

Online Appendix

“The Economic Value of *Breaking Bad*: Misbehavior, Schooling and the Labor Market”

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This online appendix has three parts. First, Appendix A contains summary statistics of the various subsamples, cited in Section 2, “Data and Preliminary Analysis,” in the main paper.

Second, we report the results from a variety of sensitivity and robustness analyses we conducted to validate and better understand the main results in the paper. These results are summarized in Section 4.4, “Robustness and Sensitivity of Main Results,” in the main paper. We separate the robustness exercises into 4 different appendices. First, Appendix B presents the full estimation results for the benchmark model for comparison. Second, Appendix C describes the sensitivity of our model to different modeling assumptions, also discussed in Section 4.4.1. Appendix D explores selection into employment, discussed in Section 4.4.2 in the main paper. Appendix E describes the exercise where we test whether the Big Five personality traits and stress hormones are potential mediators of the documented effects of the different childhood skills and behaviors, summarized in Section 4.4.3 of the main paper.

Third, the remainder of the appendix reports the results from Section 5, “Generalizability of Findings,” in the main paper. Appendix F investigates the skill returns across different occupational tasks, discussed in Section 5.2 of the main paper. Appendix G describes in detail the replication of our main findings in additional dataset, which we summarize in Section 5.3 in the main paper.

Appendix A Summary Statistics

We report summary statistics from the analysis sample in the main paper and focus on summary statistics from additional relevant samples here, including a “full sample” that includes all individuals observed at age 11 in the NCDS (some of whom may have missing variables at older ages and thus are not part of our analytic sample) in Appendix A.1, and subsamples stratified by high-SES and low-SES family background in Appendix A.2.

Appendix A.1 Full Sample

We start by describing the assignment of the syndromes to the measures of socio-emotional skills in Appendix A (Table A1). Table A2 reports summary statistics of education, labor market outcomes and demographics for the full sample. Table A3 reports summary statistics of the BSAG maladjustment syndromes for the full sample.

Table A1: MEASUREMENTS USED TO IDENTIFY UNOBSERVED SKILLS

Unobserved Skill	Measures
Externalizing Behavior	<ul style="list-style-type: none">◇ Hostility Towards Adults◇ Hostility Towards Children◇ Anxiety for Acceptance by Adults◇ Anxiety for Acceptance by Children◇ Restlessness◇ Inconsequential Behavior◇ Writing Off of Adults and Adult Standards
Internalizing Behavior	<ul style="list-style-type: none">◇ Depression◇ Withdrawal◇ Unforthcomingness◇ Writing Off of Adults and Adult Standards
Cognition	<ul style="list-style-type: none">◇ Reading Comprehension Test Score◇ Mathematics Test Score◇ Non Verbal Score on General Ability Test◇ Verbal Score on General Ability Test

Notes: This table lists the three unobserved skills (externalizing behavior, internalizing behavior and cognition) together with the observed variables used to identify them in the preliminary analysis. Measures for externalizing and internalizing behaviors are drawn from the BSAG maladjustment variables derived from teachers’ reports of misbehavior. For cognition, a series of aptitude test scores are used as measures. See Section 2.2.2 for further details.

Table A2: SUMMARY STATISTICS OF DEMOGRAPHICS, EDUCATION AND LABOR MARKET OUTCOMES, FULL SAMPLE

	Both	Males	Females	
No Formal Education	0.126 (0.332)	0.114 (0.317)	0.138 (0.345)	***
CSE	0.124 (0.330)	0.111 (0.315)	0.137 (0.344)	***
O Level	0.341 (0.474)	0.306 (0.461)	0.375 (0.484)	***
A Level	0.141 (0.348)	0.184 (0.387)	0.0997 (0.300)	***
Higher Education	0.142 (0.349)	0.144 (0.351)	0.139 (0.346)	
Higher Degree	0.126 (0.332)	0.141 (0.348)	0.111 (0.314)	***
Hourly Wage	6.749 (3.063)	7.645 (2.969)	5.666 (2.815)	***
Weekly Hours Worked	36.71 (12.54)	43.54 (7.917)	28.71 (12.23)	***
Weekly Earnings	259.8 (152.3)	329.2 (135.0)	175.9 (127.8)	***
In Paid Work	0.792 (0.406)	0.902 (0.297)	0.685 (0.464)	***
Employee	0.680 (0.467)	0.744 (0.437)	0.618 (0.486)	***
Financial Difficulties	0.178 (0.382)	0.176 (0.381)	0.180 (0.384)	
London Before 16	0.409 (0.492)	0.410 (0.492)	0.409 (0.492)	
London at 33	0.305 (0.460)	0.303 (0.460)	0.306 (0.461)	
Female	0.483 (0.500)			
Observations	15,356	7,899	7,457	15,356

Notes: This table lists the summary statistics of demographics, education and labor market outcomes for the full sample of 15,356 individuals observed at age 11. For education categories and employment, entries are in the form of percentages divided by 100. Wages and weekly earnings are measured in 1992 British pounds. Employee means the percentage of individuals in the sample that are in paid work and not self-employed. Statistics are reported separately for both genders, for males and for females. In the last column, *, ** and *** mean that differences between males and females are significant at the 10, 5 and 1 percent levels, respectively.

Table A3: SUMMARY STATISTICS OF BSAG SYNDROMES, FULL SAMPLE

	Both	Males	Females	
Hostility Towards Adults	0.904 (1.946)	1.079 (2.088)	0.719 (1.766)	***
Hostility Towards Children	0.288 (0.805)	0.336 (0.892)	0.237 (0.699)	***
Anxiety for Acceptance by Adults	0.559 (1.212)	0.545 (1.188)	0.573 (1.237)	
Anxiety for Acceptance by Children	0.334 (0.803)	0.464 (0.953)	0.197 (0.575)	***
Restlessness	0.229 (0.568)	0.286 (0.633)	0.169 (0.484)	***
Inconsequential Behavior	1.433 (1.999)	1.887 (2.278)	0.953 (1.513)	***
Depression	1.049 (1.546)	1.196 (1.614)	0.893 (1.454)	***
Withdrawal	0.347 (0.826)	0.410 (0.910)	0.279 (0.720)	***
Unforthcomingness	1.606 (2.137)	1.630 (2.059)	1.582 (2.216)	
Writing Off of Adults and Adult Standards	1.019 (1.703)	1.263 (1.911)	0.760 (1.406)	***
Observations	15,356	7,899	7,457	15,356

Notes: This table lists the summary statistics of BSAG maladjustment syndromes for the full sample of 15,356 individuals observed at age 11. Measures are constructed using teachers' reports of misbehavior in school. For each maladjustment syndrome, a child receives a score, which is an integer between 0 and 15, with 15 indicating a persistent display of behavior described by the maladjustment syndrome. In the table, entries are averages for each syndrome for the full sample. Statistics are reported separately for both genders, for males and for females. In the last column, *, ** and *** mean that differences between males and females are significant at the 10, 5 and 1 percent levels, respectively.

Appendix A.2 Analysis Sample, Stratified by SES

Table A4 reports the summary statistics of demographics, education and labor market outcomes for subsamples stratified by SES. Table A5 reports the summary statistics of BSAG syndromes for subsamples stratified by SES.

Table A4: SUMMARY STATISTICS OF DEMOGRAPHICS, EDUCATION AND LABOR MARKET OUTCOMES, SUBSAMPLES BY SES

	Both	High SES	Low SES	Diff
No Formal Education	0.112 (0.316)	0.0842 (0.278)	0.259 (0.438)	***
CSE	0.128 (0.334)	0.116 (0.320)	0.192 (0.394)	***
O Level	0.345 (0.475)	0.350 (0.477)	0.320 (0.467)	
A Level	0.147 (0.354)	0.159 (0.365)	0.0871 (0.282)	***
Higher Education	0.146 (0.354)	0.155 (0.362)	0.0992 (0.299)	***
Higher Degree	0.122 (0.327)	0.137 (0.343)	0.0431 (0.203)	***
Hourly Wage	6.636 (3.053)	6.831 (3.071)	5.599 (2.730)	***
Weekly Hours Worked	36.36 (12.67)	36.58 (12.52)	35.18 (13.39)	**
Weekly Earnings	252.5 (152.5)	260.6 (153.6)	209.1 (138.4)	***
In Paid Work	0.804 (0.397)	0.808 (0.394)	0.782 (0.413)	*
Employee	0.675 (0.468)	0.677 (0.468)	0.667 (0.472)	
Financial Difficulty	0.160 (0.367)			
London Before 16	0.355 (0.479)	0.366 (0.482)	0.302 (0.459)	***
London at 33	0.298 (0.457)	0.308 (0.462)	0.244 (0.430)	***
Female	0.507 (0.500)	0.503 (0.500)	0.523 (0.500)	
Observations	7241	6082	1159	7241

Notes: This table lists the summary statistics of demographics, education and labor market outcomes for the analytic sample of 7,241 individuals. For education categories, and employment, entries are in the form of percentages divided by 100. Wages and weekly earnings are measured in 1992 British pounds. Employee means the percentage of individuals in the sample that are in paid work and not self-employed. Statistics are reported separately for both SES groups, for High SES and for Low SES. In the last column, *, ** and *** mean that differences between SES groups are significant at the 10, 5 and 1 percent levels, respectively.

Table A5: SUMMARY STATISTICS OF BSAG SYNDROMES, SUBSAMPLES BY SES

	Both	High SES	Low SES	Diff
Hostility Towards Adults	0.763 (1.753)	0.698 (1.647)	1.104 (2.198)	***
Hostility Towards Children	0.239 (0.718)	0.216 (0.675)	0.361 (0.902)	***
Anxiety for Acceptance by Adults	0.515 (1.152)	0.481 (1.098)	0.690 (1.392)	***
Anxiety for Acceptance by Children	0.298 (0.761)	0.284 (0.749)	0.368 (0.819)	***
Restlessness	0.194 (0.520)	0.177 (0.495)	0.280 (0.627)	***
Inconsequential Behavior	1.262 (1.869)	1.165 (1.776)	1.770 (2.229)	***
Depression	0.932 (1.454)	0.857 (1.382)	1.327 (1.732)	***
Withdrawal	0.308 (0.772)	0.293 (0.744)	0.387 (0.902)	***
Unforthcomingness	1.477 (2.034)	1.415 (1.991)	1.805 (2.219)	***
Writing Off of Adults and Adult Standards	0.908 (1.588)	0.855 (1.524)	1.185 (1.866)	***
Observations	7241	6082	1159	7241

Notes: This table lists the summary statistics of the BSAG maladjustment syndromes for the analytic sample of 7,241 individuals. Measures are constructed using teachers' reports of misbehavior in school. For each maladjustment syndrome, a child receives a score, which is an integer between 0 and 15, with 15 indicating a persistent display of behavior described by the maladjustment syndrome. In the table, entries are averages for each syndrome for the analytic sample. Statistics are reported separately for both SES groups, for High SES and for Low SES. In the last column, *, ** and *** mean that differences between SES groups are significant at the 10, 5 and 1 percent levels, respectively.

Appendix B Full Results from the Benchmark Model

This appendix presents the full estimation results for the main benchmark model. Table B6 presents all the parameter estimates from the equation linking socio-emotional skills to years of education and Table B7 presents all the parameter estimates from the equation linking socio-emotional skills to earnings when estimated separately by gender and controlling and omitting years of education.

Table B6: YEARS OF EDUCATION

	All	Males	Females
Externalizing Factor	-0.183 (0.083)	-0.226 (0.102)	-0.009 (0.073)
Internalizing Factor	-0.051 (0.080)	-0.059 (0.118)	-0.196 (0.072)
Cognition	1.112 (0.044)	1.160 (0.062)	0.932 (0.051)
Mother Education	0.593 (0.056)	0.427 (0.081)	0.766 (0.078)
Father Education	0.664 (0.061)	0.618 (0.089)	0.728 (0.085)
No Father Info.	0.316 (0.160)	0.359 (0.243)	0.342 (0.218)
Father in Skilled Oc.	0.157 (0.070)	0.227 (0.098)	0.099 (0.103)
Father in Managerial Oc.	0.661 (0.082)	0.759 (0.115)	0.594 (0.117)
Working Mother	-0.011 (0.051)	-0.063 (0.073)	0.041 (0.071)
London Dummy	-0.136 (0.052)	-0.166 (0.075)	-0.114 (0.073)
Financial Difficulties	-0.258 (0.080)	-0.385 (0.115)	-0.156 (0.112)
Female	-0.460 (0.055)		
Constant	12.379 (0.084)	12.426 (0.104)	11.851 (0.122)

This table contains parameter estimates from OLS regressions used to link non-cognitive skills to years of education. We regress years of education on a set of observable variables along with the unobserved factors. The coefficients on the three factors have been standardized to represent a 1 standard deviation effect.

Table B7: LOG EARNINGS

	All		Males		Females	
	[1]	[2]	[1]	[2]	[1]	[2]
Externalizing Factor	0.120 (0.031)	0.119 (0.027)	0.088 (0.023)	0.098 (0.022)	0.068 (0.034)	0.064 (0.030)
Internalizing Factor	-0.147 (0.029)	-0.130 (0.026)	-0.149 (0.027)	-0.149 (0.025)	-0.093 (0.035)	-0.051 (0.032)
Cognition	0.157 (0.015)	0.056 (0.015)	0.091 (0.013)	0.034 (0.013)	0.258 (0.021)	0.117 (0.021)
Years of Education		0.071 (0.004)		0.038 (0.004)		0.113 (0.008)
London Dummy	0.217 (0.018)	0.202 (0.018)	0.215 (0.017)	0.210 (0.016)	0.218 (0.035)	0.186 (0.032)
Financial Difficulties	-0.081 (0.023)	-0.054 (0.022)	-0.074 (0.020)	-0.055 (0.019)	-0.078 (0.046)	-0.051 (0.042)
Female	-0.900 (0.020)	-0.865 (0.019)				
Constant	5.642 (0.019)	4.718 (0.055)	5.645 (0.010)	5.148 (0.049)	4.739 (0.022)	3.341 (0.096)

This table contains parameter estimates from OLS regressions used to link non-cognitive skills to weekly earnings. We regress log weekly earnings on a set of observable variables along with the unobserved factors. The coefficients on the three factors have been standardized to represent a 1 standard deviation effect.

Appendix C Sensitivity Analysis

This appendix presents a host of sensitivity analyses to our benchmark model. We present estimates from the measurement system under a variety of different model and estimation assumptions. Appendix C.1 reports additional estimates for externalizing behavior when we change the dedicated measurement for each of the 3 factors. Appendix C.2 presents alternative estimates for when we allow for a fourth factor to load on the outcome equations. Appendix C.3 presents alternative estimates when we re-estimate our benchmark model in one single step. That is, we jointly estimate the parameters in the measurement system with the outcome equations. These exercises together show how robust and consistent our findings are.

Appendix C.1 Alternative Assumptions on Dedicated Measures

In this section, we vary which BSAG measures are used as dedicated measures of externalizing and internalizing behaviors and re-estimate the model. We report the loadings of the externalizing behavior on all measurements, for all possible pairs of dedicated measurements of the two socio-emotional skills in Tables C8 and C9 for males and females. A BSAG measure with a loading of “1” indicates that in that specification that measure is chosen as the dedicated measure of externalizing skill. A BSAG measure with a loading of “0” indicates that in that specification that measure is chosen as the dedicated measure of internalizing skill, and hence does not load on externalizing. Finally, we maintain throughout that verbal ability is the dedicated measure of cognition and hence always loads zero on externalizing.

We summarize the effects of the externalizing skill on the schooling and earnings equations for each possible pair of dedicated measure for the male and female samples in Table C10. For easy visualization, we plot the effect on weekly earnings from a one-standard-deviation increase in externalizing for each different choice of dedicated factor measurements in Figure C1.

Table C10 suggests that the externalizing skill reduces educational attainment in all specifications and in most of the specifications it significantly increases earnings for males. Even in cases where externalizing no longer predicts an earnings premium, it is never significantly negatively associated with it. The same is true for females where we document a slightly smaller effect on schooling that is negative in all but 3 specifications. Again, there is no single specification in which the effect of externalizing goes significantly in the opposite direction to what is presented in the benchmark model.

Finally, it is worth noting that in cases where externalizing is not associated with significantly higher earnings for males, the latent factor that supposedly capture externalizing loads heavily on depression, which is negatively associated with earnings (Models (13)-(18)). There is no econometric reason to rule out this type of skill even though it runs counter to the notion that internalizing (and not externalizing) should capture depression. This issue gets at the fundamental identification problem discussed in Almlund et al. (2011). We also discuss this point in Section 4.4.1.

Table C8: ALTERNATIVE DEDICATED MEASURES: LOADINGS ON EXTERNALIZING BEHAVIOR, MALES

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	
Hostile Towards Children	1	1.620 (0.089)	1.079 (0.060)	1.306 (0.069)	2.041 (0.096)	1.724 (0.107)	1	1.280 (0.050)	1.197 (0.059)	1.843 (0.084)	2.362 (0.098)	1.895 (0.107)	1	1.262 (0.047)	1.421 (0.064)	2.343 (0.101)	2.233 (0.086)	1.789 (0.099)	1	1.603 (0.087)	1.101 (0.064)	1.073 (0.062)	2.721 (0.175)	1.291 (0.083)	
Hostile Towards Adults	0.738 (0.030)	1	0.762 (0.034)	0.924 (0.041)	1.406 (0.050)	1.220 (0.065)	0.752 (0.029)	1	0.904 (0.035)	1.411 (0.052)	1.792 (0.052)	1.410 (0.070)	0.799 (0.028)	1	1.126 (0.039)	1.872 (0.063)	1.739 (0.047)	1.439 (0.070)	0.695 (0.032)	1	0.727 (0.031)	0.729 (0.031)	1.799 (0.075)	0.876 (0.049)	
Anxiety Towards Children	0.955 (0.048)	1.589 (0.075)	1	1.179 (0.050)	1.869 (0.075)	1.602 (0.097)	0.781 (0.035)	1.004 (0.036)	1	1.479 (0.059)	1.921 (0.073)	1.496 (0.086)	0.756 (0.034)	0.943 (0.033)	1	1.636 (0.064)	1.569 (0.057)	1.324 (0.075)	0.982 (0.050)	1.686 (0.083)	1	1.063 (0.047)	2.796 (0.136)	1.232 (0.073)	
Anxiety Towards Adults	0.854 (0.040)	1.416 (0.065)	0.961 (0.039)	1	1.511 (0.053)	1.440 (0.085)	0.574 (0.027)	0.714 (0.026)	0.754 (0.029)	1	1.454 (0.052)	1.126 (0.064)	0.490 (0.022)	0.607 (0.026)	0.594 (0.026)	1	1.000 (0.037)	0.895 (0.050)	0.870 (0.041)	1.627 (0.073)	0.975 (0.039)	1	2.822 (0.118)	1.107 (0.057)	
Inconsequential Behavior	0.468 (0.022)	0.767 (0.033)	0.500 (0.024)	0.607 (0.026)	1	0.795 (0.048)	0.459 (0.019)	0.600 (0.017)	0.560 (0.022)	0.857 (0.031)	0.852 (0.047)	0.474 (0.018)	0.583 (0.016)	0.651 (0.016)	1.062 (0.035)	1	1.062 (0.035)	0.828 (0.044)	0.442 (0.022)	0.442 (0.022)	0.777 (0.037)	0.505 (0.025)	1	0.610 (0.039)	
Restless Behavior	0.629 (0.045)	1.061 (0.070)	0.672 (0.048)	0.811 (0.055)	1.319 (0.085)	1	0.588 (0.035)	0.781 (0.042)	0.732 (0.045)	1.111 (0.067)	1.377 (0.083)	1	0.508 (0.034)	0.826 (0.039)	1.346 (0.050)	1.270 (0.073)	1	0.613 (0.045)	0.613 (0.045)	1.075 (0.077)	0.711 (0.052)	0.658 (0.048)	1.760 (0.143)	0	
Depression	-0.433 (0.048)	0.863 (0.054)	-0.582 (0.049)	-0.482 (0.093)	-0.914 (0.093)	-0.810 (0.093)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.071 (0.024)	
Withdrawal	-0.517 (0.033)	-0.962 (0.064)	-0.654 (0.035)	-0.604 (0.027)	-1.007 (0.067)	-0.883 (0.067)	-0.208 (0.019)	-0.263 (0.024)	-0.250 (0.021)	-0.341 (0.027)	-0.472 (0.040)	-0.437 (0.039)	0	0	0	0	0	0	0	0	0	0	0	0	-0.071 (0.024)
Unforthcomingness	0.093 (0.019)	0.054 (0.033)	0.057 (0.024)	0.136 (0.026)	0.156 (0.039)	0.112 (0.035)	0.290 (0.018)	0.377 (0.019)	0.329 (0.023)	0.540 (0.036)	0.632 (0.036)	0.476 (0.034)	0.410 (0.017)	0.498 (0.015)	0.598 (0.024)	0.970 (0.039)	0.872 (0.030)	0.706 (0.036)	0	0	0	0	0	0	0
Write Off Adults and Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Verbal Ability	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Reading Ability	-0.013 (0.013)	-0.025 (0.015)	-0.012 (0.016)	-0.025 (0.024)	-0.039 (0.022)	-0.025 (0.022)	-0.020 (0.009)	-0.028 (0.011)	-0.024 (0.011)	-0.043 (0.016)	-0.043 (0.021)	-0.038 (0.017)	-0.024 (0.008)	-0.032 (0.010)	-0.035 (0.010)	-0.051 (0.017)	-0.052 (0.016)	-0.044 (0.014)	-0.044 (0.014)	-0.011 (0.014)	-0.019 (0.016)	-0.016 (0.015)	-0.086 (0.044)	-0.019 (0.018)	
Non-Verbal Ability	-0.013 (0.012)	-0.027 (0.020)	-0.016 (0.014)	-0.017 (0.015)	-0.023 (0.021)	-0.021 (0.020)	-0.010 (0.008)	-0.014 (0.010)	-0.011 (0.010)	-0.017 (0.015)	-0.021 (0.019)	-0.017 (0.016)	-0.006 (0.007)	-0.011 (0.009)	-0.010 (0.009)	-0.015 (0.016)	-0.017 (0.015)	-0.018 (0.013)	-0.015 (0.013)	-0.015 (0.013)	-0.026 (0.025)	-0.016 (0.014)	-0.086 (0.041)	-0.021 (0.016)	
Math Ability	-0.017 (0.011)	-0.028 (0.018)	-0.012 (0.013)	-0.024 (0.013)	-0.036 (0.020)	-0.026 (0.018)	-0.024 (0.008)	-0.032 (0.009)	-0.026 (0.009)	-0.047 (0.013)	-0.054 (0.018)	-0.044 (0.014)	-0.029 (0.006)	-0.036 (0.008)	-0.041 (0.008)	-0.063 (0.014)	-0.058 (0.013)	-0.051 (0.011)	-0.051 (0.011)	-0.014 (0.012)	-0.022 (0.022)	-0.018 (0.012)	-0.027 (0.037)	-0.025 (0.014)	

Notes: This table contains the factor loadings for externalizing behavior for males under the different assumptions on dedicated measures. A “1” indicates that the measure is a dedicated measure for externalizing behavior and a “0” indicates that the measure is a dedicated measure for a skill other than externalizing behavior so it does not load onto externalizing.

Table C9: ALTERNATIVE DEDICATED MEASURES: LOADINGS ON EXTERNALIZING BEHAVIOR, FEMALES

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]
Hostile Towards Children	1	1.102 (0.064)	0.838 (0.059)	1.065 (0.063)	2.042 (0.119)	1.910 (0.137)	1	1.023 (0.042)	0.990 (0.054)	1.488 (0.068)	1.961 (0.088)	1.444 (0.087)	1	0.991 (0.037)	1.143 (0.058)	2.462 (0.110)	1.979 (0.081)	1.381 (0.080)	1	1.128 (0.065)	0.819 (0.053)	1.088 (0.063)	1.963 (0.105)	1.903 (0.128)
Hostile Towards Adults	0.994 (0.057)	1	0.715 (0.040)	0.913 (0.043)	1.708 (0.069)	1.594 (0.094)	0.919 (0.037)	1	0.947 (0.042)	1.453 (0.051)	1.937 (0.063)	1.416 (0.074)	1.037 (0.040)	1	1.205 (0.050)	2.649 (0.095)	2.064 (0.063)	1.431 (0.073)	0.949 (0.042)	1	0.701 (0.035)	0.939 (0.039)	1.824 (0.070)	1.749 (0.094)
Anxiety Towards Children	1.502 (0.096)	1.386 (0.077)	1	1.305 (0.064)	2.562 (0.136)	2.347 (0.152)	1.087 (0.059)	1.058 (0.049)	1	1.577 (0.069)	2.023 (0.096)	1.461 (0.093)	0.895 (0.047)	0.946 (0.041)	1	2.188 (0.104)	1.763 (0.081)	1.247 (0.080)	1.196 (0.070)	1.349 (0.070)	1	1.360 (0.068)	2.406 (0.127)	2.257 (0.142)
Anxiety Towards Adults	1.314 (0.074)	1.150 (0.049)	0.900 (0.042)	1	1.817 (0.073)	2.001 (0.111)	0.713 (0.031)	0.737 (0.029)	0.673 (0.031)	1	1.400 (0.051)	0.997 (0.055)	0.550 (0.024)	0.598 (0.019)	0.600 (0.028)	1	0.999 (0.036)	0.730 (0.042)	0.863 (0.040)	0.863 (0.040)	0.880 (0.042)	1	1.724 (0.064)	1.698 (0.092)
Inconsequential Behavior	0.551 (0.038)	0.542 (0.029)	0.420 (0.027)	0.542 (0.029)	1	0.944 (0.068)	0.478 (0.022)	0.534 (0.019)	0.484 (0.025)	0.797 (0.032)	1	0.756 (0.045)	0.532 (0.022)	0.542 (0.017)	0.619 (0.029)	1.310 (0.050)	1	0.720 (0.042)	0.498 (0.042)	0.498 (0.027)	0.543 (0.026)	0.417 (0.027)	1	0.944 (0.062)
Restless Behavior	0.765 (0.073)	0.731 (0.062)	0.571 (0.055)	0.758 (0.063)	1.293 (0.115)	1	0.608 (0.044)	0.692 (0.042)	0.641 (0.051)	1.048 (0.070)	1.306 (0.091)	1	0.685 (0.044)	0.679 (0.040)	0.708 (0.058)	1.668 (0.110)	1.311 (0.090)	1	0.673 (0.055)	0.733 (0.058)	0.579 (0.051)	0.711 (0.058)	1.303 (0.108)	1
Depression	-0.937 (0.096)	-0.809 (0.084)	-0.591 (0.058)	-0.727 (0.068)	-1.156 (0.121)	-1.245 (0.123)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Withdrawal	-1.051 (0.073)	-0.951 (0.059)	-0.681 (0.039)	-0.836 (0.040)	-1.373 (0.098)	-1.543 (0.123)	-0.219 (0.024)	-0.280 (0.031)	-0.241 (0.026)	-0.460 (0.038)	-0.493 (0.051)	-0.409 (0.041)	0	0	0	0	0	0	0	0	0	0	0	0
Unforthcomingness	-0.177 (0.039)	-0.073 (0.034)	-0.075 (0.027)	-0.074 (0.032)	-0.065 (0.054)	-0.139 (0.052)	0.250 (0.023)	0.308 (0.022)	0.251 (0.025)	0.428 (0.040)	0.553 (0.045)	0.431 (0.038)	0.463 (0.022)	0.461 (0.017)	0.541 (0.027)	1.202 (0.054)	0.800 (0.034)	0.632 (0.036)	0	0	0	0	0	0
Write Off Adults and Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Verbal Ability	-0.024 (0.021)	-0.015 (0.018)	-0.017 (0.014)	-0.015 (0.017)	-0.041 (0.029)	-0.029 (0.032)	-0.020 (0.010)	-0.024 (0.011)	-0.021 (0.009)	-0.017 (0.015)	-0.025 (0.020)	-0.042 (0.014)	-0.023 (0.008)	-0.027 (0.009)	-0.025 (0.009)	-0.046 (0.018)	-0.042 (0.014)	-0.032 (0.010)	-0.032 (0.010)	-0.019 (0.014)	-0.013 (0.014)	-0.015 (0.014)	-0.040 (0.026)	-0.048 (0.026)
Reading Ability	-0.019 (0.020)	-0.008 (0.017)	-0.005 (0.013)	-0.004 (0.016)	-0.015 (0.027)	-0.007 (0.030)	-0.011 (0.009)	-0.011 (0.010)	-0.008 (0.010)	-0.008 (0.015)	-0.021 (0.019)	-0.014 (0.014)	-0.011 (0.008)	-0.015 (0.009)	-0.015 (0.009)	-0.014 (0.018)	-0.019 (0.013)	-0.011 (0.010)	-0.007 (0.010)	-0.007 (0.013)	-0.006 (0.016)	-0.004 (0.013)	-0.010 (0.025)	-0.017 (0.025)
Non-Verbal Ability	-0.005 (0.018)	0.002 (0.015)	-0.007 (0.012)	-0.004 (0.014)	-0.025 (0.025)	-0.016 (0.027)	-0.025 (0.008)	-0.026 (0.009)	-0.026 (0.008)	-0.026 (0.013)	-0.048 (0.017)	-0.034 (0.012)	-0.030 (0.007)	-0.039 (0.008)	-0.038 (0.008)	-0.071 (0.016)	-0.057 (0.012)	-0.043 (0.009)	-0.043 (0.009)	-0.043 (0.012)	-0.043 (0.011)	-0.007 (0.012)	-0.030 (0.022)	-0.037 (0.022)
Math Ability																								

Notes: This table contains the factor loadings for externalizing behavior for females under the different assumptions on dedicated measures. A “1” indicates that the measure is a dedicated measure for externalizing behavior and a “0” indicates that the measure is a dedicated measure for a skill other than externalizing behavior so it does not load onto externalizing.

Table C10: ALTERNATIVE DEDICATED MEASURES: EFFECTS OF EXTERNALIZING BEHAVIOR ON SCHOOLING AND EARNINGS BY GENDER

Model	Dedicated Measure for Internalizing	Dedicated Measure for Externalizing	Males		Females	
			Schooling	Earnings	Schooling	Earnings
(1)	Depression	Hostility C.	-0.220 (0.085)	0.080 (0.019)	-0.084 (0.139)	0.121 (0.058)
(2)	Depression	Hostility A.	-0.306 (0.115)	0.101 (0.026)	0.046 (0.106)	0.087 (0.045)
(3)	Depression	Anxiety C.	-0.117 (0.067)	0.063 (0.015)	-0.038 (0.073)	0.065 (0.031)
(4)	Depression	Anxiety A.	-0.135 (0.049)	0.040 (0.010)	-0.019 (0.055)	0.048 (0.023)
(5)	Depression	Inconseq..	-0.208 (0.076)	0.066 (0.017)	-0.127 (0.100)	0.087 (0.042)
(6)	Depression	Restless.	-0.250 (0.092)	0.079 (0.021)	-0.026 (0.139)	0.119 (0.061)
(7)	Withdrawal	Hostility C.	-0.210 (0.052)	0.025 (0.011)	-0.100 (0.048)	0.040 (0.020)
(8)	Withdrawal	Hostility A.	-0.257 (0.055)	0.025 (0.012)	-0.155 (0.071)	0.054 (0.029)
(9)	Withdrawal	Anxiety C.	-0.158 (0.046)	0.027 (0.010)	-0.089 (0.049)	0.042 (0.020)
(10)	Withdrawal	Anxiety A.	-0.215 (0.049)	0.024 (0.011)	-0.074 (0.052)	0.043 (0.022)
(11)	Withdrawal	Inconseq..	-0.253 (0.063)	0.029 (0.014)	-0.105 (0.066)	0.050 (0.028)
(12)	Withdrawal	Restless.	-0.305 (0.072)	0.039 (0.015)	-0.118 (0.063)	0.046 (0.026)
(13)	Unforthc.	Hostility C.	-0.254 (0.048)	0.003 (0.010)	-0.132 (0.048)	0.034 (0.019)
(14)	Unforthc.	Hostility A.	-0.269 (0.047)	0.003 (0.010)	-0.175 (0.050)	0.033 (0.020)
(15)	Unforthc.	Anxiety C.	-0.260 (0.044)	0.003 (0.009)	-0.156 (0.048)	0.030 (0.020)
(16)	Unforthc.	Anxiety A.	-0.271 (0.051)	0.001 (0.011)	-0.175 (0.062)	0.041 (0.026)
(17)	Unforthc.	Inconseq..	-0.284 (0.054)	0.004 (0.011)	-0.160 (0.055)	0.031 (0.023)
(18)	Unforthc.	Restless.	-0.289 (0.051)	0.006 (0.010)	-0.202 (0.057)	0.030 (0.023)
(19)	Write Off	Hostility C.	-0.197 (0.098)	0.095 (0.022)	-0.099 (0.075)	0.070 (0.032)
(20)	Write Off	Hostility A.	-0.227 (0.141)	0.142 (0.032)	0.036 (0.114)	0.094 (0.047)
(21)	Write Off	Anxiety C.	-0.140 (0.073)	0.072 (0.017)	0.004 (0.060)	0.055 (0.026)
(22)	Write Off	Anxiety A.	-0.078 (0.045)	0.041 (0.010)	-0.028 (0.054)	0.047 (0.023)
(23)	Write Off	Inconseq..	-0.268 (0.153)	0.172 (0.036)	-0.105 (0.087)	0.074 (0.037)
(24)	Write Off	Restless.	-0.179 (0.061)	0.056 (0.014)	-0.179 (0.103)	0.098 (0.044)

Notes: This table reports the returns to externalizing behavior on schooling and the labor market outcomes for males under different assumptions of dedicated measurements. In the first row we report our preferred specification. In all models, the coefficient on the externalizing factor has been standardized to represent a 1 standard deviation effect. Standard errors in parentheses.

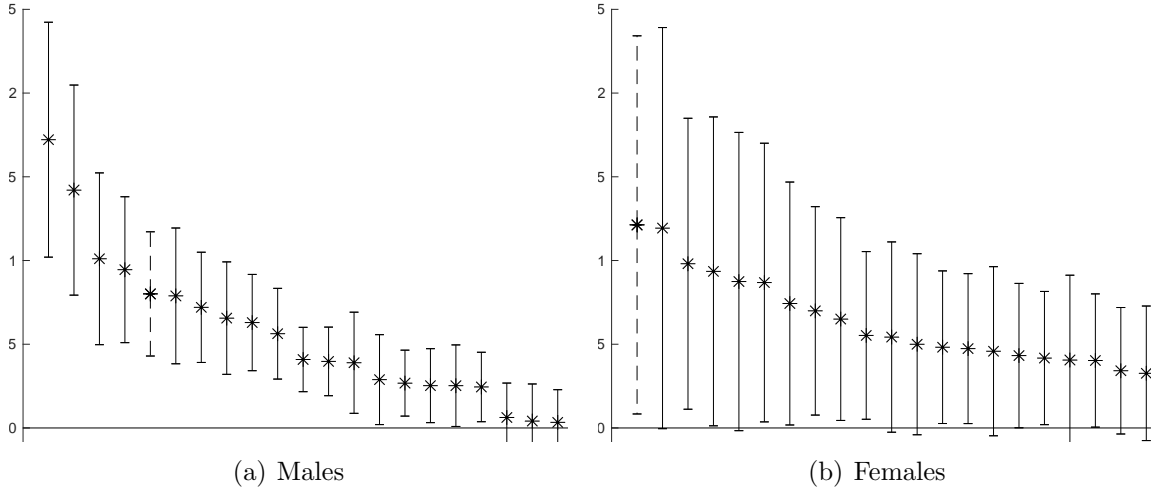


Figure C1: DISTRIBUTION OF EFFECTS OF EXTERNALIZING ON EARNINGS: Figure C1 visualizes the effects on weekly earnings from 1 standard deviation increase in externalizing behavior from specifications that span all possible combinations of the dedicated measurements for externalizing and internalizing behaviors. It summarizes the results reported in Table C10. The dashed bars indicate results from our benchmark model.

Appendix C.2 Alternative Assumptions on the Number of Factors

In this section, we test the assumption regarding the number of factors. We re-estimate the model assuming four unobserved factors underlying childhood classroom misbehaviors, and include this fourth factor, along with externalizing behavior, internalizing behavior, and cognition, in the choice and outcome equations. Since the fourth factor requires at least three measurements for identification, we present the results for earnings decomposed into its two components: wages and hours worked. Tables C11 and C12 report the estimation results for schooling, hourly wages, and weekly hours worked, respectively, by gender.

For males, the fourth factor is significantly positive correlated with schooling and hourly wages but negatively related to hours worked. For females, the fourth factor is also significantly positive correlated with schooling, but it is negatively related to both hourly wages and hours worked. Including the fourth factor does not significantly change the point estimates of externalizing in the labor market outcomes equations for both males and females. The effect on the point estimates of externalizing in the schooling equation is also minor. If anything, the negative effect of externalizing behaviors for females becomes larger, but still statistically insignificant, once we introduce the fourth factor. In general, there are no economic or statistical differences in the estimates without and with the fourth factor.

Appendix C.3 Joint Estimation of the Benchmark Econometric Model

In this section, we present estimates when the measurement system for the unobserved skills is estimated jointly with the choice and outcome equations. Tables C13 report the estimates of the measurement systems, for males and females respectively. The estimates display minimal differences compared to the estimates from the two-step estimation procedure from

Table C11: 4 FACTORS: YEARS OF EDUCATION

	All	Males	Females
Externalizing Factor	-0.096 (0.086)	-0.176 (0.110)	-0.034 (0.071)
Internalizing Factor	-0.119 (0.081)	-0.132 (0.131)	-0.178 (0.073)
Cognition	1.100 (0.045)	1.160 (0.067)	0.931 (0.051)
Additional Factor	0.206 (0.069)	0.302 (0.124)	0.400 (0.097)
Mother Education	0.594 (0.056)	0.436 (0.081)	0.761 (0.078)
Father Education	0.672 (0.061)	0.613 (0.090)	0.726 (0.085)
No Father Info.	0.328 (0.159)	0.339 (0.244)	0.324 (0.216)
Father in Skilled Oc.	0.166 (0.070)	0.219 (0.097)	0.123 (0.102)
Father in Managerial Oc.	0.670 (0.082)	0.758 (0.116)	0.619 (0.117)
Working Mother	-0.011 (0.051)	-0.063 (0.072)	0.039 (0.072)
London Dummy	-0.128 (0.052)	-0.163 (0.075)	-0.125 (0.073)
Financial Difficulties	-0.261 (0.080)	-0.384 (0.116)	-0.148 (0.112)
Female	-0.461 (0.054)		
Constant	12.380 (0.078)	12.437 (0.103)	11.830 (0.122)

This table contains parameter estimates from OLS regressions used to link non-cognitive skills to years of education. We regress years of education on a set of observable variables along with the unobserved factors. The coefficients on the three factors have been standardized to represent a 1 standard deviation effect.

Table 4 in the paper.

Tables C14, C15 present the estimates from the joint estimation procedure for the years of schooling and earnings equations by gender. Compared to the benchmark estimates from Table 5 in the main paper, externalizing behavior is still associated with lower schooling. The effect for females is larger in the joint estimation procedure but still statistically insignificant. The negative impact from the internalizing behavior and the positive impact from cognition on schooling continue to hold in the joint estimation. In addition, the impact of externalizing behavior on earnings from the joint estimation is still positive for both genders, although smaller in magnitude for males and larger for females.

Consistency of results across methods is reassuring. It suggests that, whether or not we use later labor market information to aid in the identification of the unobserved skills that underlie childhood classroom misbehavior, the three unobserved skills exhibit stable relationships with labor market outcomes.

Table C12: WAGES AND HOURS

Outcome	Log Hourly Wages			Log Hours Worked		
	All [1]	Males [2]	Females [3]	All [4]	Males [5]	Females [6]
Externalizing Factor	0.064 (0.018)	0.068 (0.021)	0.027 (0.016)	0.070 (0.018)	0.028 (0.012)	0.051 (0.021)
Internalizing Factor	-0.083 (0.017)	-0.119 (0.025)	-0.041 (0.016)	-0.058 (0.017)	-0.031 (0.014)	-0.027 (0.021)
Cognition	0.046 (0.010)	0.062 (0.013)	0.045 (0.012)	-0.011 (0.010)	-0.021 (0.007)	0.018 (0.015)
Additional Factor	-0.092 (0.012)	0.091 (0.020)	-0.201 (0.017)	-0.111 (0.012)	-0.047 (0.010)	-0.227 (0.022)
Years of Education	0.066 (0.003)	0.037 (0.004)	0.102 (0.005)	0.015 (0.003)	0.594 (0.002)	0.056 (0.007)
London Dummy	0.174 (0.011)	0.194 (0.015)	0.148 (0.016)	0.028 (0.012)	0.672 (0.009)	0.061 (0.023)
Financial Difficulties	-0.047 (0.015)	-0.052 (0.019)	-0.050 (0.022)	-0.003 (0.014)	0.328 (0.010)	0.159 (0.028)
Female	-0.326 (0.011)			-0.531 (0.015)		
Constant	1.038 (0.038)	1.409 (0.054)	0.276 (0.069)	3.547 (0.042)	3.783 (0.030)	2.585 (0.087)

Notes: This table contains parameter estimates from OLS regressions used to link non-cognitive skills to hourly wages and weekly hours worked. We regress log hourly wages and log weekly hours worked on a set of observable variables along with the unobserved factors. The coefficients on the three factors have been standardized to represent a 1 standard deviation effect.

Table C13: JOINT ESTIMATION: MEASUREMENT STRUCTURE

	All			Males			Females		
	Exter.	Inter.	Cog.	Exter.	Inter.	Cog.	Exter.	Inter.	Cog.
Hostile Towards Children	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Hostile Towards Adults	0.881 (0.028)	0.232 (0.034)	0.323 (0.020)	0.666 (0.029)	0.401 (0.041)	0.113 (0.026)	0.978 (0.057)	0.206 (0.073)	0.072 (0.045)
Anxiety Towards Children	1.196 (0.046)	-0.764 (0.060)	0.230 (0.034)	0.835 (0.042)	-0.387 (0.059)	0.033 (0.039)	1.469 (0.094)	-1.278 (0.126)	-0.353 (0.069)
Anxiety Towards Adults	1.015 (0.034)	-1.133 (0.047)	-0.057 (0.022)	0.743 (0.035)	-0.945 (0.052)	-0.182 (0.028)	1.278 (0.072)	-1.638 (0.094)	-0.734 (0.044)
Inconsequential Behavior	0.541 (0.020)	-0.004 (0.027)	-0.084 (0.016)	0.434 (0.020)	0.090 (0.030)	-0.160 (0.020)	0.538 (0.037)	-0.035 (0.055)	-0.317 (0.035)
Restless Behavior	0.732 (0.040)	-0.135 (0.059)	-0.195 (0.041)	0.579 (0.040)	0.012 (0.068)	-0.250 (0.051)	0.745 (0.072)	-0.170 (0.122)	-0.604 (0.078)
Depression	0.000	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000
Withdrawal	-0.613 (0.046)	2.239 (0.082)	0.090 (0.034)	-0.456 (0.048)	2.191 (0.099)	0.129 (0.039)	-0.905 (0.092)	2.650 (0.147)	0.878 (0.076)
Unforthcomingness	-0.709 (0.032)	1.701 (0.051)	-0.019 (0.017)	-0.524 (0.032)	1.549 (0.059)	0.046 (0.022)	-1.016 (0.070)	2.207 (0.096)	0.766 (0.037)
Write Off Adults and Standards	0.028 (0.018)	1.059 (0.033)	0.068 (0.017)	0.082 (0.018)	1.005 (0.040)	0.033 (0.021)	-0.166 (0.038)	1.358 (0.066)	0.340 (0.033)
Verbal Ability	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000	1.000
Reading Ability	-0.017 (0.011)	-0.015 (-0.015)	0.851 (0.012)	-0.017 (0.012)	-0.026 (0.024)	0.861 (0.017)	-0.023 (0.020)	-0.026 (0.033)	0.852 (0.022)
Non-Verbal Ability	-0.011 (0.010)	0.007 (0.007)	0.904 (0.013)	-0.014 (0.011)	0.018 (0.024)	0.888 (0.018)	-0.019 (0.020)	0.018 (0.033)	0.933 (0.023)
Math Ability	-0.018 (0.009)	-0.038 (-0.038)	0.911 (0.012)	-0.014 (0.010)	-0.041 (0.020)	0.924 (0.017)	-0.005 (0.017)	-0.041 (0.028)	0.904 (0.020)

Notes: This table presents estimates of factor loadings mapping latent skills to BSAG maladjustment syndromes and aptitude test scores. Estimates are reported for the pooled sample as well as separately by gender. We report standard errors in parentheses.

Table C14: JOINT ESTIMATION: YEARS OF EDUCATION

	All	Males	Females
Externalizing Factor	-0.167 (0.068)	-0.200 (0.075)	-0.084 (0.135)
Internalizing Factor	-0.074 (0.056)	-0.097 (0.074)	-0.101 (0.150)
Cognition	1.134 (0.038)	1.193 (0.051)	0.969 (0.061)
Mother Education	0.591 (0.056)	0.424 (0.081)	0.757 (0.078)
Father Education	0.660 (0.061)	0.607 (0.089)	0.717 (0.085)
No Father Info.	0.316 (0.160)	0.353 (0.243)	0.328 (0.216)
Father in Skilled Oc.	0.154 (0.070)	0.225 (0.097)	0.096 (0.103)
Father in Managerial Oc.	0.660 (0.082)	0.753 (0.115)	0.582 (0.118)
Working Mother	-0.011 (0.051)	-0.063 (0.072)	0.038 (0.071)
London Dummy	-0.130 (0.052)	-0.163 (0.075)	-0.112 (0.073)
Financial Difficulties	-0.257 (0.080)	-0.380 (0.116)	-0.149 (0.111)
Female	-0.420 (0.055)		
Constant	12.443 (0.084)	12.374 (0.104)	11.877 (0.122)

Notes: This table contains parameter estimates from OLS regressions used to link non-cognitive skills to years of education. We regress years of education on a set of observable variables along with the unobserved factors. The coefficients on the three factors have been standardized to represent a 1 standard deviation effect.

Table C15: JOINT ESTIMATION: LOG EARNINGS

	All	Males	Females
Externalizing Factor	0.095 (0.023)	0.061 (0.017)	0.118 (0.056)
Internalizing Factor	-0.096 (0.019)	-0.093 (0.017)	-0.124 (0.063)
Cognition	0.097 (0.012)	0.075 (0.011)	0.095 (0.026)
Years of Education	0.072 (0.004)	0.038 (0.004)	0.113 (0.008)
London Dummy	0.202 (0.018)	0.210 (0.016)	0.186 (0.032)
Financial Difficulties	-0.054 (0.022)	-0.054 (0.019)	-0.050 (0.042)
Female	-0.861 (0.019)		
Constant	4.726 (0.055)	5.150 (0.049)	3.343 (0.096)

Notes: This table contains parameter estimates from OLS regressions used to link non-cognitive skills to weekly earnings. We regress log weekly earnings on a set of observable variables along with the unobserved factors. The coefficients on the three factors have been standardized to represent a 1 standard deviation effect.

Appendix D Selection into Employment

Recall that earnings, wage and hours regressions are estimated on individuals who are employed. One possible concern is that the estimated relationship between externalizing and earnings is driven solely by selection into employment. In order to consider this relationship we first estimate a multinomial logit model of selection into self and paid employment while keeping the factor analysis structure constant.¹ The results can be found in Table D16 where unemployed individuals are the base group. We find important gender differences in results. Females with higher levels of externalizing behavior are less likely to be unemployed and are more likely to be either self-employed or an employee at age 33. For males, externalizing behavior is unrelated to the employment decision. Moreover, both males and females with high levels of internalizing behavior are significantly more likely to be unemployed. Cognition is related to a higher probability of being an employee for males but unrelated to female labor force participation once we condition on schooling. Educational attainment seems to dominate the decision to become an employee.

The results for externalizing behavior and females are especially concerning since they raise the possibility that high-externalizing women who are relatively productive (or who work more hours when employed) tend to self-select into employment. This could be the case if high-externalizing individuals face a lower disutility of working and are therefore observed in unemployment only if they are particularly unproductive due to other (omitted) factors. To address this concern, we exploit earnings data for individuals who were not employed at age 33 but reported earnings in a previous employment. The idea is that labor market outcomes at other periods would provide some insight into how much unemployed individuals would have earned if they had worked at age 33 (Neal and Johnson, 1996). Using this approach, the proportion of individuals in our sample for whom we obtain a measure of earnings rises from 62% to 92% (90% for males and 93.5% for females).² If results are driven by highly productive, high-externalizing individuals entering employment, we would expect the estimated relationship between externalizing and earnings to fall once we include earnings information on unemployed individuals.

We re-estimate the model outlined in Section 3 using the larger sample that includes individuals with earnings information from other years. Estimates where we use the new measure of earnings that include individuals not working at age 33 are presented in Table D17. We do not find a significant decrease in the estimated relationship between externalizing behavior and weekly earnings once we include earnings for unemployed males and females. These results provide evidence against the possibility that selection into employment explains the estimated results for the males in our sample.

¹In other words, we keep the measurement system mapping latent skills to observed measurements of misbehavior constant so that changes in the parameters are solely attributable to changes in the control variables and not in the measurement system.

²This percentage is somewhat lower for males because a higher percentage of males are always classified as self-employed.

Table D16: MULTINOMIAL LOGIT - EMPLOYMENT DECISION

	All		Males		Females	
	Self-Emp	Employee	Self-Emp	Employee	Self-Emp	Employee
Externalizing Factor	0.371 (0.146)	0.184 (0.107)	0.079 (0.188)	-0.046 (0.166)	0.282 (0.135)	0.199 (0.079)
Internalizing Factor	-0.413 (0.138)	-0.288 (0.100)	-0.380 (0.217)	-0.294 (0.190)	-0.234 (0.141)	-0.248 (0.079)
Cognition	-0.032 (0.074)	0.063 (0.056)	0.143 (0.112)	0.268 (0.100)	0.095 (0.087)	0.051 (0.052)
Years of Education	0.004 (0.019)	0.058 (0.014)	0.016 (0.027)	0.086 (0.025)	0.026 (0.029)	0.047 (0.018)
London Dummy	-0.027 (0.096)	-0.246 (0.071)	0.166 (0.163)	-0.016 (0.149)	-0.068 (0.147)	-0.330 (0.083)
Financial Difficulties	-0.146 (0.124)	0.031 (0.088)	-0.459 (0.183)	-0.398 (0.159)	-0.129 (0.201)	0.215 (0.109)
Female	-2.153 (0.099)	-1.509 (0.076)				
Constant	0.775 (0.246)	1.557 (0.191)	0.750 (0.352)	1.330 (0.329)	-1.643 (0.366)	0.179 (0.223)

Notes: This table contains parameter estimates from a multinomial logit model used to link non-cognitive skills to the employment decision at age 33. We estimate the relationship between employment and a set of observable variables along with the unobserved factors. The coefficients on the three factors have been standardized to represent a 1 standard deviation effect.

Table D17: IMPUTED EARNINGS: LOG EARNINGS

	All	Males	Females
Externalizing Factor	0.105 (0.029)	0.088 (0.026)	0.058 (0.029)
Internalizing Factor	-0.122 (0.028)	-0.138 (0.030)	-0.074 (0.029)
Cognition	0.063 (0.015)	0.059 (0.015)	0.088 (0.019)
Years of Education	0.075 (0.004)	0.040 (0.004)	0.109 (0.006)
London Dummy	0.210 (0.017)	0.199 (0.018)	0.209 (0.029)
Financial Difficulties	-0.064 (0.023)	-0.051 (0.021)	-0.078 (0.039)
Female	-0.897 (0.019)		
Constant	4.614 (0.054)	5.059 (0.056)	3.294 (0.081)

Notes: This table contains parameter estimates from OLS regressions used to link non-cognitive skills to weekly imputed earnings. We regress log weekly imputed earnings on a set of observable variables along with the unobserved factors. The coefficients on the three factors have been standardized to represent a 1 standard deviation effect.

Appendix E Personality Traits and Cortisol

Appendix E.1 Controlling for the Big 5 Personality Traits

We include the Big 5 personality traits (extraversion, agreeableness, conscientiousness, emotional stability, and intellect) in regressions similar to those in the preliminary analysis in Section 2.3. Table E18 reports the correlation coefficients between the 3 skills and the Big 5 traits. Table E19 and E20 shows that controlling for the Big 5 traits reduces the effect of externalizing behavior on earnings and slightly increase its negative effect on education. However, the key patterns remain after we control for the Big 5 personality traits. Thus, while there is some correlation between the factors we study and the Big 5 personality traits, they measure different underlying skills. Furthermore, a key concern with this analysis is that the Big 5 personality traits are measured at age 50 in the NCDS. Personality traits evolve during young adult years and only stabilize in the mid-30s, which makes the interpretation of results difficult (Todd and Zhang, 2020). For example, high-externalizing individuals may develop certain personality traits over their work life in order to work productively. A better test of whether the inclusion of additional socio-emotional skills affects the relationship between externalizing behavior, schooling and earnings is to consider other skills measured at the same time. This is not possible in the NCDS, but is possible in the British Cohort Study, which we examine in greater detail in Appendix G. Using the BCS, we construct socio-emotional skills from a larger set of behavioral questions. The larger number of measurements allows us to identify as many as 8 distinct factors, three of them capturing externalizing behavior, internalizing behavior and cognition. We find that the key patterns from our benchmark model still hold when we identify the externalizing behavior using the larger set of measurements, and also when we include the larger set of socio-emotional skills in the choice and outcome equations.

Table E18: BIG 5: CORRELATION MATRIX

Variable	Ext.	Int.	Cog.	Ext.	Agr.	Con.	Emo.	Int.
Externalizing	1.000							
Internalizing	0.509	1.000						
Cognition	-0.285	-0.281	1.000					
Extraversion	0.017	-0.132	0.044	1.000				
Agreeableness	-0.128	-0.116	0.126	0.369	1.000			
Conscientiousness	-0.055	-0.080	0.049	0.151	0.271	1.000		
Emotional Stability	-0.057	-0.043	0.098	0.236	0.049	0.188	1.000	
Intellect	-0.047	-0.100	0.320	0.401	0.331	0.230	0.093	1.000

Notes: This table contains correlation coefficients between the crude measures of the unobserved skills and the Big 5 personality traits measured at age 50 in the NCDS. To construct the crude measures of the unobserved skills, we sum up all variables used to measure that skill in the preliminary analysis and then normalize each unobserved skill.

Table E19: BIG 5: YEARS OF EDUCATION

Variable	[1]	[2]	[3]	[4]	[5]	[6]
Externalizing	-0.091 (0.039)	-0.107 (0.039)	-0.138 (0.050)	-0.144 (0.050)	0.002 (0.061)	-0.032 (0.062)
Internalizing	-0.085 (0.040)	-0.086 (0.040)	-0.083 (0.053)	-0.093 (0.054)	-0.099 (0.059)	-0.084 (0.059)
Cognition	1.179 (0.039)	1.047 (0.042)	1.231 (0.055)	1.110 (0.058)	1.117 (0.057)	0.975 (0.059)
Extraversion		-0.089 (0.037)		-0.103 (0.053)		-0.072 (0.052)
Agreeableness		-0.014 (0.038)		0.032 (0.051)		-0.063 (0.057)
Conscientiousness		-0.022 (0.036)		0.019 (0.052)		-0.056 (0.049)
Emotional Stability		0.019 (0.034)		-0.039 (0.049)		0.073 (0.047)
Intellect		0.401 (0.040)		0.348 (0.058)		0.450 (0.054)
Female	-0.584 (0.064)	-0.523 (0.072)				
Constant	12.373 (0.089)	12.397 (0.090)	12.457 (0.120)	12.501 (0.122)	11.719 (0.110)	11.839 (0.112)
Obs.	4,645	4,645	2,258	2,258	2,387	2,387

Notes: This table presents descriptive evidence linking early skills to educational attainment when controlling for the Big 5 personality traits measured at age 50 in the NCDS . Columns (1) to (6) contain parameter estimates from a linear regression model used to link crude measures of unobserved skills to years of education. Columns (1) and (2) includes all individuals with Big 5 traits available, (3) and (4) include only males and (5) and (6) only females. To construct the crude measures of the three unobserved skills, we sum up all variables used to measure that skill according to Table A1 and then normalize each unobserved skill to have mean zero and standard deviation one. Standard errors in parentheses.

Appendix E.2 Controlling for Stress Hormones (Cortisol)

We include a measure of cortisol in the regressions similar to those in the preliminary analysis in Section 2.3. Table E21 reports the correlation coefficients between the 3 skills and a salivary cortisol measure collected at age 44. Table E22 and E23 shows that controlling for cortisol doesn't change significantly the effect of externalizing behavior on earnings or its negative effect on education. Thus, while there is some correlation between the factors we study and the cortisol measure, it influences earnings and education via different pathways. Furthermore, as with the Big5, a key concern with this analysis is that the cortisol measure was collected at the age 44 survey. Cortisol at 44 is a poor proxy for the stress hormones at age 11 or 33 when skills and earnings were measured.

This makes the interpretation of results difficult. With better data, we hope that future research can explore the possible biological pathways through which skills influence education and labor market outcomes.

Table E20: BIG 5: LOG WEEKLY EARNINGS

Variable	[1]	[2]	[3]	[4]	[5]	[6]
Externalizing	0.026 (0.013)	0.018 (0.013)	0.017 (0.011)	0.011 (0.011)	0.029 (0.030)	0.014 (0.031)
Internalizing	-0.061 (0.013)	-0.052 (0.013)	-0.051 (0.011)	-0.043 (0.011)	-0.071 (0.028)	-0.057 (0.028)
Cognition	0.191 (0.012)	0.166 (0.013)	0.129 (0.010)	0.124 (0.011)	0.273 (0.024)	0.227 (0.025)
Extraversion		0.024 (0.012)		0.042 (0.010)		-0.001 (0.023)
Agreeableness		-0.032 (0.012)		-0.031 (0.010)		-0.031 (0.026)
Conscientiousness		0.023 (0.011)		0.039 (0.009)		0.007 (0.020)
Emotional Stability		0.027 (0.011)		0.007 (0.009)		0.053 (0.020)
Intellect		0.067 (0.013)		0.013 (0.011)		0.132 (0.023)
Female	-0.900 (0.021)	-0.874 (0.023)				
Constant	5.630 (0.012)	5.623 (0.013)	5.645 (0.012)	5.642 (0.012)	4.703 (0.027)	4.736 (0.029)
Obs.	3,224	3,224	1,722	1,722	1,502	1,502

Notes: This table presents descriptive evidence linking early skills to earnings when controlling for the Big 5 personality traits measured at age 50 in the NCDS . Columns (1) to (6) contain parameter estimates from a linear regression model used to link crude measures of unobserved skills to log earnings. Columns (1) and (2) includes all individuals with Big 5 traits available, (3) and (4) include only males and (5) and (6) only females. To construct the crude measures of the three unobserved skills, we sum up all variables used to measure that skill according to Table A1 and then normalize each unobserved skill to have mean zero and standard deviation one. Standard errors in parentheses.

Table E21: CORTISOL: CORRELATION MATRIX

Variable	Ext.	Int.	Cog.	Cortisol
Externalizing	1.000			
Internalizing	0.578	1.000		
Cognition	-0.321	-0.306	1.000	
Cortisol	0.038	0.035	-0.059	1.000

Notes: This table contains correlation coefficients between the crude measures of the unobserved skills and salivary cortisol measure collected at age 44 in the NCDS. To construct the crude measures of the unobserved skills, we sum up all variables used to measure that skill according to Table A1 and then normalize each unobserved skill. The cortisol measure is in logs.

Table E22: CORTISOL: YEARS OF EDUCATION

Variable	[1]	[2]	[3]	[4]	[5]	[6]
Externalizing	-0.117 (0.040)	-0.116 (0.040)	-0.142 (0.051)	-0.141 (0.051)	-0.057 (0.064)	-0.055 (0.065)
Internalizing	-0.052 (0.040)	-0.054 (0.040)	-0.042 (0.051)	-0.044 (0.052)	-0.071 (0.062)	-0.070 (0.062)
Cognition	1.165 (0.043)	1.162 (0.043)	1.238 (0.059)	1.236 (0.059)	1.074 (0.062)	1.069 (0.062)
Cortisol		-0.008 (0.006)		-0.004 (0.007)		-0.015 (0.009)
Female	-0.573 (0.070)	-0.581 (0.070)				
Constant	12.204 (0.097)	12.276 (0.108)	12.369 (0.133)	12.406 (0.147)	11.488 (0.116)	11.604 (0.135)
Obs.	3,854	3,854	1,871	1,871	1,983	1,983

Notes: This table presents descriptive evidence linking early skills to educational attainment when controlling for salivary cortisol measure collected at age 44 in the NCDS. Columns (1) to (6) contain parameter estimates from a linear regression model used to link crude measures of unobserved skills to years of education. Columns (1) and (2) includes all individuals with cortisol measure available, (3) and (4) include only males and (5) and (6) only females. To construct the crude measures of the three unobserved skills, we sum up all variables used to measure that skill according to Table A1 and then normalize each unobserved skill to have mean zero and standard deviation one. Standard errors in parentheses.

Table E23: CORTISOL: LOG WEEKLY EARNINGS

Variable	[1]	[2]	[3]	[4]	[5]	[6]
Externalizing	0.032 (0.014)	0.031 (0.014)	0.020 (0.011)	0.021 (0.011)	0.034 (0.036)	0.032 (0.036)
Internalizing	-0.055 (0.014)	-0.054 (0.014)	-0.062 (0.011)	-0.063 (0.011)	-0.041 (0.031)	-0.040 (0.031)
Cognition	0.202 (0.013)	0.203 (0.013)	0.133 (0.011)	0.133 (0.011)	0.294 (0.025)	0.295 (0.025)
Cortisol		0.001 (0.002)		-0.001 (0.001)		0.006 (0.004)
Female	-0.932 (0.023)	-0.931 (0.023)				
Constant	5.618 (0.013)	5.607 (0.020)	5.637 (0.012)	5.647 (0.018)	4.660 (0.029)	4.613 (0.044)
Obs.	2,702	2,702	1,455	1,455	1,247	1,247

Notes: This table presents descriptive evidence linking early skills to earnings when controlling for salivary cortisol measure collected at age 44 in the NCDS. Columns (1) to (6) contain parameter estimates from a linear regression model used to link crude measures of unobserved skills to log earnings. Columns (1) and (2) includes all individuals with cortisol measure available, (3) and (4) include only males and (5) and (6) only females. To construct the crude measures of the three unobserved skills, we sum up all variables used to measure that skill according to Table A1 and then normalize each unobserved skill to have mean zero and standard deviation one. Standard errors in parentheses.

Appendix F Returns Across Occupations

We sketch a simple task-based framework to examine heterogeneous returns to skills by tasks employed in different occupations. Suppose an individual i possesses three skills, externalizing (f_1), internalizing (f_2) and cognitive skill (f_3). In her job, she needs to complete two tasks, say an abstract/social task ($k = 1$) and a routine/manual task ($k = 2$). Let $T_{i,k}$ be her productivity in performing task k and it is determined by the three skills and the schooling level (s_i):

$$T_{i,k} = \tau_k(f_{i,1}, f_{i,2}, f_{i,3}, s_i), \quad k = 1, 2 \quad (1)$$

Her labor market earnings are determined by her productivity in each task, the intensity with which each task is required in her occupation of choice (Υ_i), and an individual productivity component (Ψ) that captures additional effects of skills and education that do not interact with the tasks intensity (e.g., preference for working long hours):

$$y_i = \Upsilon_i(T_{i,1}, T_{i,2}, \Psi(f_{i,1}, f_{i,2}, f_{i,3}, s_i)). \quad (2)$$

A special case of this general formulation is when we assume linear relationships in functions τ_k , Υ_i and Ψ in (1) and (2). In particular, let $\iota_{i,1}$ be the intensity of abstract/social tasks and $\iota_{i,2}$ the intensity of routine/manual tasks required in individual i 's occupation in Υ_i , then we can rewrite equation (2) as

$$\begin{aligned} y_i &= \iota_{i,1}T_{i,1} + \iota_{i,2}T_{i,2} + \psi_1f_{i,1} + \psi_2f_{i,2} + \psi_3f_{i,3} + \psi_s s_i + \psi_0 \\ &= \iota_{i,1} \left(\sum_{j=1}^3 \tau_{1,j}f_{i,j} + \tau_{1,s}s_i + \tau_{1,0} \right) + \iota_{i,2} \left(\sum_{j=1}^3 \tau_{2,j}f_{i,j} + \tau_{2,s}s_i + \tau_{2,0} \right) + \sum_{j=1}^3 \psi_j f_{i,j} + \psi_s s_i + \psi_0 \\ &= \sum_{j=1}^3 \psi_j f_{i,j} + \sum_{j=1}^3 \tau_{1,j} \cdot (\iota_{i,1} \times f_{i,j}) + \tau_{1,0} \cdot \iota_{i,1} \\ &\quad + \sum_{j=1}^3 \tau_{2,j} \cdot (\iota_{i,2} \times f_{i,j}) + \tau_{2,0} \cdot \iota_{i,2} + \alpha_s s_i + \psi_0 \end{aligned} \quad (3)$$

where $\alpha_s = \iota_{i,1}\tau_{1,s} + \iota_{i,2}\tau_{2,s} + \psi_s$.

Equation (3) highlights how the labor market returns of different skills will depend on the combination of tasks required in their chosen occupation. In particular, the return to skill j for individual i will depend on the skill's general productivity (ψ_j), its task productivity effects ($\tau_{1,j}$ and $\tau_{2,j}$), and on the task intensities at the individual's chosen occupation ($\iota_{i,1}$ and $\iota_{i,2}$).

The task intensities ($\iota_{i,1}$ and $\iota_{i,2}$) are observed in our data. We follow a similar methodology as in Acemoglu and Autor (2011) and Autor and Handel (2013) to construct the task intensity for each individual i in occupation k (ι_{ik}). The task intensities are com-

posite measures of O*NET Work Activities and Work Context Importance scales.³ The abstract/social task measure is a normalized composite scale of six O*NET subscales: “analyzing data/information,” “thinking creatively,” “interpreting information for others,” “establishing and maintaining personal relationships,” and “guiding, directing, and motivating subordinates and coaching and developing others.” The routine/manual task measure is a normalized composite scale of six O*NET subscales: “importance of repeating the same tasks,” “importance of being exact or accurate,” “structured versus unstructured work,” “controlling machines and processes,” “keeping a pace set by machinery or equipment,” and “time spent making repetitive motions.” The two composite scales were constructed using factor analysis.

We extend our main econometric model by replacing the earnings outcome equation with equation (3) to estimate heterogeneous skill returns by tasks. Since the task intensities ($\iota_{i,1}$ and $\iota_{i,2}$) are observed, the estimated interactions between skills and task intensities are measures of skills task productivity effects ($\tau_{k,j}$ s). A positive (negative) interaction between task k and skill j implies that skill j increases (decreases) individual productivity in performing task k . The results from the extended model are found in Table F24.

³The O*NET is an American classification system, and the NCDS collected detailed information on individual occupations in the ISCO-88 classification system. We rely on the methodology in Hardy, Keister, and Lewandowski (2018) to link the NCDS individuals’ occupations to the O*NET classification.

Table F24: LOG EARNINGS BY OCCUPATIONAL TASKS

	All		Males		Females	
	Abstract	Routine	Abstract	Routine	Abstract	Routine
Externalizing Factor	0.099 (0.012)	0.125 (0.012)	0.095 (0.010)	0.092 (0.010)	0.037 (0.016)	0.055 (0.016)
Internalizing Factor	-0.107 (0.023)	-0.151 (0.024)	-0.128 (0.023)	-0.138 (0.024)	-0.014 (0.023)	-0.035 (0.023)
Cognition	0.047 (0.015)	0.032 (0.015)	0.026 (0.014)	0.036 (0.014)	0.114 (0.022)	0.073 (0.023)
Ext. x Task Intensity	0.000 (0.012)	0.033 (0.011)	-0.036 (0.009)	0.044 (0.008)	0.017 (0.020)	0.011 (0.018)
Int. x Task Intensity	-0.028 (0.024)	-0.031 (0.021)	0.018 (0.020)	-0.043 (0.018)	-0.048 (0.027)	-0.001 (0.024)
Cog. x Task Intensity	-0.002 (0.017)	-0.002 (0.014)	0.003 (0.013)	-0.019 (0.012)	0.005 (0.028)	0.018 (0.026)
Task Intensity	0.283 (0.055)	0.343 (0.048)	0.142 (0.043)	-0.034 (0.037)	0.402 (0.113)	0.651 (0.100)
Years of Education	0.053 (0.004)	0.079 (0.004)	0.033 (0.004)	0.041 (0.004)	0.068 (0.008)	0.122 (0.007)
London Dummy	0.189 (0.017)	0.195 (0.018)	0.203 (0.017)	0.215 (0.017)	0.180 (0.031)	0.166 (0.031)
Financial Difficulties	-0.060 (0.021)	-0.046 (0.022)	-0.052 (0.019)	-0.056 (0.020)	-0.073 (0.040)	-0.030 (0.040)
Yedu x Task Intensity	-0.009 (0.004)	-0.019 (0.004)	-0.005 (0.003)	0.004 (0.003)	-0.011 (0.009)	-0.036 (0.008)
Female	-0.886 (0.019)	-0.869 (0.018)				
Constant	4.965 (0.058)	4.613 (0.052)	5.224 (0.050)	5.116 (0.049)	3.895 (0.101)	3.206 (0.090)

Notes: This table lists parameter estimates from a linear model used to link socio-emotional and cognitive skills to log earnings across occupational tasks. We regress log earnings on a set of observable variables along with the unobserved skills and their interaction with the occupational task intensities. Task intensities are standardized composite measures of O*NET Work Activities and Work Context Importance scales, as in Acemoglu and Autor (2011) and Autor and Handel (2013). The abstract/social task measure is a normalized composite scale of six O*NET subscales: ‘analyzing data/information’, ‘thinking creatively’, ‘Interpreting information for others’, ‘establishing and maintaining personal relationships’, and ‘guiding, directing, and motivating subordinates and Coaching and developing others’. The routine/manual task measure is a normalized composite scale of six O*NET subscales: ‘importance of repeating the same tasks’, ‘importance of being exact or accurate’, ‘structured versus unstructured work’, ‘controlling machines and processes’, ‘keeping a pace set by machinery or equipment’, and ‘time spent making repetitive motions’. The coefficients on the three skills have been standardized to represent a 1 standard deviation effect. Standard errors in parentheses.

Appendix G Replication on Additional Datasets

In this section, we examine externalizing behavior, schooling and earnings in four additional datasets from the UK and the U.S. As far as we know, we examine all major cohort studies with information on (i) childhood behavior, from which externalizing and internalizing behaviors can be measured; (ii) educational outcomes; and (iii) labor market outcomes. In particular, we assess whether the main patterns we find using the NCDS hold in the 1970 British Cohort Study (BCS), the National Education Longitudinal Study of 1988 (NELS), the Child Development Supplement of the Panel Study of Income Dynamics (PSID-CDS), and the National Longitudinal Survey of Youth 1979 Children and Young Adults (CNLSY). The first of these datasets is from the UK and the remaining three are from the U.S. Compared to the 1958 cohort of the NCDS, the BCS features a more recent cohort. The comparison thus speaks to the stability of the returns to the skills over time in the UK. The three U.S. datasets also cover relatively recent cohorts. They also allow us to assess whether results extend to a different country. In a document that is available upon request, we provide details on each dataset along with details on how we use each one to construct measures of socio-emotional skills and economic outcomes.

For brevity of exposition, we summarize the main efforts that we have made to ensure comparability of measures across datasets and summarize the main take-away in Tables G25 and G26. For each data set, we construct measures of socio-emotional skills in a way that has been validated in earlier research in each dataset. In the BCS, we factor analyze teachers' descriptions of classroom behaviors for ten-year-olds and obtain 8 factors, 3 of which correspond to externalizing behavior, internalizing behavior and cognition. We report estimates with only these 3 factors (cognition, externalizing behavior and internalizing behavior) in Tables G25 and G26, but the results are robust to the inclusion of additional factors. In the NELS, we follow Farkas (2011) and construct externalizing and internalizing behaviors using the weighted average of two 8th grade teachers' and one 10th grade teacher's responses to questions of classroom behaviors. In both the PSID and CNLSY, we rely on measures of externalizing and internalizing behavior from the Behavior Problems Index (BPI). These measures were developed by Peterson and Zill (1986) and have been used extensively in earlier literature.⁴ The key difference between the two, however, is that in the PSID, the scores for externalizing and internalizing behaviors were constructed from both teachers' reports and mothers' reports, while in the CNLSY the measures are only available from maternal reports. In the paper, we report results using the teachers' reports in the PSID and mothers' reports in the CNLSY.

For the measure of schooling outcome, we use years of schooling since this measure is easiest to compare across datasets. Compared to the 1958 cohort in the NCDS, these datasets cover younger cohorts born in the 70s and 80s. One noticeable difference is that in the 1958 British cohort, men exhibit higher education on average than women, but the

⁴The Behavior Problems Index was originally developed from the Achenbach Behavior Problems Checklist to measure the incidence and severity of child behavior problems. The BPI scale is based on a set of 32 problems describing whether a behavior is often, sometimes, or never true of the targeted child. These items are divided into two subscales: 1) a measure of externalizing or aggressive behavior and 2) a measure of internalizing, withdrawn or sad behavior, with the group confirmed by factor analysis by the survey team.

gender education gap has reversed among younger cohorts — in both Great Britain and the U.S. Average years of schooling in our NCDS sample is 12.73 for men and 11.25 for women. For a younger 1970 British cohort, these two numbers are 12.44 for men and 12.46 for women. For the 1973-6 U.S. cohort in NELS, these two numbers are 14.03 and 14.17. These results are available upon request. Despite the reversal of the gender education gap, the gender wage gap persists in all of these datasets.

To measure earnings, we focus on early career earnings. Specifically, in BCS we construct weekly earnings from yearly earnings reported at age 30. In the NELS, we use weekly earnings from the 2000 survey when the subjects are between 24 and 27 years old. In the PSID, earnings are measured at ages 25 and 26. In CNLSY, they are measured at ages 29 or 30.

Table G25: ROBUSTNESS ACROSS DATASETS: YEARS OF EDUCATION

	NCDS	BCS	NELS	PSID	CNLSY
Males & Females					
Externalizing	-0.074 (0.027)	-0.122 (0.026)	-0.161 (0.023)	-0.176 (0.110)	-0.136 (0.030)
Internalizing	-0.069 (0.028)	0.019 (0.027)	-0.165 (0.021)	-0.037 (0.105)	0.015 (0.028)
Cognition	1.088 (0.031)	0.587 (0.027)	0.637 (0.026)	0.770 (0.092)	0.220 (0.023)
Obs.	7241	5789	5052	468	1597
Males					
Externalizing	-0.115 (0.035)	-0.148 (0.034)	-0.170 (0.028)	-0.370 (0.136)	-0.085 (0.039)
Internalizing	-0.059 (0.038)	0.059 (0.039)	-0.166 (0.032)	0.109 (0.134)	0.030 (0.039)
Cognition	1.169 (0.041)	0.585 (0.038)	0.548 (0.038)	0.646 (0.127)	0.198 (0.031)
Obs.	3573	2808	2373	216	737
Females					
Externalizing	0.004 (0.042)	-0.089 (0.039)	-0.148 (0.039)	-0.042 (0.199)	-0.197 (0.046)
Internalizing	-0.085 (0.042)	-0.023 (0.038)	-0.161 (0.028)	-0.116 (0.177)	0.015 (0.042)
Cognition	0.995 (0.045)	0.588 (0.038)	0.720 (0.036)	0.871 (0.133)	0.244 (0.034)
Obs.	3668	2981	2679	252	860

Notes: This table lists estimates from OLS regressions used to link socio-emotional and cognitive skills to years of education across datasets. For each dataset, we regress years of education on a set of observable variables along with proxies for the unobserved skills. Standard errors are in parentheses.

In each dataset, we link the measure of externalizing behavior to schooling and earnings in a manner similar to the preliminary analysis described in Section 2.3. In particular, we run an OLS regression of years of schooling on measures of externalizing behavior, internalizing behavior and cognition, controlling for individual characteristics such as gender and race

as well as family background information such as father’s and mother’s education status and employment status. Results are summarized in Table G25. Next, for each dataset, we run OLS regressions of log weekly earnings for workers in their young adulthood on the same measures of externalizing and internalizing behaviors along with cognition, controlling for gender, race and educational attainment. Results are summarized in Table G26. We summarize these findings in Section 5.3 in the main paper.

Table G26: ROBUSTNESS ACROSS DATASETS: LOG EARNINGS

	NCDS	BCS	NELS	PSID	CNLSY
Males & Females					
Externalizing	0.032 (0.009)	0.020 (0.011)	0.028 (0.009)	0.068 (0.034)	0.002 (0.024)
Internalizing	-0.047 (0.009)	-0.033 (0.011)	-0.040 (0.009)	-0.090 (0.033)	-0.066 (0.025)
Cognition	0.079 (0.010)	0.064 (0.011)	0.019 (0.011)	0.044 (0.025)	0.077 (0.019)
Obs.	4888	5140	5161	249	1269
Males					
Externalizing	0.020 (0.008)	0.012 (0.013)	0.028 (0.011)	0.089 (0.047)	-0.027 (0.035)
Internalizing	-0.055 (0.008)	-0.029 (0.014)	-0.046 (0.014)	-0.136 (0.049)	-0.076 (0.039)
Cognition	0.067 (0.009)	0.061 (0.013)	0.011 (0.015)	0.065 (0.033)	0.057 (0.027)
Obs.	2643	2665	2457	118	593
Females					
Externalizing	0.041 (0.020)	0.028 (0.018)	0.028 (0.018)	0.042 (0.050)	0.034 (0.034)
Internalizing	-0.031 (0.020)	-0.035 (0.018)	-0.034 (0.012)	-0.048 (0.042)	-0.047 (0.031)
Cognition	0.103 (0.021)	0.070 (0.017)	0.021 (0.015)	0.030 (0.037)	0.099 (0.027)
Obs.	2245	2475	2704	131	676

Notes: This table compares estimates from OLS regressions used to link socio-emotional and cognitive skills to log earnings in early adulthood across datasets. For each dataset, we regress log weekly earnings on education attainment along with proxies for the unobserved skills. Standard errors in parentheses.

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