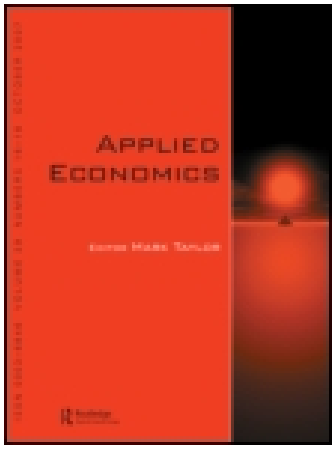

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Friends or family? Revisiting the effects of high school popularity on adult earnings

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Friends or family? Revisiting the effects of high school popularity on adult earnings

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Recent evidence has suggested links between high school popularity and wages during mid-life using the Wisconsin Longitudinal Study. This article revisits this question by first replicating the results using an alternative dataset that is very similar in structure. Similar to previous results, the Add Health baseline effects suggest that an additional high school friendship nomination is linked to a 2% increase in earnings around age 30. However, leveraging the unique structure of the Add Health shows that sibling comparisons eliminate any associations between popularity and earnings. The findings suggest that families, rather than friends, may be the cause of the association.

Keywords: social networks; popularity; earnings; sibling fixed effects

JEL Classification: J31; J24; J20

I. Introduction

In this article, I re-examine the evidence of the effects of popularity on labour market returns. A new study by Conti *et al*. (2012, 2013) uses the Wisconsin Longitudinal Study (WLS) to estimate both the predictors of high school friendship nominations as well as the labour market returns to these nominations. The authors show a robust relationship across multiple specifications, suggesting that having one additional high school nomination increases labour market earnings by approximately 2% around age 35. This is the key result that I re-examine.

Other aspects of the Conti *et al*. (henceforth CGMP) paper centre on making a series of statistical adjustments for several issues with the WLS data. While the WLS is a unique and impressive dataset, it has several limitations related to linking high school nominations with earnings. First, the WLS nomination measures are likely incomplete because each student was limited to nominating three classmates as 'friends' and only 1 in 3 students in each class were recruited into the survey, so that 60% of the individuals in the data have 'no friends' who nominated them. Second, the data were collected from a single high school graduating class (1957) from a single state (Wisconsin). This feature of the data poses several issues with external validity. In addition to the state and cohort external validity issues, the sampled individuals were all high school seniors, so the distribution of educational attainments is left-censored. However, even with these limitations, I am able to closely replicate the main findings using an alternative dataset, the National Longitudinal Study of Adolescent Health (Add Health), which has none of these limitations.

As CGMP argue, understanding key determinants of labour market earnings is an increasingly important topic in economics. An important shift in the literature has been a focus on 'noncognitive,' or social, skills as key, and relatively unexamined, determinants of human capital accumulation and labour market rewards (e.g. Heckman *et al*., 2006; Mihaly, 2009; Fletcher, 2013). However, the current evidence on many of these skills is underdeveloped. Indeed, most papers are unable to leverage quasi-random variation in the key factors of interest (unlike the use of compulsory schooling laws (Angrist and Keueger,

1991) or college openings (Currie and Moretti, 2003) in the larger and more mature labour returns literature). In addition, the literature focusing on estimating the returns to social skills is nearly always unable to account for family-level heterogeneity. This may be important because of the likely partial genetic transmission of personality and other noncognitive skills (e.g. Bouchard *et al*., 2001) as well as the many examples in the economics literature where the use of sibling comparisons has quantitatively or qualitatively changed the baseline findings. For example Almond *et al*. (2003) show that estimates of the impacts of birth weight are 80% lower when using sibling comparisons.[1] Fletcher (2013) shows evidence that a common estimate of the importance of the personality measure of contentiousness on earnings is reduced to zero when sibling comparisons are used.

This article questions whether the estimated effects of popularity on earnings reported by CGMP are sensitive to controls for family-level heterogeneity using a complementary dataset. The baseline estimates are nearly identical across datasets; however, I find that sibling comparisons suggest no detectable effects of high school popularity on adult earnings. These findings are important in understanding the principal determinants of adult earnings as well as categorizing what domains of social and noncognitive skills appear to be rewarded in the labour market.

II. Data and Empirical Strategy

This article uses the restricted version of the National Longitudinal Study of Adolescent Health (Add Health). Add Health is a school-based, longitudinal study of the health-related behaviours of adolescents and their outcomes in adulthood. Beginning with an in-school questionnaire administered to a nationally representative sample of students in grades 7 through 12 in the period 1994 to 1995, the study follows up with a series of in-home interviews of students approximately 1, 6 and 13 years later. Other sources of data include questionnaires for parents, siblings, fellow students and school administrators.

Of the 20 000 individuals surveyed in Wave 1, approximately 15 000 are also followed through age 30 at Wave 4. In order to also link these individuals with their high school social network measures, an additional 5000 individuals are removed from the data due to missing network data.[2] Thus, the baseline sample is approximately 10 000 individuals. The Wave 1 survey also included an oversampling of siblings who attended the same schools and were in grades 7–12 of the approximately 5000 respondents in the original 20 000 in-home samples. I am able to use approximately 2500 siblings who are followed to Wave 4 and also where each co-sibling has information on their social networks during high school.[3]

Earnings are collected in Wave 4 and come from the following question and are interval coded[4]: 'Now think about your personal earnings. How much income did you receive from personal earnings before taxes – that is, wages'. Using this coding procedure, the average earning for this sample of adults (average age nearly 30) is over $37 000. As in standard social science surveys, a host of sociodemographic data has also been collected, including age, race, birth order, gender and family background characteristics such as maternal education, rural status and parental marital status at Wave 1. I follow CGMP and control for these demographic characteristics as well as an indicator for whether the individual is an only child. In some specifications, I also control for a measure of ability (the Peabody Picture Vocabulary Test),[5] grade point average at Wave 1, completed years of schooling at Wave 4 and the Big 5 personality measures at Wave 4 – adding these controls follow the specifications in CGMP. Table 1 presents summary statistics for the full sample. Appendix Table 1A shows that there are no important differences between the main sample and sibling sub-sample.

[1] Similarly, Fletcher (2011) shows that the impacts of breastfeeding on later outcomes often disappear when sibling comparisons are employed.

[2] There are two linked data collection activities in Add Health. There was an original ('Wave 0') in-school survey of 90 000 children that ascertained friendship nominations and basic demographic information. Secondly, there are the four longitudinal 'in-home' surveys that track 20 000 children. Approximately 75% of the 20 000 children in the in-home sample were also in the in-school sample.

[3] It is also important to note that 80% of the sample has a sibling; however, in order to be sampled in Add Health, the sibling needed to be in one of the 120 schools and in grades 7–12 in 1994/95.

[4] The midpoint of each interval is used in the analysis. The intervals include: $0, <$5000, $5000–9999, 10 000–14 999, 15 000–19 999, 20 000–24 999, 25 000–29 999, 30 000–39 999, 40 000–49 999, 50 000–74 999, 75 000–99 999, 100 000–149 999, 150 000 or more.

[5] The Add Health Picture Vocabulary Test (AHPVT) is a computerized, abridged version of the Peabody Picture Vocabulary Test-Revised (PPVT-R). The AHPVT is a test of hearing vocabulary, designed for persons aged 2½ to 40 years old who can see and hear reasonably well and who understand standard English to some degree. Each test included a set of practice, or pretest items, followed by a series of test items arranged in order of increasing difficulty. The respondent was asked to listen to the word spoken by the interviewer and to select the picture on the plate that he or she believed best illustrated the meaning of the stimulus word. Once the response was entered into the computer, the program indicated the next plate to use in the test. In addition, the computer program determined test results automatically. These test results were not made available to the interviewer or to the respondent. The test scores are standardized by age. Some psychologists interpret PVT scores as a measure of verbal IQ. Information on the test is provided online at http://www.cpc.unc.edu/projects/addhealth/files/w3cdbk/w3doc.zip

Table 1. Descriptive statistics: main analysis sample

	Obs	Mean	Std Dev	Min	Max
Earnings	10 001	37 485.43	39 848.04	1	920 000
Log (earnings)	10 001	10.18	1.01	0	13.73213
In degree	10 001	4.46	3.67	0	32
Out degree	10 001	4.41	3.01	0	10
Age (W4)	10 001	28.95	1.71	24.5	34.08333
Male	10 001	0.48	0.50	0	1
Black	10 001	0.23	0.42	0	1
Hispanic	10 001	0.15	0.36	0	1
Other race	10 001	0.07	0.26	0	1
Grade = 8	9869	0.14	0.34	0	1
Grade = 9	9869	0.18	0.39	0	1
Grade = 10	9869	0.20	0.40	0	1
Grade = 11	9869	0.19	0.39	0	1
Grade = 12	9869	0.16	0.36	0	1
Only child	10 001	0.21	0.41	0	1
Birth order	9994	1.81	1.15	1	13
Maternal education	10 001	13.30	2.25	0	17
Parents married	10 001	0.72	0.42	0	1
Rural status	10 001	0.27	0.44	0	1
Missing family indicator	10 001	0.30	0.46	0	1
Education (W4)	10 000	14.47	2.04	8	21
PVT Score (W1)	10 001	101.53	13.90	14	137
Missing PVT Score	10 001	0.04	0.21	0	1
GPA (W1)	9816	2.81	0.75	1	4
Extraversion (W4)	9995	13.25	3.05	4	20
Neuroticism (W4)	9994	10.33	2.72	4	20
Agreeable (W4)	9995	15.29	2.39	4	20
Conscientiousness (W4)	9995	14.70	2.68	4	20
Openness (W4)	9955	14.59	2.44	4	20

Note: Maternal education, parents married, rural status and PVT score imputed if missing.

Finally, similar to CGMP, I use as a measure of high school popularity the number of nominations each individual received from other high school classmates ('in-degree'). Whereas the WLS had a maximum allowable number of nominations of three individuals attending the same school, Add Health's maximum number is ten (and fewer than 1% of students make 10 nominations). Moreover, WLS can only link incoming nominations for individuals where both students were followed (WLS sampled 1/3 of each graduating class), whereas Add Health has the full set of nominations for all individuals in school on the day of the survey. This limitation with WLS has the implication that 60% of the sample has no nominations received. Table 2 shows that in Add Health, this figure is <10%.

A final difference between this examination and the CGMP paper is that I use both women and men in the analysis and show in an appendix table (Table A3) that adding an interaction between in-degree and gender shows no statistically or economically significant differences for this cohort. See Table A2 in the appendix for descriptive differences between male and female respondents.

This article examines two key specifications to (1) replicate the results in Conti *et al*. and to (2) extend these results by accounting for family-level heterogeneity. The first specification is a basic OLS regression linking adult (log) earnings to high school popularity, adjusting for covariates:

$$\ln(earnings_{it+1}) = \beta_0 + \beta_1 X_{it} + \beta_2 Popularity_{it} + \varepsilon_{it+1} \quad (1)$$

Here $t + 1$ indicates a measure at Wave 4 (earnings) and t indicates a measure at Wave 1. The coefficient of interest is β_2 and the error term is clustered at the Wave 1 school level. The second specification adds a family-level fixed effect and also controls for only the subset of covariates in Equation 1 that vary between siblings (e.g. parental education is dropped):

$$\ln(earnings_{ift+1}) = \beta_0 + \beta_1 Z_{ift} + \beta_2 Popularity_{ift} + \delta_f + \varepsilon_{ift+1} \quad (2)$$

Table 2. Distribution of in-degree by sample

	Full sample			Sibling sample			Full sample (men)			Full sample (women)		
In-degree	Freq.	Percent	Cum.	Freq.	Percent	Cum.	Freq.	Percent	Cum.	Freq.	Percent	Cum.
0	1348	9.41	9.41	291	8.37	8.37	812	11.57	11.57	536	7.34	7.34
1	1871	13.07	22.48	436	12.54	20.91	1029	14.66	26.23	842	11.53	18.87
2	1992	13.91	36.39	449	12.92	33.83	1003	14.29	40.52	989	13.55	32.42
3	1930	13.48	49.87	449	12.92	46.75	967	13.78	54.3	963	13.19	45.61
4	1642	11.47	61.34	378	10.87	57.62	730	10.4	64.71	912	12.49	58.1
5	1304	9.11	70.44	318	9.15	66.77	574	8.18	72.88	730	10	68.1
6	1070	7.47	77.92	268	7.71	74.48	467	6.65	79.54	603	8.26	76.36
7	815	5.69	83.61	208	5.98	80.47	351	5	84.54	464	6.36	82.71
8	634	4.43	88.04	161	4.63	85.1	282	4.02	88.56	352	4.82	87.54
9	434	3.03	91.07	114	3.28	88.38	183	2.61	91.17	251	3.44	90.97
10	329	2.3	93.37	98	2.82	91.2	152	2.17	93.33	177	2.42	93.4
11	250	1.75	95.11	70	2.01	93.21	120	1.71	95.04	130	1.78	95.18
12	185	1.29	96.4	56	1.61	94.82	96	1.37	96.41	89	1.22	96.4
13	130	0.91	97.31	46	1.32	96.14	53	0.76	97.16	77	1.05	97.45
14	112	0.78	98.09	45	1.29	97.44	57	0.81	97.98	55	0.75	98.21
15	76	0.53	98.62	20	0.58	98.01	39	0.56	98.53	37	0.51	98.71

And the key question of interest is whether the estimate of β_2 from Equation 1 changes in Equation 2.

III. Results

This article examines the associations between high school popularity and adult earnings. Table 3 reports results replicating CGMP. Column 1 estimates a baseline regression (Equation 1) and finds a 2% earnings increase for each additional same-sex friendship nomination; similar to CGMP there is no effect for the number of nominations sent (out degree). CGMP controls for a number of school characteristic not available in the Add Health. To follow their specification, I control for school-level fixed effects beginning in Column 2, although this results in little change in the estimates. CGMP then controls for ability and education (my Column 3) and personality (my Column 4), showing that the results are not very sensitive to these controls. Thus, even with samples from different eras (the 1950s versus The 1990s), different geographical areas (Wisconsin versus National samples) and different sample strategies (high school seniors versus 7–12th graders), the results are remarkably similar in the replication attempt. Finally, to examine whether moving from the full to sibling sample may change the results (even without controlling for sibling fixed effects), Columns 5–7 repeat Columns 2–4 with the sibling sample and show very similar results.

The main findings of the article are presented in Table 4. Here I repeat earlier estimates in Columns 1–3 with no sibling fixed effects and then proceed to add sibling fixed effects in Columns 4–6. It is clear from the results that the effects of popularity on earnings are quite sensitive to controls for family-level heterogeneity. Indeed, the baseline sibling fixed effects estimate is zero. Although the SEs in the sibling models are too large to rule out the baseline results, they do suggest the fragility of the point estimates to family controls. In contrast, the associations between completed schooling and wages are quite similar to the baseline and sibling fixed effects results.

A potential issue with using sibling fixed effects is lack of variation in the outcome and/or the popularity measure. However, in this sample, only 13% of siblings have the same value of in-degree (average difference between siblings is 2.64, with a 2.88 SD); only 3% of the sample of siblings have the same wage (average difference is $23 000, with an SD of $39 200). A second, related, issue in using sibling fixed effects is measurement error. As an alternative to fixed effects, Appendix Table A4 presents a specification where sibling popularity is included as an additional control variable. The results suggest that a sibling high school popularity is highly correlated with own adult earnings, again suggesting potential family-level unobserved heterogeneity that may be related to both own popularity and future earnings. A potential alternative interpretation to the results in Appendix Table A4 is that sibling popularity, instead of representing unobserved family-level heterogeneity, could reflect peer effects, where the sibling shows the individual how to be popular in high school and could be a second causal relationship on earnings. To further probe this potential explanation, Appendix Table A5 interacts an indicator for whether the focal sibling is older (versus younger) than his/her sibling, where the idea is that younger siblings likely have no causal influence on older sibling's popularity. Because the results suggest no

Table 3. Replication of the effect of in-degree on log earnings

Outcome	Log (Earnings)	Log (Earnings)	Log (Earnings)	Log (Earnings)	Log (Earnings)	Log (Earnings)	Log (Earnings)
Sample	Full	Full	Full	Full	Family	Family	Family
Fixed effects?	Grade	Grade, School	Grade, School	Grade, School	Grade, School	Grade, School	Grade, School
In-degree	0.022***	0.024***	0.017***	0.016***	0.021***	0.014**	0.013**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.006)	(0.006)	(0.006)
Out degree	0.003	0.004	−0.003	−0.005	0.004	−0.004	−0.006
	(0.003)	(0.003)	(0.003)	(0.003)	(0.007)	(0.007)	(0.007)
Age (W4)	−0.128***	−0.114***	−0.047***	−0.047***	−0.094***	−0.021	−0.026
	(0.019)	(0.018)	(0.017)	(0.017)	(0.034)	(0.032)	(0.032)
Male	0.344***	0.346***	0.409***	0.395***	0.365***	0.415***	0.404***
	(0.032)	(0.032)	(0.031)	(0.035)	(0.054)	(0.053)	(0.059)
Black	−0.204***	−0.194***	−0.176***	−0.175***	−0.209**	−0.182**	−0.187**
	(0.048)	(0.040)	(0.038)	(0.039)	(0.084)	(0.077)	(0.076)
Hispanic	0.072**	−0.028	−0.011	−0.018	−0.119	−0.086	−0.092
	(0.036)	(0.039)	(0.037)	(0.037)	(0.088)	(0.086)	(0.087)
Maternal education	0.038***	0.026***	0.004	0.004	0.034**	0.004	0.005
	(0.007)	(0.006)	(0.005)	(0.005)	(0.014)	(0.013)	(0.013)
Parent's married	0.118***	0.101***	0.055**	0.052**	0.117**	0.077	0.072
	(0.025)	(0.025)	(0.025)	(0.026)	(0.058)	(0.055)	(0.054)
PVT score W1			−0.000	0.001		0.003	0.004*
			(0.001)	(0.001)		(0.002)	(0.002)
GPA W1			0.115***	0.112***		0.108***	0.104***
			(0.017)	(0.017)		(0.030)	(0.029)
Education (W4)			0.099***	0.102***		0.106***	0.108***
			(0.007)	(0.007)		(0.013)	(0.013)
Extraversion W4				0.021***			0.013**
				(0.003)			(0.006)
Neuroticism W4				−0.016***			−0.017**
				(0.004)			(0.007)
Agreeable W4				−0.016***			−0.011
				(0.005)			(0.010)
Conscientiousness W4				0.013***			0.014*
				(0.004)			(0.007)
Openness W4				−0.026***			−0.025***
				(0.005)			(0.009)
Observations	9862	9862	9795	9750	2578	2563	2550
R-squared	0.089	0.121	0.167	0.176	0.161	0.215	0.222

Notes: Additional Controls include Constant, Missing indicator for PVT Score, Missing Family Information Indicator, Other Race Indicator, Birth Order, Only Child Indicator, Rural Status.
SEs Clustered at the School Level (W1).

Table 4. The effects of high school popularity on adult earnings: sibling fixed effects

Outcome	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)
Sample	Full	Full	Full	Full	Family	Family	Full
Fixed effects?	Grade	Grade, School	Grade, School	Grade, School	Family	Family	Family
In-degree	0.022***	0.024***	0.017***	0.016***	–0.000	–0.004	0.007
	(0.003)	(0.003)	(0.003)	(0.003)	(0.019)	(0.019)	(0.016)
Out degree	0.003	0.004	–0.003	–0.005	0.010	0.007	0.009
	(0.003)	(0.003)	(0.003)	(0.003)	(0.022)	(0.022)	(0.021)
Age (W4)	–0.128***	–0.114***	–0.047***	–0.047***	0.055	0.082	0.069
	(0.019)	(0.018)	(0.017)	(0.017)	(0.106)	(0.100)	(0.099)
Male	0.344***	0.346***	0.409***	0.395***	0.383**	0.423***	0.427**
	(0.032)	(0.032)	(0.031)	(0.035)	(0.158)	(0.158)	(0.176)

(*continued*)

Table 4. Continued

Outcome	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)
Sample	Full	Full	Full	Full	Family	Family	Full
Fixed effects?	Grade	Grade, School	Grade, School	Grade, School	Family	Family	Family
Birth Order	0.002	0.005	0.010	0.009	–0.006	0.006	–0.005
	(0.010)	(0.010)	(0.009)	(0.009)	(0.083)	(0.079)	(0.081)
PVT Score W1			–0.000	0.001		0.006	0.004
			(0.001)	(0.001)		(0.008)	(0.006)
GPA W1			0.115***	0.112***		0.040	0.056
			(0.017)	(0.017)		(0.114)	(0.113)
Education (W4)			0.099***	0.102***		0.077**	0.081**
			(0.007)	(0.007)		(0.033)	(0.034)
Extraversion W4				0.021***			0.017
				(0.003)			(0.017)
Neuroticism W4				–0.016***			–0.011
				(0.004)			(0.023)
Agreeable W4				–0.016***			–0.011
				(0.005)			(0.024)
Conscientiousness W4				0.013***			–0.004
				(0.004)			(0.019)
Openness W4				–0.026***			–0.010
				(0.005)			(0.025)
Observations	9862	9862	9795	9750	2578	2563	2550
R-squared	0.089	0.121	0.167	0.176	0.793	0.801	0.811

Note: Same as Table 3.

difference in the impact of younger or older sibling's popularity on *own* adult earnings, this suggests unobserved family-level heterogeneity rather than causal peer effects and thus highlights the need to control for family-level fixed effects in the analysis. A third potential issue is whether children with no siblings (who are dropped from the sibling sample) have different returns to popularity. In Appendix Table A6, I show that an interaction between being an only child and in-degree is not statistically significant in determining adult earnings.

IV. Conclusion

Understanding the key factors related to human capital accumulation and wage determination is a central question in labour economics. During the past decade there has been a shift of attention from traditional measures of cognitive ability and education to less-examined measures of 'noncognitive skills' such as personality, self-control, leadership and popularity. Although the evidence linking cognitive ability to wages is strong and the literature is mature, much less is conclusive in the newer literature on noncognitive skills. In part, this is because many research designs used to estimate the returns to education and cognitive skills have yet to be used to examine noncognitive skills. This article begins to fill this void by comparing siblings' popularity in high school with their earnings around age 30. I replicate new results in the literature using a different dataset and show that the results are sensitive to controls for family-level heterogeneity and suggest no return to popularity in earnings for this new cohort of workers. These results have implications for our understanding of the key determinants of adult earnings and in detecting which domains of social and noncognitive skills appear to be valued by the labour market.

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Appendix tables

Table A1. Descriptive statistics: comparison between main and sibling sample

	Obs	Mean	Std.	Obs	Mean	Std.
Earnings	10 001	37 485.43	39 848.04	2623	35 847.54	36 342.29
Log (earnings)	10 001	10.18	1.01	2623	10.14	1.02
In-degree	10 001	4.46	3.67	2623	4.82	3.97
Out degree	10 001	4.41	3.01	2623	4.40	3.00
Age (W4)	10 001	28.95	1.71	2623	28.97	1.68
Male	10 001	0.48	0.50	2623	0.50	0.50
Black	10 001	0.23	0.42	2623	0.25	0.43
Hispanic	10 001	0.15	0.36	2623	0.12	0.33
Other race	10 001	0.07	0.26	2623	0.07	0.25
Grade = 8	9869	0.14	0.34	2580	0.13	0.34
Grade = 9	9869	0.18	0.39	2580	0.20	0.40
Grade = 10	9869	0.20	0.40	2580	0.21	0.40
Grade = 11	9869	0.19	0.39	2580	0.18	0.39
Grade = 12	9869	0.16	0.36	2580	0.14	0.35
Only child	10 001	0.21	0.41	2623	0.13	0.34
Birth order	9994	1.81	1.15	2621	1.98	1.21
Maternal education	10 001	13.30	2.25	2623	13.22	2.22
Parents married	10 001	0.72	0.42	2623	0.71	0.42
Rural status	10 001	0.27	0.44	2623	0.29	0.45
Missing family indicator	10 001	0.30	0.46	2623	0.28	0.45
Education (W4)	10 000	14.47	2.04	2623	14.33	2.08
PVT Score (W1)	10 001	101.53	13.90	2623	99.91	13.69
Missing PVT Score	10 001	0.04	0.21	2623	0.04	0.19
GPA (W1)	9816	2.81	0.75	2568	2.80	0.76
Extraversion (W4)	9995	13.25	3.05	2619	13.16	3.05
Neuroticism (W4)	9994	10.33	2.72	2619	10.36	2.75
Agreeable (W4)	9995	15.29	2.39	2619	15.19	2.41
Conscientiousness (W4)	9995	14.70	2.68	2619	14.79	2.64
Openness (W4)	9955	14.59	2.44	2610	14.45	2.49

Table A2. Descriptive statistics: comparison between males and females

	Obs	Mean	Std Dev	Obs	Mean	Std Dev
Earnings	4791	43 253.12	44 787.12	5210	32 181.60	33 838.48
Log (earnings)	4791	10.35	0.95	5210	10.02	1.04
In-degree	4791	4.24	3.74	5210	4.65	3.59
Out degree	4791	4.18	3.15	5210	4.62	2.86
Age (W4)	4791	29.08	1.71	5210	28.83	1.70
Male	4791	1.00	0.00	5210	0.00	0.00
Black	4791	0.20	0.40	5210	0.26	0.44
Hispanic	4791	0.15	0.36	5210	0.15	0.36
Other race	4791	0.08	0.27	5210	0.07	0.25
Grade = 8	4734	0.13	0.34	5135	0.14	0.35
Grade = 9	4734	0.18	0.39	5135	0.19	0.39
Grade = 10	4734	0.21	0.40	5135	0.20	0.40
Grade = 11	4734	0.19	0.39	5135	0.19	0.39
Grade = 12	4734	0.16	0.36	5135	0.15	0.36
Only child	4791	0.20	0.40	5210	0.22	0.42
Birth order	4788	1.84	1.18	5206	1.79	1.12
Maternal education	4791	13.35	2.25	5210	13.26	2.24
Parents married	4791	0.74	0.41	5210	0.71	0.42
Rural status	4791	0.27	0.44	5210	0.27	0.44
Missing family indicator	4791	0.29	0.45	5210	0.31	0.46
Education (W4)	4790	14.19	2.01	5210	14.72	2.03
PVT score (W1)	4791	102.52	13.84	5210	100.62	13.89
Missing PVT score	4791	0.05	0.21	5210	0.04	0.20
GPA (W1)	4702	2.71	0.76	5114	2.90	0.73
Extraversion (W4)	4788	13.15	3.05	5207	13.34	3.04
Neuroticism (W4)	4787	9.74	2.59	5207	10.87	2.73
Agreeable (W4)	4788	14.66	2.47	5207	15.86	2.16
Conscientiousness (W4)	4788	14.48	2.60	5207	14.89	2.73
Openness (W4)	4767	14.93	2.47	5188	14.29	2.38

Table A3. The effects of high school popularity on log earnings: differences by gender

Outcome	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)
Sample	Full	Full	Full	Full	Full	Full
Fixed effects?	Grade, School	Grade, School	Grade, School	Grade, School	Grade, School	Grade, School
In-degree	0.024***	0.017***	0.016***	0.021***	0.015***	0.013***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Out degree	0.004	−0.003	−0.005	0.004	−0.003	−0.005
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Age (W4)	−0.114***	−0.047***	−0.047***	−0.114***	−0.048***	−0.047***
	(0.018)	(0.017)	(0.017)	(0.018)	(0.017)	(0.017)
Male	0.346***	0.409***	0.395***	0.326***	0.392***	0.377***
	(0.032)	(0.031)	(0.035)	(0.048)	(0.046)	(0.049)
Black	−0.194***	−0.176***	−0.175***	−0.195***	−0.177***	−0.176***
	(0.040)	(0.038)	(0.039)	(0.040)	(0.038)	(0.039)
Hispanic	−0.028	−0.011	−0.018	−0.029	−0.012	−0.019
	(0.039)	(0.037)	(0.037)	(0.039)	(0.037)	(0.037)
Other race	−0.011	−0.075*	−0.086*	−0.011	−0.075*	−0.086*
	(0.047)	(0.045)	(0.044)	(0.047)	(0.045)	(0.044)
Only child	−0.036	−0.010	−0.006	−0.036	−0.011	−0.006
	(0.023)	(0.024)	(0.024)	(0.023)	(0.024)	(0.024)
Birth order	0.005	0.010	0.009	0.005	0.010	0.009
	(0.010)	(0.009)	(0.009)	(0.010)	(0.009)	(0.009)
Maternal education	0.026***	0.004	0.004	0.027***	0.004	0.004
	(0.006)	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)

(*continued*)

Table A3. Continued

Outcome	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)	Log (earnings)
Sample	Full	Full	Full	Full	Full	Full
Fixed effects?	Grade, School	Grade, School	Grade, School	Grade, School	Grade, School	Grade, School
Parent's married	0.101***	0.055**	0.052**	0.101***	0.055**	0.052**
	(0.025)	(0.025)	(0.026)	(0.025)	(0.025)	(0.026)
Rural status (W1)	0.004	0.011	0.007	0.004	0.011	0.007
	(0.029)	(0.029)	(0.028)	(0.030)	(0.029)	(0.028)
PVT score W1		−0.000	0.001		−0.000	0.001
		(0.001)	(0.001)		(0.001)	(0.001)
GPA W1		0.115***	0.112***		0.115***	0.112***
		(0.017)	(0.017)		(0.017)	(0.017)
Education (W4)		0.099***	0.102***		0.099***	0.102***
		(0.007)	(0.007)		(0.007)	(0.007)
In degree × male				0.005	0.004	0.004
				(0.006)	(0.006)	(0.006)
Constant	12.330***	9.231***	9.408***	12.346***	9.243***	9.423***
	(0.481)	(0.492)	(0.497)	(0.482)	(0.492)	(0.498)
Observations	9862	9795	9750	9862	9795	9750
R-squared	0.121	0.167	0.176	0.121	0.167	0.177

Note: Same controls as Table 3.

Table A4. The effects of high school popularity on log earnings: inclusion of sibling popularity

Outcome	Log (earnings)	Log (earnings)
Sample	Family	Family
Fixed effects?	Grade, School	Grade, School
In degree	0.014*	0.009
	(0.008)	(0.009)
Sibling in degree		0.014**
		(0.007)
Out degree	0.001	0.001
	(0.010)	(0.010)
Age (W4)	−0.003	−0.001
	(0.034)	(0.034)
Male	0.400***	0.396***
	(0.063)	(0.064)
Black	−0.298***	−0.287***
	(0.102)	(0.100)
Only child	0.028	0.035
	(0.079)	(0.078)
Birth order	0.031	0.032
	(0.021)	(0.021)
Maternal education	0.015	0.014
	(0.013)	(0.013)
Rural status (W1)	0.026	0.032
	(0.058)	(0.057)
PVT score W1	0.003	0.003
	(0.003)	(0.003)
GPA W1	0.123***	0.120***
	(0.038)	(0.038)
Education (W4)	0.104***	0.103***
	(0.015)	(0.015)
Extraversion W4	0.018***	0.018***
	(0.007)	(0.007)
Neuroticism W4	−0.017**	−0.018**
	(0.008)	(0.008)
Agreeable W4	−0.016	−0.016
	(0.011)	(0.011)
Conscientiousness	0.019**	0.017**
	(0.008)	(0.008)
Openness W4	−0.023*	−0.023*
	(0.012)	(0.012)
Observations	1872	1872
R-squared	0.246	0.249

Note: Same controls as Table 3.

(*continued*)

Table A5. The effects of high school popularity on log earnings: younger/older sibling popularity controls

Outcome	Log (earnings)	Log (earnings)	Log (earnings)
Sample	Family	Family	Family
Fixed effects?	Grade, School	Grade, School	Grade, School
In degree	0.009	0.010	0.010
	(0.009)	(0.011)	(0.011)
Sibling in-degree	0.014**	0.017**	0.016
	(0.007)	(0.007)	(0.010)
Sibling in-degree × older			0.001
			(0.012)
Out degree	0.001	0.001	0.001
	(0.010)	(0.011)	(0.011)
Older sibling			0.079
			(0.086)
Age (W4)	−0.001	0.025	0.012
	(0.034)	(0.040)	(0.042)
Male	0.396***	0.403***	0.404***
	(0.064)	(0.067)	(0.067)
Black	−0.287***	−0.245***	−0.246***
	(0.100)	(0.092)	(0.094)
Only child	0.035	−0.015	−0.005
	(0.078)	(0.102)	(0.105)
Birth order	0.032	0.023	0.030
	(0.021)	(0.024)	(0.024)
Maternal education	0.014	0.019	0.020
	(0.013)	(0.016)	(0.016)
GPA W1	0.120***	0.114**	0.113**
	(0.038)	(0.045)	(0.044)
Education (W4)	0.103***	0.110***	0.110***
	(0.015)	(0.016)	(0.016)
Extraversion W4	0.018***	0.021***	0.020***
	(0.007)	(0.007)	(0.007)
Neuroticism W4	−0.018**	−0.027**	−0.027**
	(0.008)	(0.011)	(0.011)
Agreeable W4	−0.016	−0.021	−0.021
	(0.011)	(0.013)	(0.014)
Conscientiousness	0.017**	0.016*	0.016*
	(0.008)	(0.009)	(0.009)
Openness W4	−0.023*	−0.021*	−0.020*
	(0.012)	(0.011)	(0.011)
Observations	1872	1476	1476
R-squared	0.249	0.277	0.278

Notes: Same controls as Table 3. Column 2 repeats Column 1 on the sample with missing information on sibling in-degree.

Table A6. The effects of high school popularity on log earnings: differences by parity

Outcome	Log (earnings)	Log (earnings)
Sample	Family	Family
Fixed effects?	Grade, School	Grade, School
In-degree	0.016***	0.014***
	(0.003)	(0.002)
In-degree × only child		0.009
		(0.007)
Out degree	−0.005	−0.005
	(0.003)	(0.003)
Age (W4)	−0.047***	−0.048***
	(0.017)	(0.017)
Male	0.395***	0.395***
	(0.035)	(0.035)
Black	−0.175***	−0.176***
	(0.039)	(0.038)
Hispanic	−0.018	−0.020
	(0.037)	(0.037)
Other race	−0.086*	−0.088**
	(0.044)	(0.044)
Only child	−0.006	−0.047
	(0.024)	(0.041)
Birth order	0.009	0.010
	(0.009)	(0.009)
Parent's married	0.052**	0.052**
	(0.026)	(0.026)
GPA W1	0.112***	0.112***
	(0.017)	(0.017)
Education (W4)	0.102***	0.102***
	(0.007)	(0.007)
Extraversion W4	0.021***	0.021***
	(0.003)	(0.003)
Neuroticism W4	−0.016***	−0.016***
	(0.004)	(0.004)
Agreeable W4	−0.016***	−0.016***
	(0.005)	(0.005)
Conscientiousness	0.013***	0.013***
	(0.004)	(0.004)
Openness W4	−0.026***	−0.026***
	(0.005)	(0.005)
Observations	9750	9750
R-squared	0.176	0.177

Note: Same controls as Table 3.