The Two-Generational Labor Market Costs of Learning Disabilities*

Rachel Cummings[a] and María José Luengo-Prado[†b]

[a]Brown University, Providence, RI, USA

[b]Instituto Complutense de Análisis Económico, Madrid, Spain

Abstract

Using the Panel Study of Income Dynamics, we document the association between a child's learning disability (LD) diagnosis and a broad set of outcomes for both the child and the child's parents. Young people with an LD report more police contact, drug use, violence, and incarceration, and have lower educational attainment, well-being, and employment. We also provide novel evidence that mothers—especially in the bottom half of the income distribution—are substantially more likely to leave the labor force when a child has an LD. ADHD shows smaller associations for children and none for parental labor supply.

Keywords: learning disabilities; young adult outcomes; labor market outcomes.

JEL Classification: J24, I24

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†Corresponding author.

Email addresses: rachel.cummings.econ@gmail.com (R. Cummings); maria@luengoprado.net (M. Luengo-Prado).

1 Introduction

Roughly one in five US children has a learning or attention problem (Horowitz et al. 2017). Specific learning disabilities[1] (LD)—heterogeneous neurodevelopmental disorders affecting the acquisition of academic skills such as reading, writing, or arithmetic—are the largest disability category recognized by the Individuals with Disabilities Education Act (IDEA) and represented about 34% of the 6.9 million school-aged children served under IDEA in 2022–23.[2] This paper documents the substantial long-term economic burden that accompanies LDs. At a time of stunted labor supply, understanding the barriers faced by both the neurodiverse population and their caregivers is critical for effective policy.

A large literature documents associations between LDs and childhood outcomes such as low self-esteem, risky behavior, and lower educational attainment (Alexander-Passe 2006; McNamara and Willoughby 2010; McGee 2011). Complementary work examines ADHD/ADD (Fletcher 2014; Rajah et al. 2023) and special education (Hanushek et al. 2002; Ballis and Heath 2021; Schwartz et al. 2021; Albeck Nielsen 2021; Setren 2021). The parental margin, to our knowledge, is not well documented.

We use the longitudinal richness of the Panel Study of Income Dynamics (PSID) to track individuals with LDs from childhood to early adulthood while simultaneously measuring the labor-market responses of their parents. The paper makes two primary contributions. First, we provide comprehensive tracking of the associations between LDs and social, behavioral, and economic outcomes from childhood to the mid-20s. Second, we document and quantify the relationship between a child's LD diagnosis and parental employment, establishing a sizable household labor-supply response. LDs are associated with worse outcomes in every dimension we examine; the largest gap, 12.9 percentage points (pp), is on not holding a college degree by age 25. Young adults with an LD are also 2.6 pp more likely to be out of the labor force (OLF) and 5.4 pp less likely to be employed. Most strikingly, mothers—but not fathers—of

[1] Dyslexia is the most common.

[2] Data from U.S. Department of Education, NCES, 2024. *Digest of Education Statistics 2023*, Table 204.50. Available at https://nces.ed.gov/programs/digest/d23/tables/dt23_204.50.asp (accessed April 2026).

children with an LD are 2.5 pp more likely to be OLF and 3.0 pp less likely to be employed, with the effects driven by lower-income families. A child's ADHD/ADD diagnosis is associated with smaller gaps for the child and none for parental labor supply.

2 Data and methodology

The data come from the PSID, a longitudinal survey conducted by the University of Michigan. We combine the PSID family files with two supplements designed to study children and young adults: the Child Development Supplement (CDS) and the Transition to Adulthood Supplement (TAS).

The CDS began in 1997 as a random sample of PSID children aged 0-12 who were re-interviewed in 2002 and 2007. In 2014, the CDS began to survey all children aged 17 and younger in PSID families on a more regular basis. Across waves, the CDS collects primary-caregiver reports on child health, schooling, and behavior, teacher questionnaires, and—for older children—a self-administered module on risky behaviors such as police contact, substance use, and violence. The TAS was launched in 2005 and follows respondents from age 18 until they form their own households or turn 28. It records completed education, labor-force history, incarceration, family formation, and standardized scales for emotional, social, and psychological well-being.[3] PSID family files provide matching parental records, including demographics, schooling, self-reported own LD, labor-force status, and family income and wealth.

We flag children as having an LD if, in any CDS or TAS wave in which they appear, they themselves, their primary caregivers, or their teachers report that a physician or other health professional ever diagnosed a learning disability or learning disorder. ADHD/ADD is coded analogously. Parental LD is measured from the same questions asked of adults in the family file. Because reported diagnosis depends on access to evaluations, LDs are likely under-diagnosed in lower-income families; this measurement issue biases our income-interaction estimates *toward*

[3]Note most children observed in the CDS can be linked to young-adult outcomes a decade or more later once they are old enough, but some TAS respondents were never part of the CDS.

zero and, if anything, makes our low-income findings conservative.

Our child/young-adult sample contains roughly 4,500 PSID children born between 1983 and 2008, of whom 13% are flagged as having an LD and 13% as having ADHD/ADD (see Appendix Table A.1). Outcomes include trouble with the police, drug use, violence, incarceration, high-school dropout, no college degree by age 25 and being in the bottom quartile of standardized emotional, social and psychological well-being scales – all indicators, with 1 the least desirable state (construction details in the appendix).

For CDS and TAS outcomes other than labor-market outcomes, we estimate linear probability models of the form

$$Y_i = \alpha + \beta\,\mathrm{LD}_i + \gamma\,\mathrm{ADHD}_i + \lambda\,X_i + \mathrm{BirthYear}_i + \rho_s + \epsilon_i, \tag{1}$$

where Y_i is one of the outcomes considered for individual i, LD_i and ADHD_i indicate an LD diagnosis or ADHD/ADD diagnosis, X_i includes demographic and socioeconomic characteristics, and ρ_s is a state fixed effect. Fixed effects of the Birth-year are included to account for age differences between respondents. Standard errors are robust. We treat estimates as conditional associations rather than causal effects: LD diagnosis is not an exact science, and some individuals may be diagnosed after exhibiting poor outcomes, although the more likely direction runs from LD to those outcomes.

For labor-market outcomes, we construct a longitudinal data set with observations for each respondent in every survey year they are 16 or older, and estimate

$$Y_{it} = \alpha + \beta\,\mathrm{LD}_i + \gamma\,\mathrm{ADHD}_i + \lambda\,X_{it} + \pi\,Y_{i,t-2} + \theta_t + \rho_s + \epsilon_{it}, \tag{2}$$

controlling for past labor-force status, age, year, and state fixed effects. Standard errors are clustered at the individual level.

For parental outcomes, we construct a matched parent-child-year panel covering every year

from a child's birth through age 23 and estimate

$$Y_{it}^{p} = \alpha + \beta\, LD_i^{c} + \gamma\, ADHD_i^{c} + +\omega\, LD_i^{p} + \lambda\, X_{it}^{p} + \pi\, Y_{i,t-1}^{p} + \theta_t + \rho_s + \varepsilon_{it}^{p}, \tag{3}$$

where Y_{it}^{p} is OLF or employment for parent i in year t, and controls include the parent's own LD, demographics, schooling, lagged own labor-force status, spouse's labor-force status, number of children, presence of children under 6, log family income in the preceding year, and year, age, and state fixed effects.[4] Standard errors are clustered at the parent level.

3 Childhood, young-adult, and labor-market outcomes

Panel A of Table 1 reports results for risky behaviors and incarceration; Panel B reports results for education, well-being, and young-adult labor-force status. LDs are statistically associated with every outcome except drug use measured in the CDS (which covers younger ages), with estimated gaps ranging from 2.2 pp (police trouble, CDS) to 12.9 pp (no college degree by age 25). Where the same behavior is measured in both supplements, the gap roughly doubles between the two stages, consistent with LD-related disadvantages that compound as children age. ADHD/ADD shows qualitatively similar but typically smaller associations.

These patterns translate into measurable labor-market gaps in early adulthood. Having an LD raises the probability of being OLF by 2.6 pp and lowers the probability of being employed by 5.4 pp—a shortfall of about 9% relative to the sample employment rate of 62%. Because the employment gap is nearly twice the OLF gap, a meaningful share operates through unemployment rather than outright non-participation. ADHD/ADD lowers the probability of being employed by 3.7 pp without shifting OLF, consistent with ADHD affecting the ability to hold a job while leaving labor-force attachment largely intact.

[4] To avoid conflating an LD with more severe disorders diagnosed earlier, we set $LD_i^{c} = 0$ for children under 5. Estimates are robust to dropping observations with very early LD diagnoses and also to restricting the sample to offspring aged 18 or younger instead of 23.

Table 1: Learning Disabilities, Childhood/Young-Adult Outcomes, and Labor-Force Status

Panel A. Risky behaviors and incarceration

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Police		Drugs		Violence		Prison
	CDS	TAS	CDS	TAS	CDS	TAS	TAS
Learning Disorder	0.022*	0.037*	0.013	0.049***	0.046**	0.092***	0.043**
	(1.79)	(1.83)	(0.60)	(2.63)	(2.35)	(4.15)	(2.57)
ADHD/ADD	0.032**	0.067***	0.035	0.051**	0.017	0.068***	0.041**
	(2.50)	(2.94)	(1.62)	(2.48)	(0.87)	(2.75)	(2.17)
Outcome Mean	0.05	0.26	0.32	0.71	0.19	0.33	0.11
Min Birth Year	1983	1983	1983	1983	1983	1983	1983
Max Birth Year	2008	2002	2008	2002	2008	2001	2002
R^2	0.05	0.17	0.15	0.09	0.06	0.12	0.10
Observations	4,736	4,671	4,499	4,676	4,744	4,629	4,702

Panel B. Education, low well-being, and labor-force status

	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	HS	No	Low well-being			OLF	Employed
	Dropout	College	Emot.	Social	Psych.		
Learning Disorder	0.078***	0.129***	0.112***	0.074***	0.084***	0.026**	−0.054***
	(5.04)	(6.50)	(5.03)	(3.38)	(3.74)	(2.42)	(−4.49)
ADHD/ADD	0.014	0.056**	0.070***	0.054**	0.063**	0.009	−0.037***
	(0.84)	(2.41)	(2.81)	(2.23)	(2.55)	(0.73)	(−2.71)
Outcome Mean	0.10	0.67	0.34	0.31	0.33	0.22	0.62
Min Birth Year	1983	1983	1983	1983	1983	1983	1983
Max Birth Year	2000	1994	2002	2002	2002	2002	2002
R^2	0.13	0.30	0.07	0.11	0.07	0.21	0.21
Observations	4,580	2,751	4,699	4,690	4,699	19,439	19,439

Notes: Linear probability regressions based on PSID data; t-statistics in parentheses. The table reports coefficients on covariates of interest: indicators for a learning-disability diagnosis and for an ADHD/ADD diagnosis.
Columns (1)–(12) (child and young-adult cross-sectional outcomes). Specifications also include—but do not report—indicators for Hispanic, Black non-Hispanic, and other race non-Hispanic; the log of parental income and wealth; and an indicator for having a college-educated parent. Birth-year and state fixed effects are also included. Robust standard errors. Outcomes are indicators coded so that 1 denotes the less desirable state (except employment).
Columns (13) and (14) (young-adult labor-force status, individual–year panel for respondents aged 16 and older). Specifications also include—but do not report—race/ethnicity indicators, an indicator for the young adult being a college graduate, an in-school indicator, log. parental income, and the lagged dependent variable. Year, age, and state fixed effects are included. Standard errors are clustered at the individual level. Outcomes are indicators for being out of the labor force and for being employed, respectively.
Samples differ across columns because the CDS and TAS cohorts only partially overlap; some CDS children in later waves had not yet aged into the TAS, and some TAS respondents were not initially sampled in the CDS.
Significance: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Interaction analyses (Appendix Figures A.1-A.4) show the estimated associations are largely robust across gender, race, and parental income, though point estimates for female respondents are larger on some well-being and educational outcomes (girls are less likely to be diagnosed with

an LD, so those identified may have more severe conditions). Parental income has a protective role for employment and educational outcomes but not for drug use.

4 Parental labor-market outcomes

Table 2 reports the estimated associations between a child's LD and parental labor-market outcomes. In the pooled sample, a child's LD is associated with a 1.5 pp increase in the probability of being OLF and a 2.4 pp decrease in employment (columns 1 and 4). The pattern is entirely driven by mothers: fathers are unaffected (columns 2 and 5), while mothers of a child with an LD are 2.5 pp more likely to be OLF and 3.0 pp less likely to be employed (columns 3 and 6). The asymmetry is consistent with LD-related interventions—evaluations, specialist appointments, IEP meetings, and remediation—falling disproportionately on primary caregivers, who in this sample must be overwhelmingly mothers. A child's ADHD/ADD diagnosis shows no detectable effect on either parent's labor supply, consistent with ADHD/ADD being more often managed through pharmacological treatment, likely placing fewer scheduling demands on parents (Brown 2005).

For context, the child-LD gap on a mother's OLF (2.5 pp) is nearly identical to the penalty a young adult with an LD faces (2.6 pp), while the mother's employment cost (3.0 pp) is a bit more than half of the young adult's own-LD employment penalty (5.4 pp). A more notable comparison is between a parent's *own* LD and a young adult's *own* LD. A parent's own LD raises OLF by 6.7 pp and lowers employment by 8.0 pp overall (7.6 and -8.5 pp for mothers; 5.2 and -8.1 pp for fathers)—roughly three times the young-adult OLF gap and about 1.5 times the employment gap. Two interpretations are consistent with this pattern: early disadvantages in schooling and skill formation may accumulate into larger mid-career gaps, and earlier cohorts grew up with less institutional support for LDs. We cannot disentangle the two, but both imply that LDs have consequences extending well beyond young adulthood.

Table 3 interacts child LD with the mother's education and with her household being in the bottom half of the income distribution. A college degree does not protect mothers from the

Table 2: Parental Labor Market Outcomes and Learning Disabilities

	(1)	(2)	(3)	(4)	(5)	(6)
	OLF			Employed		
	All	Men	Women	All	Men	Women
Child LD	0.015***	0.003	0.025***	−0.024***	−0.011	−0.030***
	(3.65)	(0.73)	(3.93)	(−4.61)	(−1.54)	(−4.35)
Child has ADHD	0.003	0.001	0.002	−0.005	−0.006	−0.004
	(0.61)	(0.21)	(0.25)	(−0.99)	(−0.72)	(−0.54)
Parent has LD	0.067***	0.052***	0.076***	−0.080***	−0.081***	−0.085***
	(8.15)	(5.44)	(6.16)	(−8.27)	(−5.41)	(−6.36)
Outcome Mean	0.17	0.05	0.26	0.75	0.88	0.65
R^2	0.36	0.37	0.31	0.33	0.25	0.31
Observations	148,534	62,178	86,355	148,534	62,178	86,355
Individuals	9,522	4,329	5,193	9,522	4,329	5,193

Notes: Linear probability regressions based on PSID data. Dependent variables are indicators for being out of the labor force (OLF, cols. 1–3) and being employed (cols. 4–6). The unit of observation is a parent-year. Only coefficients of primary interest are displayed. All regressions also include: *demographics* (female indicator, pooled columns only; Hispanic; Black non-Hispanic; other race non-Hispanic); *marital status* (married); *parental education* (high-school dropout; some college; college graduate); *economic controls* (log total family income in the previous survey year); *family structure* (number of children, indicator for children under 6); *labor-market history* (parent OLF/not employed in the previous survey year; spouse OLF/not employed); and year, age, and state fixed effects. Standard errors are clustered at the individual level; t-statistics in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

association between a child's LD and their labor-force status. The magnitude is economically meaningful: a mother's own college degree lowers her probability of being OLF by 4.2 pp relative to a high-school graduate, so a child's LD offsets more than half of that gain.

Most strikingly, we find very large estimates for mothers in the bottom half of the income distribution: they are 9.1 pp more likely to be OLF and 9.6 pp less likely to be employed.[5] Remediation requires informed advocacy, evaluations, and frequent transportation to specialists, after and sometimes during school hours. Even parents with resources may cycle through programs that do not work; lower-income parents face the starkest trade-offs between paid work and their children's education.

[5]Household income is potentially endogenous, since a mother's labor-supply response to a child's LD directly affects it; the interaction should not be interpreted as causal but descriptive. Because LDs are likely underdiagnosed among lower-income children, this estimate is if anything conservative.

Table 3: Mothers' Labor Market Outcomes and Learning Disabilities. Interactions

	(1)	(2)	(3)	(4)
	OLF		Employed	
Child LD	0.027***	0.010	–0.029***	–0.012
	(3.52)	(1.32)	(–3.50)	(–1.44)
Child has ADHD	0.002	0.000	–0.004	–0.003
	(0.25)	(0.07)	(–0.54)	(–0.38)
Parent has LD	0.076***	0.072***	–0.085***	–0.081***
	(6.15)	(5.91)	(–6.36)	(–6.13)
Child LD × Parent College Graduate	–0.006		–0.005	
	(–0.51)		(–0.39)	
Child LD × Parent Bottom Half of Income Dist.		0.091***		–0.096***
		(7.35)		(–7.59)
Outcome Mean	0.26	0.26	0.65	0.65
R^2	0.31	0.31	0.31	0.32
Observations	86,355	86,355	86,355	86,355
Number of Individuals	5,193	5,193	5,193	5,193

Notes: Linear probability regressions based on PSID data with year, age, and state fixed effects. Standard errors are clustered at the individual level. Additional controls (not displayed) and details as in Table 2.

5 Concluding remarks

Using the PSID, we confirm that LDs are associated with a broad set of adverse outcomes during childhood, young adulthood, and early labor-market experiences, and we provide new evidence of a substantial parental margin: mothers, especially in lower-income families, cut back their labor supply when a child has an LD. Because the burden falls most heavily on the families least able to absorb it, earlier and more uniform screening together with publicly funded, evidence-based remediation should be priorities for research and policy. Such interventions would improve outcomes for affected children and loosen the constraint on their mothers' labor supply.

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A Appendix

A.1 Outcome construction

Trouble with police (CDS): respondent reports at least one arrest in the preceding six months in any CDS wave (asked of children aged 12+). (TAS): respondent reports ever being arrested.

Drug use (CDS): respondent reports ever using cigarettes, chewing tobacco, marijuana, prescription drugs, inhalants, steroids, hallucinogens, amphetamines, tranquilizers, or e-cigarettes. (TAS): same items plus cocaine, barbiturates, narcotics, and heroin.

Violence (CDS): respondent reports hurting someone badly enough that they needed a doctor, using a weapon in a fight at school, bringing a weapon to school, or damaging school property in the preceding six months. (TAS): ever damaged public property or got into a physical fight.

Prison (TAS only): respondent reports ever being incarcerated.

Well-being (TAS): being in the bottom quartile of standardized emotional, social, or psychological well-being scales in any TAS wave.

High-school dropout: no high school diploma by age 19.

No college by 25: no college degree by age 25.

A.2 Summary statistics

Appendix Table A.1 reports unweighted means, standard deviations, and sample sizes. The PSID over-samples low-income families, so 44% of the child sample is Black (non-Hispanic) and

13% Hispanic.

Table A.1: Summary Statistics. PSID Children, Unweighted

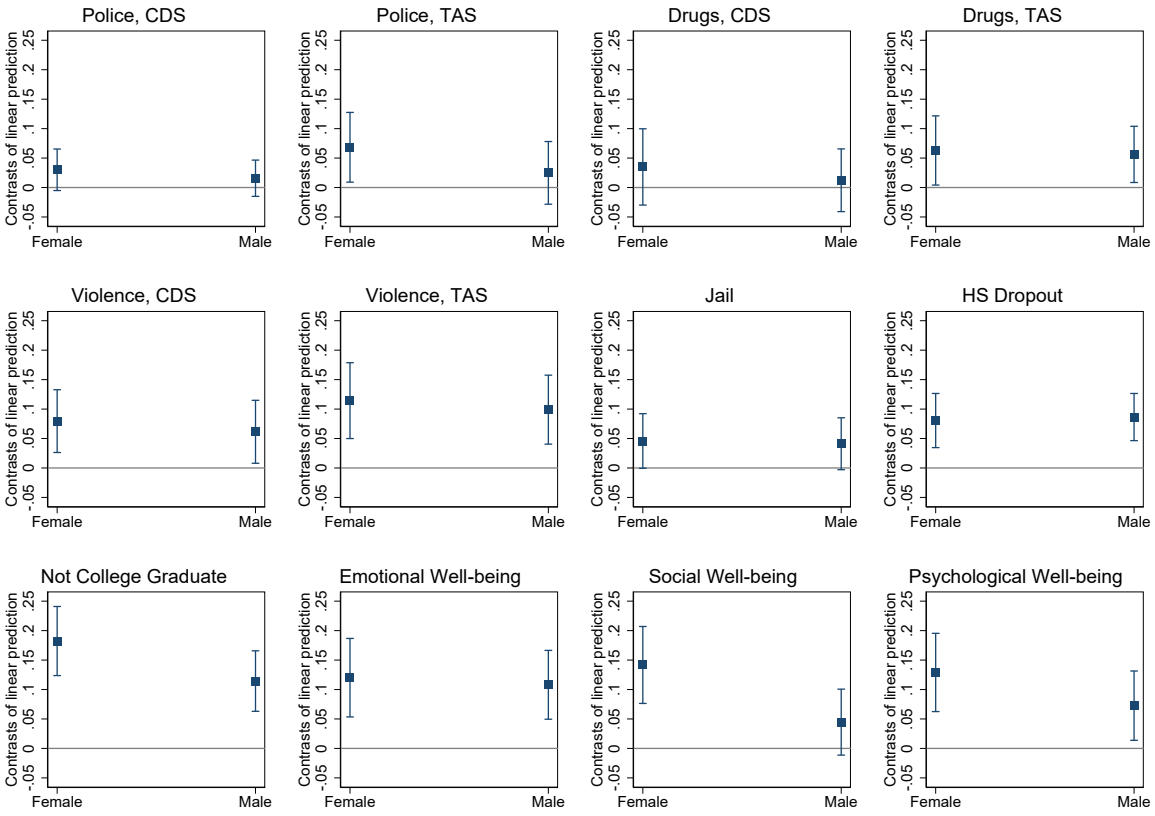
	Mean	SD	Min	Max	N
Trouble with police, CDS	0.05	0.23	0	1	4,736
Trouble with police, TAS	0.26	0.44	0	1	4,671
Drug use, CDS	0.32	0.47	0	1	4,499
Drug use, TAS	0.71	0.45	0	1	4,676
Violence, CDS	0.19	0.39	0	1	4,744
Violence, TAS	0.33	0.47	0	1	4,630
HS dropout	0.10	0.30	0	1	4,580
Not college graduate by 25	0.67	0.47	0	1	2,751
Ever in jail	0.11	0.31	0	1	4,702
Ever bottom quartile emotional well-being	0.34	0.47	0	1	4,699
Ever bottom quartile social well-being	0.31	0.46	0	1	4,690
Ever bottom quartile psychological well-being	0.33	0.47	0	1	4,699
Male	0.50	0.50	0	1	5,236
Black, non-Hispanic	0.44	0.50	0	1	5,236
Hispanic	0.13	0.33	0	1	5,236
Other race, non-Hispanic	0.20	0.40	0	1	5,236
White, non-Hispanic	0.45	0.50	0	1	5,236
Parent with college degree	0.35	0.48	0	1	5,236
Learning disorder	0.13	0.34	0	1	5,236
ADHD/ADD	0.13	0.33	0	1	5,236
Parental learning disorder	0.08	0.28	0	1	5,064
Avg. parental income/$10,000 (2019$)	8	7	0	106	5,236
Avg. parental wealth/$10,000 (2019$)	17	60	−27	3,079	5,230

A.3 Robustness

Results are qualitatively unchanged when (i) we exclude the CDS questions that lump learning disorders with developmental delays, (ii) we restrict the sample to respondents who have passed through both the CDS and the TAS, (iii) we further control for ever having attended special education, and (iv) we control for test scores at age 10 in the labor-market regressions. Controlling for age-10 test scores attenuates the LD coefficient, suggesting that severity is an important determinant of labor-market outcomes. Changing the 5-year cutoff used to zero out the LD indicator in the parental regressions also leaves results essentially unchanged.

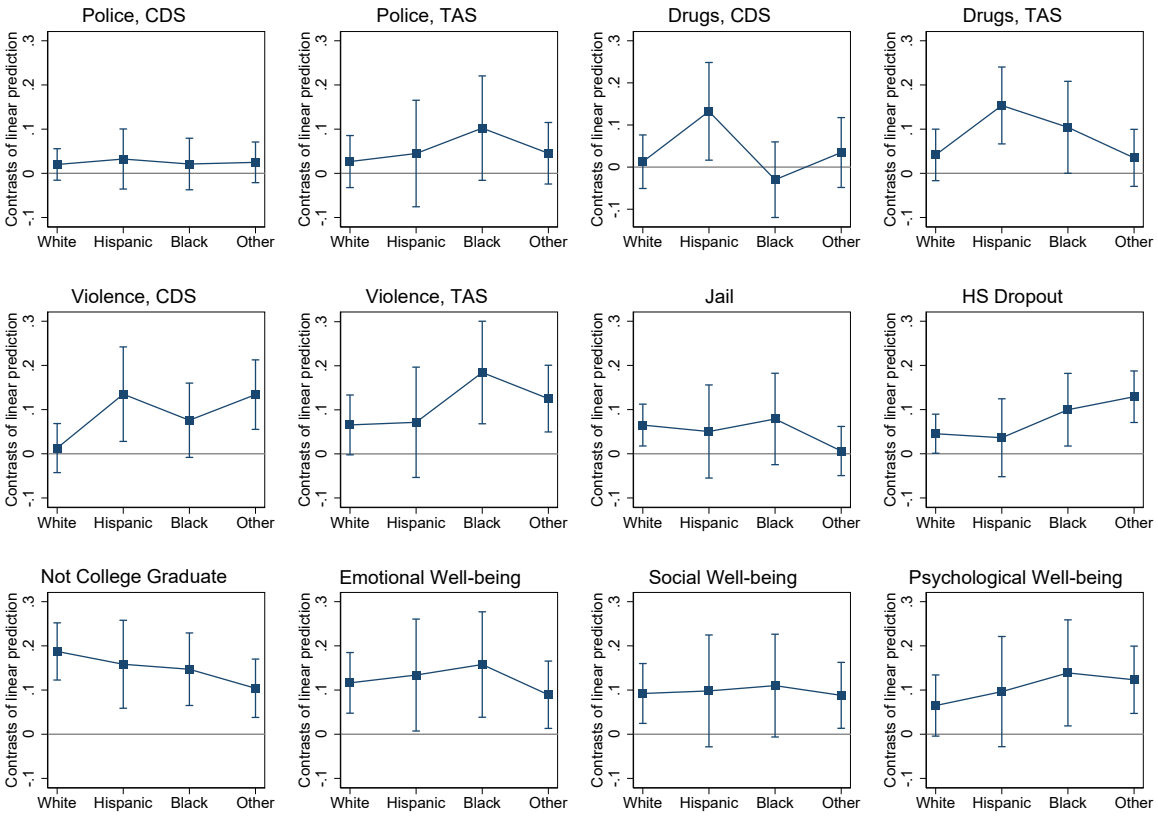
A.4 Heterogeneity in childhood, young-adult, and labor-market outcomes

Figure A.1: Effects of Learning Disabilities on CDS and TAS Outcomes by Child's Gender



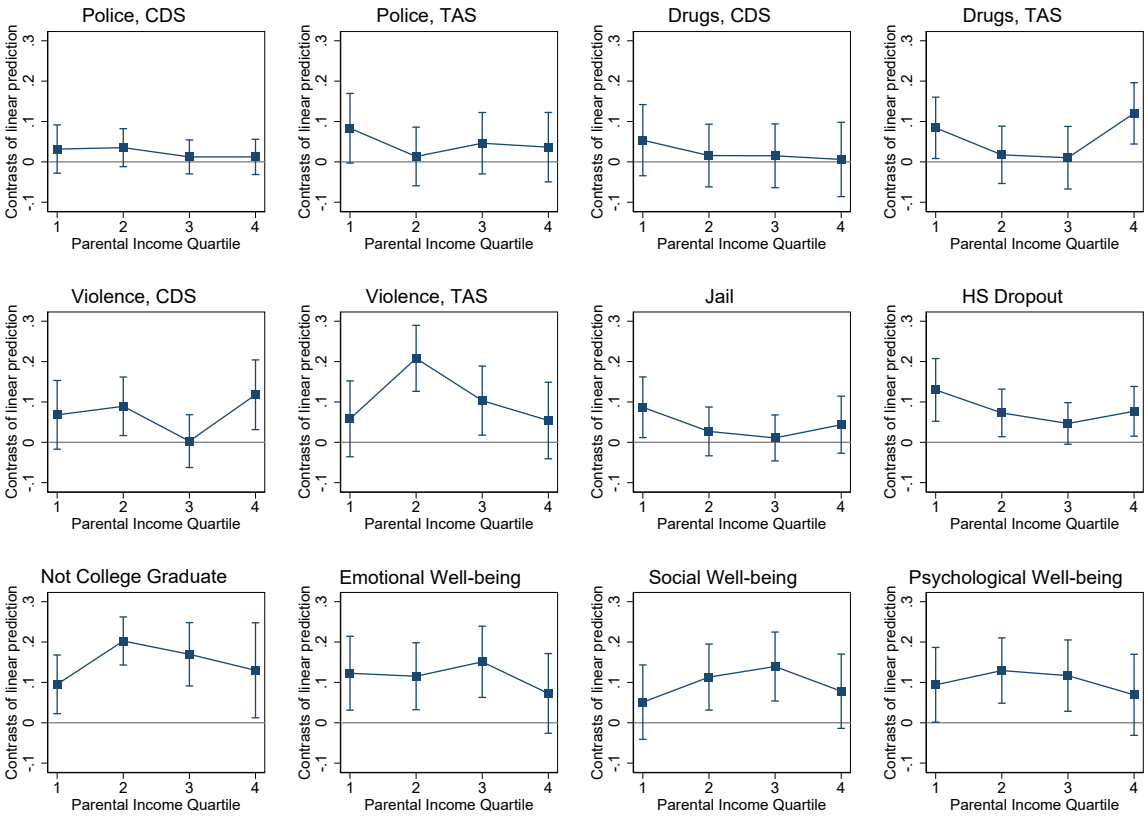
Notes: Authors' calculations using PSID data. We estimate Equation (1) with an interaction term of gender and the learning disability dummy. Differences in predicted outcomes between individuals with and without learning disabilities.

Figure A.2: Effects of Learning Disabilities on CDS and TAS Outcomes by Child's Race/Ethnicity



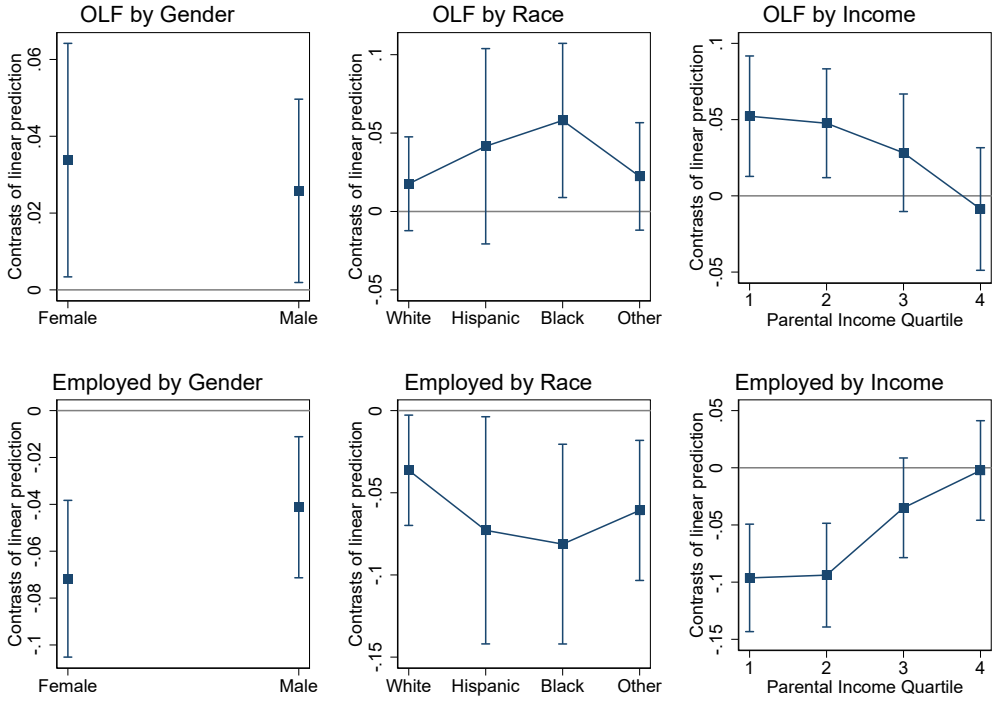
Notes: Authors' calculations using PSID data. We estimate Equation (1) with interaction terms of race/ethnicity and the learning disability dummy. Differences in predicted outcomes between individuals with and without learning disabilities.

Figure A.3: Effects of Learning Disabilities on CDS and TAS Outcomes by Parental Income Quartile



Notes: Authors' calculations using PSID data. We estimate Equation (1) with interaction terms of parental income quartile and the learning disability dummy. Differences in predicted outcomes between individuals with and without learning disabilities.

Figure A.4: Effects of Learning Disabilities on Labor Market Outcomes by Selected Attributes



Notes: Authors' calculations using PSID data. We estimate Equation (2) with interaction terms of the learning disability dummy with either gender, race/ethnicity, or parental income, as indicated in the caption. Differences in predicted outcomes between individuals with and without learning disabilities.