction of years with a higher cutoff for one major compared to another within the same school region. If both majors have a cutoff in a given year in the same school region, we compare the two to determine which is higher. If one major has a cutoff, but the other does not, we record the major with the cutoff as having a higher cutoff. "No difference" can either reflect that both majors have cutoffs which are equal or that neither major was oversubscribed.

Table A4. Correlational estimates by gender mix.

| | Correlational estimates | IV-enrolled | Difference |
|-----------------------------------|----------------------------|-------------------|-------------------|
| Panel A: Siblings | | | |
| Older brother – younger brother | .182*** (.004) | .063*** (.015) | .119*** (.014) |
| Older sister – younger brother | .056*** (.003) | -.029** (.014) | .085*** (.013) |
| Older sister – younger sister | .108*** (.004) | .039** (.016) | .069*** (.016) |
| Older brother – younger sister | .098*** (.003) | .017 (.014) | .081*** (.014) |
| N | 82,714 | 88,174 | |
| Panel B: Intergenerational | | | |
| Father – son | .111*** (.003) | .043*** (.012) | .068*** (.021) |
| Mother – son | .045*** (.002) | .024** (.011) | .021** (.011) |
| Mother – daughter | .054*** (.003) | .010 (.012) | .044*** (.012) |
| Father – daughter | .061*** (.003) | .014 (.012) | .047*** (.011) |
| N | 157,760 | 168,933 | |

Notes: Correlational estimates are based on the fraction of younger siblings/children who list a major as their first choice if it is the one their older sibling/parent enrolled in minus the fraction who choose it when their older sibling/parent did not enroll in it. This is done for each of the 5 majors and averaged across majors (with weights equal to the number of older siblings/parents choosing each of the majors). Bootstrap standard errors based on 1,000 replications. For IV-enrolled estimates, see notes to Table 5 and 6.

** p<0.10, ** p<0.05, *** p<0.01*

Table A5. Sibling estimates by parent’s educational background.

| | At least one parent had an academic HS major | | Neither parent had an academic HS major | |
|--------------------------------------|---|------------------|--|-------------------|
| | Reduced form | IV-enrolled | Reduced form | IV-enrolled |
| (1) Impact on younger brother | | | | |
| Older brother – younger brother | .032** (.014) | .048** (.022) | .053*** (.014) | .075*** (.020) |
| Older sister – younger brother | -.028** (.014) | -.034 (.021) | -.024* (.012) | -.027 (.018) |
| (2) Impact on younger sister | | | | |
| Older sister – younger sister | .031* (.017) | .045* (.024) | .020 (.015) | .031 (.023) |
| Older brother – younger sister | .013 (.013) | .023 (.021) | .003 (.013) | .009 (.020) |
| N | 51,957 | 51,957 | 36,106 | 36,106 |

Notes: See notes to Table 5. The sample is reduced slightly as 111 parents have missing values for education. Standard errors in parentheses, clustered at the family level.

** $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*

Table A6. Intergenerational estimates by birth order.

| | Firstborn child | | | Not firstborn child | | |
|--------------------------------|-------------------|-------------------|-------------------|---------------------|-----------------|----------------|
| | Reduced form | IV-enrolled | IV-completed | Reduced form | IV-enrolled | IV-completed |
| (1) Impact on sons | | | | | | |
| Father – son | .044*** (.011) | .068*** (.017) | .085*** (.021) | .013 (.011) | .019 (.017) | .025 (.022) |
| Mother – son | .016 (.010) | .029* (.016) | .037* (.019) | .012 (.010) | .018 (.015) | .022 (.019) |
| (2) Impact on daughters | | | | | | |
| Mother – daughter | .010 (.011) | .020 (.017) | .028 (.021) | -.002 (.011) | -.001 (.016) | .000 (.022) |
| Father – daughter | .013 (.010) | .025 (.016) | .035* (.020) | .001 (.010) | .004 (.015) | .006 (.020) |
| N | 87,261 | 87,261 | 87,261 | 81,672 | 81,672 | 81,672 |

Notes: See notes to Table 6. Standard errors in parentheses, clustered at the family level.

** $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*

Table A7. Alternative measures for whether a younger sibling or child copies their older sibling or parent.

| | Panel A: Siblings | | | | | | Panel B: Intergenerational | | | | |
|---------------------------------|--------------------|---------------------|---------------------|---------------------|----------------------|-------------------------|----------------------------|---------------------|---------------------|---------------------|----------------------|
| | Baseline | Same major any rank | Same major accepted | Same major enrolled | Same major completed | | Baseline | Same major any rank | Same major accepted | Same major enrolled | Same major completed |
| (1) Reduced form | | | | | | (1) Reduced form | | | | | |
| Older brother – younger brother | .043*** (.010) | .041*** (.010) | .041*** (.009) | .042*** (.009) | .037*** (.009) | Father – son | .029*** (.008) | .029*** (.008) | .021*** (.007) | .019*** (.007) | .023** (.010) |
| Older sister – younger brother | -.026*** (.009) | -.029*** (.010) | -.024*** (.008) | -.023*** (.008) | -.018** (.008) | Mother – son | .015** (.007) | .015* (.008) | .010 (.007) | .008 (.006) | .004 (.009) |
| Older sister – younger sister | .025** (.011) | .026** (.012) | .030*** (.010) | .029*** (.010) | .027*** (.010) | Mother – daughter | .004 (.008) | .001 (.008) | .006 (.008) | .005 (.007) | .004 (.010) |
| Older brother – younger sister | .009 (.009) | .005 (.010) | .007 (.009) | .005 (.009) | .004 (.008) | Father – daughter | .007 (.008) | .009 (.008) | .002 (.007) | .002 (.007) | -.007 (.009) |
| (2) IV-enrolled | | | | | | (2) IV-enrolled | | | | | |
| Older brother – younger brother | .063*** (.015) | .059*** (.015) | .060*** (.014) | .061*** (.014) | .053*** (.013) | Father – son | .043*** (.012) | .045*** (.013) | .031*** (.011) | .028** (.011) | .033** (.015) |
| Older sister – younger brother | -.030** (.014) | -.034** (.014) | -.028** (.012) | -.026** (.012) | -.020* (.011) | Mother – son | .024** (.011) | .024** (.012) | .017* (.010) | .014 (.010) | .007 (.013) |
| Older sister – younger sister | .039** (.016) | .038** (.017) | .045*** (.015) | .044*** (.015) | .040*** (.014) | Mother – daughter | .010 (.012) | .006 (.012) | .012 (.011) | .009 (.011) | .007 (.014) |
| Older brother – younger sister | .017 (.014) | .011 (.015) | .014 (.014) | .012 (.014) | .009 (.013) | Father – daughter | .014 (.012) | .017 (.012) | .006 (.011) | .005 (.011) | -.007 (.014) |
| | | | | | | (3) IV-completed | | | | | |
| | | | | | | Father – son | .056*** (.016) | .057*** (.017) | .040*** (.015) | .036** (.014) | .041** (.019) |
| | | | | | | Mother – son | .031** (.014) | .031** (.015) | .022* (.013) | .018 (.012) | .010 (.017) |
| | | | | | | Mother – daughter | .015 (.015) | .011 (.016) | .016 (.014) | .013 (.014) | .010 (.018) |
| | | | | | | Father – daughter | .021 (.015) | .024 (.015) | .011 (.014) | .008 (.014) | -.006 (.018) |
| N | 88,174 | 88,174 | 88,174 | 88,174 | 88,174 | 168,933 | 168,933 | 168,933 | 168,933 | 93,412 | |

Notes: See notes to Tables 5 and 6. The baseline outcome variable is whether a younger sibling's or child's first choice on their preference list matches the first-best major choice of their older sibling or parent. Columns 2-5 replace this with whether the younger sibling or child (i) includes on their choice list, (ii) is accepted to, (iii) enrolls in, or (iv) completes the same major as the first-best choice of their older sibling or parent. Standard errors in parentheses, clustered at the family level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A8. Estimates corresponding to Tables 5 and 6, also including individuals who drop out after ninth grade.

| | Reduced form | IV-enrolled | IV-completed |
|-----------------------------------|--------------------|-------------------|-------------------|
| Panel A: Siblings | | | |
| Older brother – younger brother | .037*** (.009) | .053*** (.013) | |
| Older sister – younger brother | -.026*** (.008) | -.031** (.012) | |
| Older sister – younger sister | .025** (.010) | .037*** (.014) | |
| Older brother – younger sister | .004 (.008) | .008 (.013) | |
| N | 99,384 | 99,384 | |
| Panel B: Intergenerational | | | |
| Father – son | .028*** (.007) | .042*** (.011) | .054*** (.015) |
| Mother – son | .013* (.007) | .021** (.010) | .028** (.013) |
| Mother – daughter | .005 (.008) | .010 (.011) | .016 (.014) |
| Father – daughter | .006 (.007) | .012 (.011) | .018 (.014) |
| N | 182,171 | 182,171 | 182,171 |

Notes: See notes to Table 5 and 6. Standard errors in parentheses, clustered at the family level.

** $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*

Table A9. Estimates corresponding to Table 5, limiting the sample to older siblings whose first and second best major choices are both available at the school they are admitted to.

| | Any age gap | | Age gap ≤ 3 years (concurrent school enrollment) | | Age gap > 3 years | | Mean |
|--------------------------------------|--------------------|-------------------|---|--------------------|-------------------|-------------------|--------|
| | Reduced form | IV-enrolled | Reduced form | IV-enrolled | Reduced form | IV-enrolled | |
| (1) Impact on younger brother | | | | | | | |
| Older brother – younger brother | .034*** (.012) | .048*** (.017) | .014 (.016) | .020 (.024) | .059*** (.017) | .082*** (.025) | [.254] |
| Older sister – younger brother | -.030*** (.010) | -.037** (.015) | -.041*** (.014) | -.052*** (.020) | -.016 (.015) | -.017 (.022) | [.111] |
| (2) Impact on younger sister | | | | | | | |
| Older sister – younger sister | .021* (.013) | .031* (.018) | .043*** (.017) | .057** (.023) | -.005 (.019) | -.002 (.028) | [.219] |
| Older brother – younger sister | .004 (.011) | .009 (.017) | .001 (.014) | .002 (.022) | .008 (.017) | .015 (.025) | [.194] |
| N | 64,988 | 64,988 | 38,127 | 38,127 | 26,861 | 26,861 | |

Notes: See notes to Table 5. Standard errors in parentheses, clustered at the family level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A10. Estimates corresponding to Table 6, limiting the sample to parents whose first and second best major choices are both available at the school they are admitted to.

| | Reduced form | IV-enrolled | IV-completed | Mean |
|--------------------------------|------------------|------------------|------------------|--------|
| (1) Impact on sons | | | | |
| Father – son | .023** (.009) | .034** (.014) | .044** (.018) | [.257] |
| Mother – son | .014 (.009) | .021* (.013) | .028* (.016) | [.172] |
| (2) Impact on daughters | | | | |
| Mother – daughter | .005 (.009) | .010 (.013) | .014 (.017) | [.246] |
| Father – daughter | .004 (.009) | .009 (.014) | .014 (.017) | [.196] |
| N | 123,406 | 123,406 | 123,406 | |

Notes: See notes to Table 6. Standard errors in parentheses, clustered at the family level.

** $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*

Table A11. Sibling and intergenerational estimates for each of the five majors.

| | Siblings | | Intergenerational | | | |
|------------------------|--------------------|-------------------|--------------------------|-------------------|-------------------|-------------------|
| | Reduced form | IV enrolled | Reduced form | IV enrolled | IV completed | |
| Brother-brother | | | Father-son | | | |
| Engineering | .058*** (.016) | .086*** (.023) | Engineering | .023* (.012) | .039** (.019) | .059** (.026) |
| Natural science | .042 (.031) | .077 (.054) | Natural science | .022 (.030) | .044 (.054) | .055 (.060) |
| Business | .042*** (.016) | .057*** (.021) | Business | .042*** (.012) | .057*** (.016) | .068*** (.019) |
| Social science | .010 (.018) | .017 (.025) | Social science | .015 (.017) | .024 (.024) | .033 (.031) |
| Humanities | .007 (.037) | .013 (.045) | Humanities | .013 (.029) | .020 (.035) | .041 (.067) |
| Sister-brother | | | Mother-son | | | |
| Engineering | .020 (.067) | .032 (.094) | Engineering | .043* (.025) | .094* (.054) | .110** (.053) |
| Natural science | -.126* (.069) | -.203 (.127) | Natural science | .000 (.044) | .006 (.068) | .018 (.084) |
| Business | -.015 (.014) | -.016 (.019) | Business | .001 (.011) | .005 (.015) | .009 (.018) |
| Social science | -.038*** (.013) | -.044** (.018) | Social science | .003 (.014) | .007 (.019) | .012 (.024) |
| Humanities | -.028* (.015) | -.036 (.022) | Humanities | .013 (.018) | .025 (.027) | .035 (.035) |
| Sister-sister | | | Mother-daughter | | | |
| Engineering | .057 (.047) | .099 (.078) | Engineering | .005 (.008) | .012 (.013) | .027 (.018) |
| Natural science | .024 (.044) | .039 (.063) | Natural science | .041 (.030) | .075 (.052) | .082 (.056) |
| Business | .042** (.018) | .061** (.024) | Business | -.003 (.012) | .000 (.017) | .004 (.019) |
| Social science | .017 (.017) | .026 (.024) | Social science | .028 (.020) | .042 (.027) | .052 (.034) |
| Humanities | -.013 (.025) | -.015 (.036) | Humanities | -.003 (.035) | .000 (.045) | .006 (.074) |
| Brother-sister | | | Father-daughter | | | |
| Engineering | -.010 (.011) | -.011 (.017) | Engineering | .079* (.043) | .166* (.094) | .180** (.089) |
| Natural science | .012 (.031) | .027 (.056) | Natural science | .002 (.037) | .008 (.057) | .019 (.065) |
| Business | .025 (.017) | .036 (.023) | Business | .024** (.011) | .036** (.015) | .043** (.017) |
| Social science | .017 (.023) | .027 (.032) | Social science | .000 (.012) | .005 (.016) | .008 (.021) |
| Humanities | .060 (.047) | .080 (.059) | Humanities | .013 (.013) | .023 (.020) | .033 (.027) |
| N | 88,174 | 88,174 | | 168,933 | 168,933 | 168,933 |

Notes: See notes to Table 5. The regressions differ by allowing for heterogeneous effects based on the majors. Standard errors in parentheses, clustered at the family level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A12. Changes in the characteristics of the student peer group an older sibling or parent is admitted to.

| | Female share of peer group for older sibling | GPA rank relative to peer group for older sibling | | Female share of peer group for parent | GPA rank relative to peer group for parent |
|---|---|--|------------------------------|--|---|
| <u>Older brother – younger brother:</u> | | | <u>Father – son:</u> | | |
| Male-dominated major (E) | -.095*** (.007) | -.363*** (.009) | Male-dominated major (E) | -.086*** (.007) | -.381*** (.008) |
| Gender-neutral major (N+B) | .046*** (.006) | -.297*** (.008) | Gender-neutral major (N+B) | .057*** (.005) | -.314*** (.007) |
| Female-dominated major (S+H) | .173*** (.008) | -.287*** (.012) | Female-dominated major (S+H) | .175*** (.007) | -.306*** (.010) |
| <u>Older sister – younger brother:</u> | | | <u>Mother – son:</u> | | |
| Male-dominated major (E) | -.296*** (.035) | -.318*** (.036) | Male-dominated major (E) | -.273*** (.027) | -.294*** (.030) |
| Gender-neutral major (N+B) | -.053*** (.005) | -.315*** (.009) | Gender-neutral major (N+B) | -.043*** (.003) | -.322*** (.007) |
| Female-dominated major (S+H) | .133*** (.005) | -.245*** (.008) | Female-dominated major (S+H) | .126*** (.004) | -.256*** (.007) |
| <u>Older sister – younger sister:</u> | | | <u>Mother – daughter:</u> | | |
| Male-dominated major (E) | -.301*** (.038) | -.317*** (.043) | Male-dominated major (E) | -.345*** (.027) | -.310*** (.034) |
| Gender-neutral major (N+B) | -.050*** (.005) | -.310*** (.009) | Gender-neutral major (N+B) | -.044*** (.003) | -.315*** (.007) |
| Female-dominated major (S+H) | .134*** (.005) | -.241*** (.009) | Female-dominated major (S+H) | .129*** (.004) | -.252*** (.007) |
| <u>Older brother – younger sister:</u> | | | <u>Father – daughter:</u> | | |
| Male-dominated major (E) | -.091*** (.008) | -.361*** (.009) | Male-dominated major (E) | -.093*** (.007) | -.380*** (.008) |
| Gender-neutral major (N+B) | .043*** (.006) | -.301*** (.009) | Gender-neutral major (N+B) | .049*** (.005) | -.308*** (.007) |
| Female-dominated major (S+H) | .174*** (.008) | -.287*** (.012) | Female-dominated major (S+H) | .176*** (.006) | -.297*** (.009) |
| N | 88,174 | 82,611 | | 168,933 | 154,881 |

Notes: See notes to Table 5. Female share is the older sibling's (or parent's) fraction of women in the same year and region for the major they are admitted to. GPA rank is the older sibling's (or parent's) GPA rank relative to their peers in the same year and region for the major they are admitted to. The regressions differ by allowing for heterogeneous effects based on the majors. Standard errors in parentheses, clustered at the family level.

** p<0.10, ** p<0.05, *** p<0.01*

Table A13. Multiple inference adjustments for the reduced form estimates in Tables 8 and 9.

| Panel A: q-values after FDR control for Table 8 | | Panel B: q-values after FDR control for Table 9 | |
|--|-------|--|------|
| (1) Impact on younger brother | | (1) Impact on sons | |
| <u>Older brother – younger brother:</u> | | <u>Father – son:</u> | |
| Male-dominated major (E) | <.001 | Male-dominated major (E) | .094 |
| Gender-neutral major (N+B) | .005 | Gender-neutral major (N+B) | .002 |
| Female-dominated major (S+H) | .563 | Female-dominated major (S+H) | .349 |
| <u>Older sister – younger brother:</u> | | <u>Mother – son:</u> | |
| Male-dominated major (E) | .764 | Male-dominated major (E) | .101 |
| Gender-neutral major (N+B) | .206 | Gender-neutral major (N+B) | .078 |
| Female-dominated major (S+H) | .004 | Female-dominated major (S+H) | .716 |
| (2) Impact on younger sister | | (2) Impact on daughters | |
| <u>Older sister – younger sister:</u> | | <u>Mother – daughter:</u> | |
| Male-dominated major (E) | .341 | Male-dominated major (E) | .265 |
| Gender-neutral major (N+B) | .045 | Gender-neutral major (N+B) | .962 |
| Female-dominated major (S+H) | .530 | Female-dominated major (S+H) | .961 |
| <u>Older brother – younger sister:</u> | | <u>Father – daughter:</u> | |
| Male-dominated major (E) | .329 | Male-dominated major (E) | .817 |
| Gender-neutral major (N+B) | .329 | Gender-neutral major (N+B) | .870 |
| Female-dominated major (S+H) | .329 | Female-dominated major (S+H) | .583 |

Notes: The table reports multiple inference corrected q-values (False Discovery Rate control) using the qqvalue package in Stata (method: simes).