Figure 1. Forest plots of odds ratios and 99% confidence intervals for risk of outcomes of interest at age 10 years associated with left-hand preference (left panels) and mixed hand preference (right panels) relative to children with right-hand preference.

Part A: Odds of z scores ≤ -2 on each DAS-II, OWLS, WIAT-III, and NEPSY-II assessment.

Part B: Odds of positive screens for behavior problems on the CSI-4 and for an ASD diagnosis at age 10 years.

Analyses were adjusted for mother's age < 21 years at delivery, gestational age category 23–24 weeks, birth weight Z-score < -2, and male sex. Large black dots indicate that the odds ratios are significantly >1 ($p < 0.01$), as does the lower bound of the confidence interval to the right of the vertical line.

Online Figure 2. Forest plots of odds ratios and 99% confidence intervals for the odds of z scores ≤ -2 on each DAS-II, OWLS, WIAT-III, and NEPSY-II assessment at age 10 years associated with left-hand preference (left panel) and mixed hand preference (right panel) relative to children with right-hand preference, excluding children with manual limitations.

Analyses were adjusted for mother's age < 21 years at delivery, gestational age category 23–24 weeks, birth weight Z-score < -2, and male sex. Large black dots indicate that the odds ratios are significantly >1 ($p < 0.01$), as does the lower bound of the confidence interval to the right of the vertical line. This sample excludes children with MACS level 3 or above.

15

Online Table 1. Sample characteristics of left, mixed, and right-handed preference groups.

		Handedness Classification (Column %)			
		Left *n* = 145	*Mixed* *n* = 49	*Right* *n* = 670	*Row* *N*
Maternal characteristics					
Racial identity	White	70	57	63	551
	Black	24	30	25	214
	Other	8	13	12	97
Hispanic	Yes	6	10	10	84
Age at birth, years	< 21	14	8	13	111
	21-35	68	73	66	575
	> 35	19	18	21	178
Education, years	≤ 12 (high school)	42	51	40	353
	> 12, < 16	23	18	24	203
	≥ 16 (≥college)	35	31	37	308
Single marital status	Yes	37	51	39	341
Public insurance	Yes	39	43	32	297
Newborn characteristics					
Sex	Male	57	57	49	437
Gestational age (weeks)	23-24	29	27	17	171
	25-26	40	45	47	393
	27	31	29	36	300
Birth weight, grams	≤ 750	40	45	35	313
	751-1000	40	35	45	378
	> 1000	20	20	20	173
Birth weight Z-score	< -2	2	8	7	51
	≥ -2, < -1	14	12	14	117
	≥ -1	84	80	80	696
Birth head circumference Z-score	< -2	8	4	9	69
	-2, < -1	22	15	22	181
	≥ -1	70	80	69	580

16

Online Table 2. Proportion of children scoring low on measures of cognition, academic achievement, and motor function according to handedness.

| | Z-score or value | Handedness Classification (Column %) | | | |
		Left n = 145	Mixed n = 49	Right n = 670	Row N
General Cognitive Ability					
DAS-II Verbal Reasoning	≤ -2	19	33	13	127
	> -2, ≤ -1	22	15	19	163
DAS-II Nonverbal Reasoning	≤ -2	17	31	10	107
	> -2, ≤ -1	26	24	25	213
Attention, Inhibitory Control, and Cognitive Flexibility					
DAS-II Working Memory	≤ -2	22	30	13	133
	> -2, ≤ -1	20	24	17	153
NEPSY-II Auditory Attention	≤ -2	25	40	18	168
	> -2, ≤ -1	18	23	22	177
NEPSY-II Auditory Response Set	≤ -2	22	35	16	147
	> -2, ≤ -1	33	30	27	235
NEPSY-II Inhibition-Inhibition	≤ -2	37	36	34	265
	> -2, ≤ -1	24	22	24	199
NEPSY-II Inhibition-Switching	≤ -2	30	45	23	208
	> -2, ≤ -1	29	23	30	243
NEPSY-II Animal Sorting	≤ -2	29	48	25	224
	> -2, ≤ -1	36	18	31	263
Speed of Processing					
NEPSY-II Inhibition Naming	≤ -2	34	47	27	245
	> -2, ≤ -1	18	20	21	171
Language					
OWLS Listening Comprehension	≤ -2	20	34	15	139
	> -2, ≤ -1	28	25	28	231
OWLS Oral Expression	≤ -2	23	36	15	143
	> -2, ≤ -1	22	23	23	190
Visual-Spatial Processing					
NEPSY-II Geometric Puzzles	≤ -2	23	33	11	121
	> -2, ≤ -1	21	18	24	192
Academic Achievement					
WIAT-III Word Reading	≤ -2	13	22	9	89
	> -2, ≤ -1	22	26	16	148
WIAT-III Pseudoword Decoding	≤ -2	15	30	11	108
	> -2, ≤ -1	19	17	17	145
WIAT-III Spelling	≤ -2	26	30	13	78
	> -2, ≤ -1	26	26	23	135
WIAT-III Numeric Operations	≤ -2	11	26	8	123
	> -2, ≤ -1	24	20	14	199
Individual education plan	Yes	62	73	49	453
Repeated a grade	Yes	23	24	18	164
Special placement	Yes	24	29	17	163
Motor Skills					
NEPSY-II Visuomotor Precision	≤ -2	26	35	16	157
	> -2, ≤ -1	41	28	35	301
Manual Ability Classification System	Level 1	68	55	81	669
	Level 2	20	24	13	131
	Level ≥ 3	12	20	6	64
Gross Motor Function Classification System	Level ≥ 3	3	10	2	24

Values are **column** percents.

17

Online Table 3. Proportion of children with positive screens and diagnoses for behavioral disorders according to handedness.

	Handedness Classification (Column %)			Row *n*
	Left *n* = 145	*Mixed* *n* = 49	*Right* *n* = 670	
Autism spectrum disorder				
Clinical diagnosis of ASD	8	20	6	57
Behavioral problems (CSI-4)				
ADHD inattentive	17	27	16	97
ADHD hyperactive/ impulsive	8	15	9	32
ADHD combined type	6	10	5	48
Oppositional defiant	7	13	9	73
Conduct disorder	3	4	4	33
Generalized anxiety	6	13	5	49
Motion tics	13	23	12	108
Vocal tics	17	25	16	145
Major depression	2	4	0.5	8
Dysthymic disorder	3	10	4	34
Social phobia	2	6	5	41
Separation anxiety	1	4	3	26
Enuresis	16	17	12	110
Encopresis	10	13	7	65

CSI-4: Child Symptom Inventory-4 Parent Checklist.

18