Supplemental Material for

***In-utero* exposure to DDT and pyrethroids and child behavioral and emotional problems at 2 years of age in the VHEMBE cohort, South Africa**

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Table of Contents

Supplemental Table 1. Pearson correlation coefficients for maternal serum concentrations of *p,p'*-DDT and *p,p'* -DDE (log$_{10}$ transformed; lipid-adjusted), and urinary concentrations of pyrethroid metabolites (log$_{10}$ transformed; specific-gravity adjusted), VHEMBE study (n=683), Limpopo South Africa.

	p,p'-DDT	*p,p'*-DDE	*cis*-DBCA	*cis*-DCCA	*trans*-DCCA	3PBA
p,p'-DDT	-	0.853[*]	0.028	0.046	0.028	0.050
p,p'-DDE	-	-	-0.014	0.038	0.030	0.039
cis-DBCA	-	-	-	0.317[*]	0.353[*]	0.515[*]
cis-DCCA	-	-	-	-	0.882[*]	0.834[*]
trans-DCCA	-	-	-	-	-	0.846[*]

*p<0.05

Supplemental Table 2. Maternal serum concentrations of *p,p'* - and o,p'- DDT and DDE (ng/g, lipid-adjusted), and maternal urinary concentrations of pyrethroid metabolites (ug/L, specific-gravity adjusted); VHEMBE study participants with CBCL data at 2 years (n=683).

	n	%Detected[a]	%Quantifiable[b]	GMean	± GSD	Min	10%	25%	50%	75%	90%	Max
p,p'-DDT	683	98.1	90.6	69.9	± 6.7	0.1	7.8	18.7	56.8	261.0	994.8	15027.6
p,p'-DDE	683	100.0	97.4	292.2	± 4.8	4.0	45.6	92.3	252.4	878.1	2673.6	26301.3
o,p'-DDT	683	90.6	44.4	9.1	± 4.7	<LOD	1.5	3.5	7.3	23.1	74.8	2029.3
o,p'-DDE	683	82.6	16.1	<LOD		<LOD	<LOD	2.3	4.2	6.9	13.9	117.5
cis-DBCA	673	100	99.6	0.346	± 3.1	0.017	0.084	0.159	0.318	0.737	1.479	13.393
cis-DCCA	673	100	99.9	0.478	± 2.6	0.051	0.152	0.262	0.451	0.784	1.477	209.488
trans-DCCA	673	100	99.6	0.558	± 3.1	0.032	0.140	0.267	0.534	1.048	2.346	268.945
3-PBA	672	100	100	1.113	± 2.4	0.103	0.394	0.650	1.048	1.851	3.178	102.383
4F3PBA	650	12.6	7.9	<LOD		<LOD	<LOD	<LOD	<LOD	<LOD	0.008	0.423

[a] Detection limit is 0.01 ng/g wet weight for p,p'-DDT, o,p'-DDT, and o,p'-DDE; 0.03 ng/g for p,p'-DDE; and 0.0025 ug/L, 0.0045 ug/L, 0.0038 ug/L, 0.0047 ug/L, 0.005ug/L for cis-DBCA, cis-DCCA, trans-DCCA, 3PBA, and 4F3PBA, respectively.

[b] Quantification limit is 0.05 ng/g wet weigh for p,p'-DDT, o,p'-DDT, and o,p'-DDE; 0.15 ng/g for p,p'-DDE; and 0.015 ug/L for cis-DCCA, 0.013 ug/L for trans-DCCA, 0.0082 ug/L for cis-DBCA, 0.016 ug/L for 3PBA, and0.011 ug/L for 4F3PBA.

Supplemental Table 3. Wet weight (ug/L) maternal urinary concentrations of pyrethroid metabolites; VHEMBE study participants with CBCL data at 2 years.

	n	%Detected[a]	%Quantifiable[b]	GMean	± GSD	Min	10%	25%	50%	75%	90%	Max
cis-DBCA	673	100	99.6	0.227	± 3.5	0.005	0.050	0.097	0.226	0.490	1.142	18.416
cis-DCCA	673	100	99.9	0.313	± 3.0	0.015	0.086	0.154	0.304	0.614	1.058	104.744
trans-DCCA	673	100	99.6	0.366	± 3.5	0.008	0.079	0.161	0.343	0.810	1.605	134.473
3PBA	672	100	100	0.729	± 2.8	0.022	0.215	0.382	0.714	1.402	2.446	59.724
F3PBA	650	12.6	7.9	<LOD		<LOD	<LOD	<LOD	<LOD	<LOD	0.008	0.431

[a] Detection limit is 0.01 ng/g wet weight for p,p'-DDT, o,p'-DDT, and o,p'-DDE; 0.03 ng/g for p,p'-DDE; and 0.0025 ug/L, 0.0045 ug/L, 0.0038 ug/L, 0.0047 ug/L, 0.005ug/L for cis-DBCA, cis-DCCA, trans-DCCA, 3PBA, and 4F3PBA, respectively.

[b] Quantification limit is 0.05 ng/g wet weigh for p,p'-DDT, o,p'-DDT, and o,p'-DDE; 0.15 ng/g for p,p'-DDE; and 0.015 ug/L for cis-DCCA, 0.013 ug/L for trans-DCCA, 0.0082 ug/L for cis-DBCA, 0.016 ug/L for 3PBA, and0.011 ug/L for 4F3PBA.

Supplemental Table 4. Mean and standard deviation (SD) of maternal reported behavioral/emotional raw scores, and the number and percentage of children whose scores were at 93rd percentile or higher at 2 years on the Child Behavioral Checklist (CBCL) for ages 1 ½ - 5 (BSID), VHEMBE study, Limpopo, South Africa.

CBCL Measures	Mean± SD			Borderline-Clinical and Clinical Range, n (%)		
	All (n=683)	Boys (n=355)	Girls (n=328)	All (n=683)	Boys (n=355)	Girls (n=328)
DSM measures						
Pervasive developmental disorder	6.7 ± 3.8	6.8 ± 3.8	6.5 ± 3.8	318 (46.6)	176 (49.6)	142 (43.3)
Anxiety	6.5 ± 3.4	6.6 ± 3.5	6.3 ± 3.4	252 (36.9)	149 (42.0)	103 (31.4)
Affective	4.3 ± 3.0	4.4 ± 3.0	4.2 ± 2.9	198 (29.0)	111 (31.3)	87 (26.5)
Attention-deficit/ Hyperactivity disorder	6.3 ± 2.7	6.5 ± 2.7	6.0 ± 2.7	83 (12.2)	49 (13.8)	34 (10.4)
Oppositional disorder	3.5 ± 2.6	3.7 ± 2.6	3.3 ± 2.6	57 (8.3)	31 (8.7)	26 (7.9)
Empirical measures						
Withdrawn	4.2 ± 2.7	4.2 ± 2.6	4.1 ± 2.8	286 (41.9)	153 (43.1)	133 (40.6)
Anxious/depressed	5.2 ± 2.8	5.4 ± 2.9	5.0 ± 2.8	213 (31.2)	121 (34.1)	92 (28.0)
Aggressive behavior	13.5 ± 7.2	14.3 ± 7.2	12.7 ± 7.1	121 (17.7)	71 (20.0)	50 (15.2)
Attention	3.4 ± 1.7	3.6 ± 1.8	3.2 ± 1.6	79 (11.6)	49 (13.8)	30 (9.2)
Externalizing[†]	16.9 ± 8.3	17.9 ± 8.4	15.9 ± 8.2	223 (32.6)	139 (39.2)	84 (25.6)

[†] Externalizing is a composite measure, combining scores of attention and aggressive behavior measure

Supplementary Table 5.1 Adjusted beta coefficient and 95% confidence interval (CI) for the total raw score of the behavioral/emotional scales of the CBCL with each log10 unit increase in serum DDT/DDE congener level (lipid-adjusted), by sex of the child (N=683).

Measures	*p,p'*-DDT Boys[a,b] β (95% CI)	*p,p'*-DDT Girls[a,b] β (95% CI)	$p_{interaction}$[a,c]	*p,p'*-DDE Boys[a,b] β (95% CI)	*p,p'*-DDE Girls[a,b] β (95% CI)	$p_{interaction}$[a,c]
DSM						
Pervasive developmental	0.17 (-0.31, 0.65)	0.30 (-0.20, 0.81)	0.71	0.23 (-0.35, 0.81)	0.30 (-0.30, 0.90)	0.94
Anxiety	0.13 (-0.29, 0.55)	0.05 (-0.40, 0.49)	0.75	0.09 (-0.42, 0.60)	-0.09 (-0.62, 0.44)	0.54
Affective	0.16 (-0.20, 0.53)	0.22 (-0.15, 0.59)	0.80	0.16 (-0.28, 0.60)	0.17 (-0.28, 0.62)	0.97
ADHD	0.08 (-0.26, 0.41)	-0.05 (-0.41, 0.30)	0.62	0.17 (-0.23, 0.58)	0.01 (-0.42, 0.44)	0.54
Oppositional-defiant	0.25 (-0.07, 0.57)	0.10 (-0.24, 0.45)	0.49	0.25 (-0.14, 0.63)	0.14 (-0.27, 0.56)	0.65
Empirical						
Withdrawn	0.19 (-0.14, 0.51)	0.32 (-0.06, 0.69)	0.63	0.20 (-0.19, 0.59)	0.28 (-0.16, 0.73)	0.82
Externalizing	0.58 (-0.46, 1.63)	0.26 (-0.81, 1.33)	0.66	0.75 (-0.51, 2.00)	0.38 (-0.89, 1.66)	0.60
Anxious/ Depressed	0.21 (-0.14, 0.55)	-0.03 (-0.40, 0.34)	0.32	0.25 (-0.17, 0.67)	-0.13 (-0.57, 0.31)	0.17
Aggressive behavior	0.53 (-0.36, 1.42)	0.24 (-0.69, 1.18)	0.66	0.69 (-0.39, 1.77)	0.40 (-0.71, 1.52)	0.62
Attention	0.05 (-0.18, 0.28)	0.02 (-0.20, 0.23)	0.76	0.05 (-0.22, 0.33)	-0.02 (-0.28, 0.24)	0.63

[a] Models adjusted for maternal education, and age at delivery; mother's Ravens score, and HOME score at 1-year; risk for depression at 1-year and 2-years; poverty at 2-years; breastfeeding through 1 year.
[b] Models stratified by sex
[c] Models adjusted with child's sex and child's sex-exposure interaction term (p-values listed).
*p<0.05

Supplementary Table 5.2 Adjusted relative risk and 95% confidence interval (CI) for the <u>borderline-clinical and clinical range</u> to normal range of behavioral/emotional scales of the CBCL with a $\log_{10}$ unit increase in serum DDT/DDE congener levels (lipid-adjusted), by sex of the child (N=683).

Measures	p,p'-DDT			p,p'-DDE		
	Boys[a,b] RR (95% CI)	Girls[a,b] RR (95% CI)	$p_{interaction}$[a,c]	Boys[a,b] RR (95% CI)	Girls[a,b] RR (95% CI)	$p_{interaction}$[a,c]
DSM						
Pervasive developmental	1.11 (0.98, 1.25)	1.05 (0.91, 1.21)	0.56	1.10 (0.96, 1.28)	1.00 (0.84, 1.19)	0.34
Anxiety	1.07 (0.93, 1.23)	1.07 (0.89, 1.28)	0.99	1.02 (0.87, 1.21)	1.03 (0.82, 1.29)	1.00
Affective	1.04 (0.87, 1.24)	1.23 (1.02, 1.49)*	0.20	1.01 (0.82, 1.24)	1.24 (0.99, 1.57)#	0.27
ADHD	1.33 (0.98, 1.79)#	1.03 (0.73, 1.46)	0.26	1.47 (1.01, 2.14)*	1.14 (0.75, 1.73)	0.27
Oppositional-defiant	1.32 (0.92, 1.89)	1.25 (0.89, 1.74)	0.75	1.37 (0.87, 2.14)	1.38 (0.88, 2.17)	0.91
Empirical						
Withdrawn	1.06 (0.92, 1.21)	1.18 (1.02, 1.37)*	0.28	1.05 (0.89, 1.25)	1.09 (0.91, 1.32)	0.78
Externalizing	1.05 (0.90, 1.23)	1.00 (0.82, 1.23)	0.80	1.03 (0.85, 1.24)	1.06 (0.83, 1.34)	0.89
Anxious/ Depressed	1.01 (0.85, 1.19)	1.06 (0.88, 1.28)	0.91	1.05 (0.87, 1.28)	1.01 (0.80, 1.27)	0.55
Aggressive behavior	1.16 (0.92, 1.46)	1.05 (0.80, 1.36)	0.55	1.19 (0.89, 1.59)	1.08 (0.77, 1.50)	0.57
Attention	1.25 (0.93, 1.68)	1.03 (0.70, 1.52)	0.37	1.12 (0.74, 1.70)	1.12 (0.73, 1.72)	0.84

[a] Models adjusted for maternal education, and age at delivery; mother's Ravens score, and HOME score at 1-year; risk for depression at 1-year and 2-years; poverty at 2-years; breastfeeding through 1 year.
[b] Models stratified by sex
[c] Models adjusted with child's sex and child's sex-exposure interaction term (p-values listed).
*$p<0.05$

Supplementary Table 6.1 Adjusted beta coefficient and 95% confidence interval (CI) for the total raw score of the behavioral/emotional scales of the CBCL with a log10 unit increase in urinary pyrethroid metabolites (specific gravity-adjusted, log10), by sex of the child.

Measures	cis-DBCA Boys[a,b] β (95%CI)	cis-DBCA Girls[a,b] β (95%CI)	pinteraction[a,c]	cis-DCCA Boys[a,b] β (95%CI)	cis-DCCA Girls[a,b] β (95%CI)	pinteraction[a,c]	trans-DCCA Boys[a,b] β (95%CI)	trans-DCCA Girls[a,b] β (95%CI)	pinteraction[a,c]	3-PBA Boys[a,b] β (95%CI)	3-PBA Girls[a,b] β (95%CI)	pinteraction[a,c]
DSM												
Pervasive developmental	-0.10 (-0.94, 0.75)	0.25 (-0.57, 1.07)	0.54	-0.51 (-1.48, 0.47)	0.28 (-0.73, 1.29)	0.30	-0.14 (-0.94, 0.67)	0.41 (-0.45, 1.27)	0.39	-0.33 (-1.37, 0.71)	0.50 (-0.60, 1.59)	0.33
Anxiety	-0.19 (-0.94, 0.55)	0.70 (-0.03, 1.43)	0.08	-0.10 (-0.96, 0.75)	-0.02 (-0.92, 0.89)	0.93	-0.28 (-0.99, 0.43)	-0.04 (-0.81, 0.73)	0.68	-0.38 (-1.29, 0.53)	0.39 (-0.59, 1.37)	0.29
Affective	0.20 (-0.44, 0.85)	0.27 (-0.33, 0.88)	0.86	-0.07 (-0.81, 0.68)	0.12 (-0.63, 0.87)	0.83	0.03 (-0.59, 0.64)	0.17 (-0.46, 0.81)	0.85	0.04 (-0.75, 0.84)	0.33 (-0.49, 1.14)	0.73
ADHD	-0.09 (-0.68, 0.51)	0.31 (-0.28, 0.89)	0.34	-0.14 (-0.82, 0.55)	0.28 (-0.45, 1.01)	0.36	0.05 (-0.52, 0.62)	0.00 (-0.61, 0.62)	0.98	-0.08 (-0.82, 0.65)	0.29 (-0.50, 1.08)	0.48
Oppositional-defiant	-0.01 (-0.57, 0.56)	0.50 (-0.06, 1.07)	0.27	-0.14 (-0.79, 0.52)	0.18 (-0.52, 0.88)	0.61	0.06 (-0.48, 0.60)	0.13 (-0.47, 0.72)	0.93	-0.05 (-0.75, 0.65)	0.34 (-0.42, 1.10)	0.54
Empirical												
Withdrawn	-0.27 (-0.84, 0.30)	0.13 (-0.48, 0.73)	0.35	-0.35 (-1.01, 0.31)	0.37 (-0.38, 1.11)	0.18	-0.13 (-0.67, 0.42)	0.22 (-0.42, 0.86)	0.45	-0.29 (-1.00, 0.41)	0.26 (-0.55, 1.08)	0.35
Externalizing	-0.03 (-1.88, 1.82)	1.85 (0.10, 3.59)*	0.16	-0.80 (-2.92, 1.33)	1.41 (-0.75, 3.58)	0.16	-0.25 (-2.01, 1.51)	0.95 (-0.89, 2.79)	0.34	-0.43 (-2.70, 1.85)	2.09 (-0.25, 4.44)	0.15
Anxious/ Depressed	-0.15 (-0.76, 0.47)	0.18 (-0.43, 0.79)	0.45	-0.17 (-0.88, 0.54)	0.34 (-0.41, 1.09)	0.34	-0.16 (-0.75, 0.42)	0.14 (-0.50, 0.78)	0.49	-0.31 (-1.07, 0.44)	0.46 (-0.35, 1.28)	0.18
Aggressive behavior	0.13 (-1.46, 1.71)	1.76 (0.24, 3.28)*	0.17	-0.76 (-2.58, 1.07)	1.32 (-0.57, 3.20)	0.13	-0.22 (-1.73, 1.29)	0.95 (-0.66, 2.55)	0.28	-0.42 (-2.37, 1.54)	1.96 (-0.08, 4.00)	0.12
Attention	-0.16 (-0.56, 0.25)	0.08 (-0.27, 0.44)	0.35	-0.04 (-0.51, 0.43)	0.10 (-0.34, 0.53)	0.70	-0.03 (-0.42, 0.36)	0.00 (-0.38, 0.37)	0.91	-0.01 (-0.51, 0.49)	0.13 (-0.34, 0.61)	0.71

[a] Models adjusted for maternal education, and age at delivery; mother's Ravens score, and HOME score at 1-year; risk for depression at 1-year and 2-years; poverty at 2-years; breastfeeding through 1 year, and time of urine collection.
[b] Models stratified by sex.
[c] Models adjusted with child's sex and child's sex-exposure interaction term (p-values listed).
*p<0.05

Supplementary Table 6.2 Adjusted relative risk and 95% confidence interval (CI) for the borderline-clinical and clinical range of behavioral/emotional scales of the CBCL with a log10 unit increase in urinary pyrethroid metabolites (specific gravity-adjusted, log10) , by sex of the child.

Measures	*cis*-DBCA Boy[a,b] RR (95%CI)	Girls[a,b] RR (95%CI)	p interaction[a,c]	*cis*-DCCA Boys[a,b] RR (95%CI)	Girls[a,b] RR (95%CI)	p interaction[a,c]	*trans*-DCCA Boys[a,b] RR (95%CI)	Girls[a,b] RR (95%CI)	p interaction[a,c]	3-PBA Boy[a,b] RR (95%CI)	Girls[a,b] RR (95%CI)	p interaction[a,c]
DSM												
Pervasive developmental	1.07 (0.86, 1.35)	1.08 (0.85, 1.38)	0.94	0.88 (0.67, 1.16)	1.06 (0.79, 1.42)	0.42	0.98 (0.79, 1.22)	1.10 (0.85, 1.41)	0.55	1.00 (0.76, 1.33)	1.06 (0.76, 1.50)	0.84
Anxiety	1.01 (0.79, 1.30)	1.28 (0.93, 1.75)	0.27	0.91 (0.65, 1.28)	0.89 (0.57, 1.39)	0.85	0.80 (0.60, 1.08)	0.88 (0.62, 1.26)	0.73	0.80 (0.56, 1.14)	1.06 (0.67, 1.69)	0.40
Affective	1.03 (0.75, 1.41)	1.51 (1.08, 2.12)*	0.11	0.85 (0.56, 1.30)	1.30 (0.86, 1.97)	0.18	0.86 (0.61, 1.21)	1.24 (0.86, 1.77)	0.16	0.85 (0.53, 1.35)	1.57 (1.02, 2.44)*	0.08
ADHD	0.72 (0.40, 1.30)	0.77 (0.37, 1.61)	0.77	0.50 (0.23, 1.08)	1.23 (0.52, 2.89)	0.12	0.69 (0.39, 1.24)	0.86 (0.36, 2.06)	0.58	0.48 (0.21, 1.10)	1.03 (0.33, 3.15)	0.23
Oppositional-defiant	0.71 (0.33, 1.49)	1.14 (0.56, 2.34)	0.41	0.85 (0.22, 3.25)	0.75 (0.31, 1.81)	0.83	1.02 (0.43, 2.41)	0.84 (0.41, 1.71)	0.77	0.50 (0.13, 1.97)	0.89 (0.34, 2.31)	0.50
Empirical												
Withdrawn	0.97 (0.75, 1.25)	1.07 (0.83, 1.39)	0.54	0.96 (0.70, 1.32)	1.14 (0.83, 1.57)	0.54	1.03 (0.80, 1.32)	1.07 (0.81, 1.42)	0.92	0.99 (0.71, 1.40)	1.07 (0.74, 1.53)	0.88
Externalizing	1.18 (0.89, 1.55)	1.44 (1.02, 2.04)*	0.40	1.01 (0.73, 1.41)	1.28 (0.82, 1.98)	0.41	1.07 (0.82, 1.39)	1.20 (0.82, 1.77)	0.54	1.16 (0.83, 1.63)	1.64 (1.04, 2.58)*	0.25
Anxious/ Depressed	0.84 (0.63, 1.12)	1.01 (0.71, 1.44)	0.48	0.67 (0.47, 0.96)*	1.11 (0.69, 1.77)	0.11	0.73 (0.55, 0.97)*	0.99 (0.66, 1.48)	0.23	0.59 (0.41, 0.84)*	1.11 (0.65, 1.90)	0.05
Aggressive behavior	0.82 (0.53, 1.29)	1.23 (0.77, 1.97)	0.25	0.79 (0.40, 1.56)	1.01 (0.48, 2.09)	0.67	0.87 (0.52, 1.46)	0.90 (0.49, 1.66)	0.93	0.68 (0.34, 1.36)	1.36 (0.67, 2.76)	0.18
Attention	0.81 (0.45, 1.45)	0.68 (0.27, 1.68)	0.74	0.63 (0.28, 1.42)	0.57 (0.21, 1.57)	0.83	0.84 (0.46, 1.54)	0.33 (0.14, 0.81)*	0.12	0.79 (0.33, 1.90)	0.45 (0.15, 1.35)	0.47

[a] Models adjusted for maternal education, and age at delivery; mother's Ravens score, and HOME score at 1-year; risk for depression at 1-year and 2-years; poverty at 2-years; breastfeeding through 1 year, and time of urine collection.
[b] Models stratified by sex.
[c] Models adjusted with child's sex and child's sex-exposure interaction term (p-values listed).
*p<0.05

Supplemental Table 7. Adjusted beta coefficient and 95% confidence interval (CI) for the total raw score of the behavioral/emotional scales of the CBCL with a log10 unit increase in urinary pyrethroid metabolites 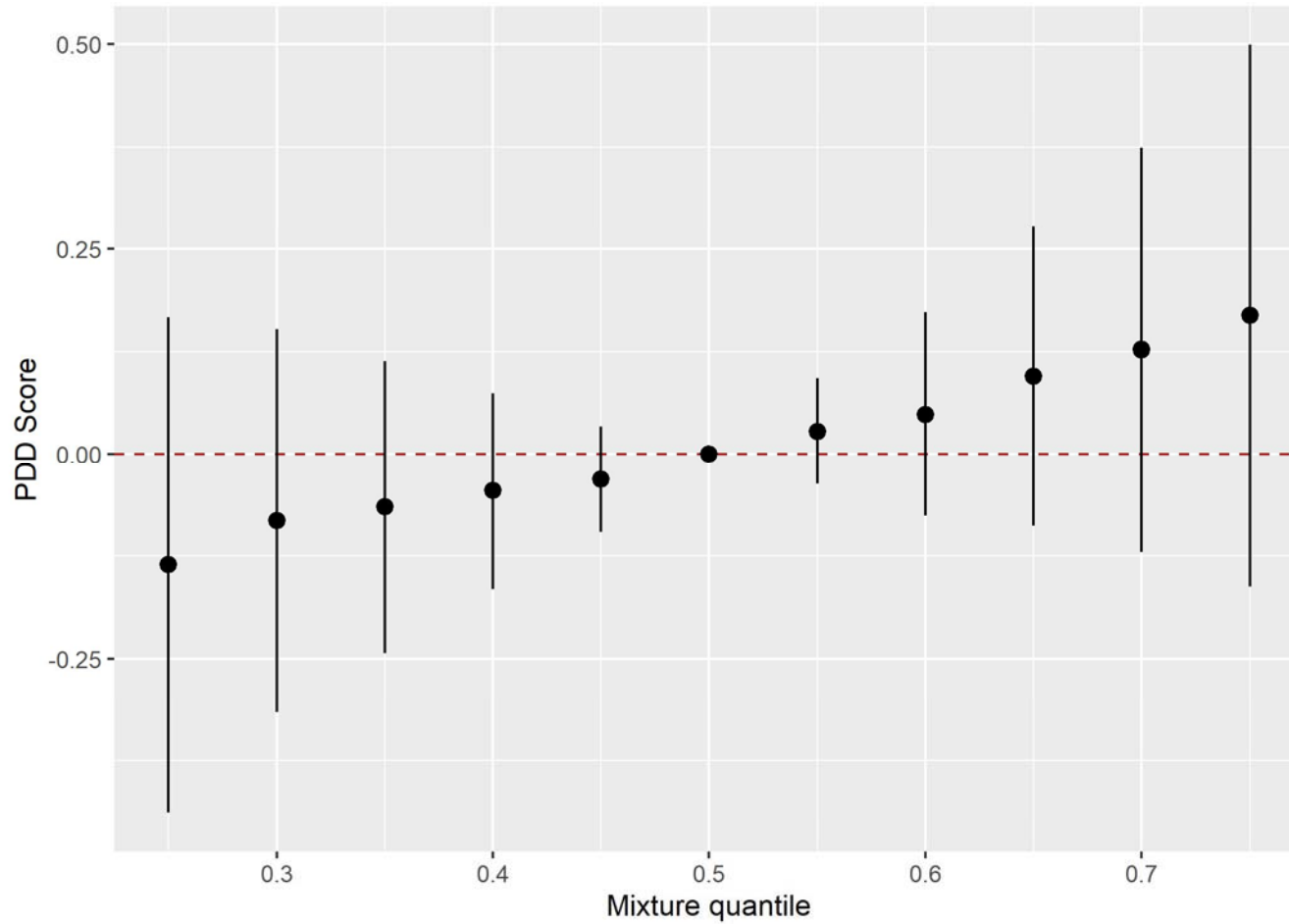(specific gravity-adjusted, log10) collected before delivery; Adjusted relative risk and 95% confidence interval (CI) for the borderline-clinical and clinical range of behavioral/emotional scales of the CBCL with a log10 unit increase in urinary pyrethroid metabolites (specific gravity-adjusted, log10) collected before delivery (n=418).

Measures	β (95% CI)				RR (95% CI)			
	cis-DBCA	*cis*-DCCA	*trans*-DCCA	3-PBA	*cis*-DBCA	*cis*-DCCA	*trans*-DCCA	3-PBA
DSM								
Pervasive developmental	0.00 (-0.73, 0.72)	0.13 (-0.70, 0.96)	0.14 (-0.57, 0.85)	0.13 (-0.75, 1.01)	1.07 (0.87, 1.32)	1.02 (0.79, 1.30)	1.05 (0.85, 1.29)	1.09 (0.84, 1.39)
Anxiety	0.08 (-0.56, 0.72)	0.13 (-0.61, 0.86)	-0.19 (-0.82, 0.43)	0.04 (-0.73, 0.81)	1.12 (0.87, 1.45)	1.01 (0.72, 1.43)	0.88 (0.65, 1.19)	0.99 (0.70, 1.40)
Affective	0.12 (-0.44, 0.68)	0.05 (-0.59, 0.69)	0.02 (-0.53, 0.57)	0.20 (-0.48, 0.88)	1.18 (0.88, 1.59)	1.01 (0.68, 1.50)	0.97 (0.70, 1.35)	1.16 (0.79, 1.70)
ADHD	0.14 (-0.39, 0.66)	0.29 (-0.31, 0.89)	0.06 (-0.45, 0.57)	0.31 (-0.33, 0.94)	0.74 (0.38, 1.42)	0.87 (0.39, 1.95)	0.75 (0.37, 1.50)	0.91 (0.40, 2.09)
Oppositional-defiant	0.21 (-0.30, 0.72)	0.24 (-0.34, 0.83)	0.12 (-0.38, 0.62)	0.31 (-0.31, 0.92)	0.91 (0.50, 1.64)	0.86 (0.30, 2.45)	0.92 (0.42, 2.02)	0.67 (0.25, 1.77)
Empirical								
Withdrawn	-0.16 (-0.68, 0.37)	-0.04 (-0.64, 0.57)	-0.06 (-0.58, 0.45)	-0.11 (-0.75, 0.53)	0.99 (0.79, 1.25)	1.07 (0.79, 1.44)	1.01 (0.78, 1.31)	1.02 (0.74, 1.40)
Externalizing	0.66 (-0.94, 2.26)	0.88 (-0.95, 2.71)	0.34 (-1.23, 1.91)	1.34 (-0.59, 3.28)	1.24 (0.94, 1.63)	1.29 (0.97, 1.71)	1.22 (0.94, 1.58)	1.52 (1.14, 2.03)*
Anxious/ Depressed	-0.17 (-0.71, 0.36)	0.20 (-0.41, 0.82)	-0.11 (-0.63, 0.41)	0.03 (-0.62, 0.67)	0.78 (0.58, 1.04)	0.81 (0.55, 1.18)	0.72 (0.53, 0.99)*	0.71 (0.49, 1.03)
Aggressive behavior	0.72 (-0.64, 2.09)	0.75 (-0.82, 2.31)	0.35 (-0.99, 1.69)	1.15 (-0.50, 2.80)	1.00 (0.66, 1.52)	1.11 (0.60, 2.03)	0.98 (0.57, 1.68)	1.21 (0.68, 2.16)
Attention	-0.06 (-0.41, 0.28)	0.13 (-0.26, 0.53)	-0.01 (-0.35, 0.33)	0.19 (-0.23, 0.61)	0.77 (0.43, 1.38)	0.85 (0.42, 1.72)	0.68 (0.36, 1.31)	0.88 (0.41, 1.87)

[a] Models adjusted for maternal education, and age at delivery; mother's Ravens score, and HOME score at 1-year; risk for depression at 1-year and 2-years; poverty at 2-years; breastfeeding through 1 year, and time of urine collection.
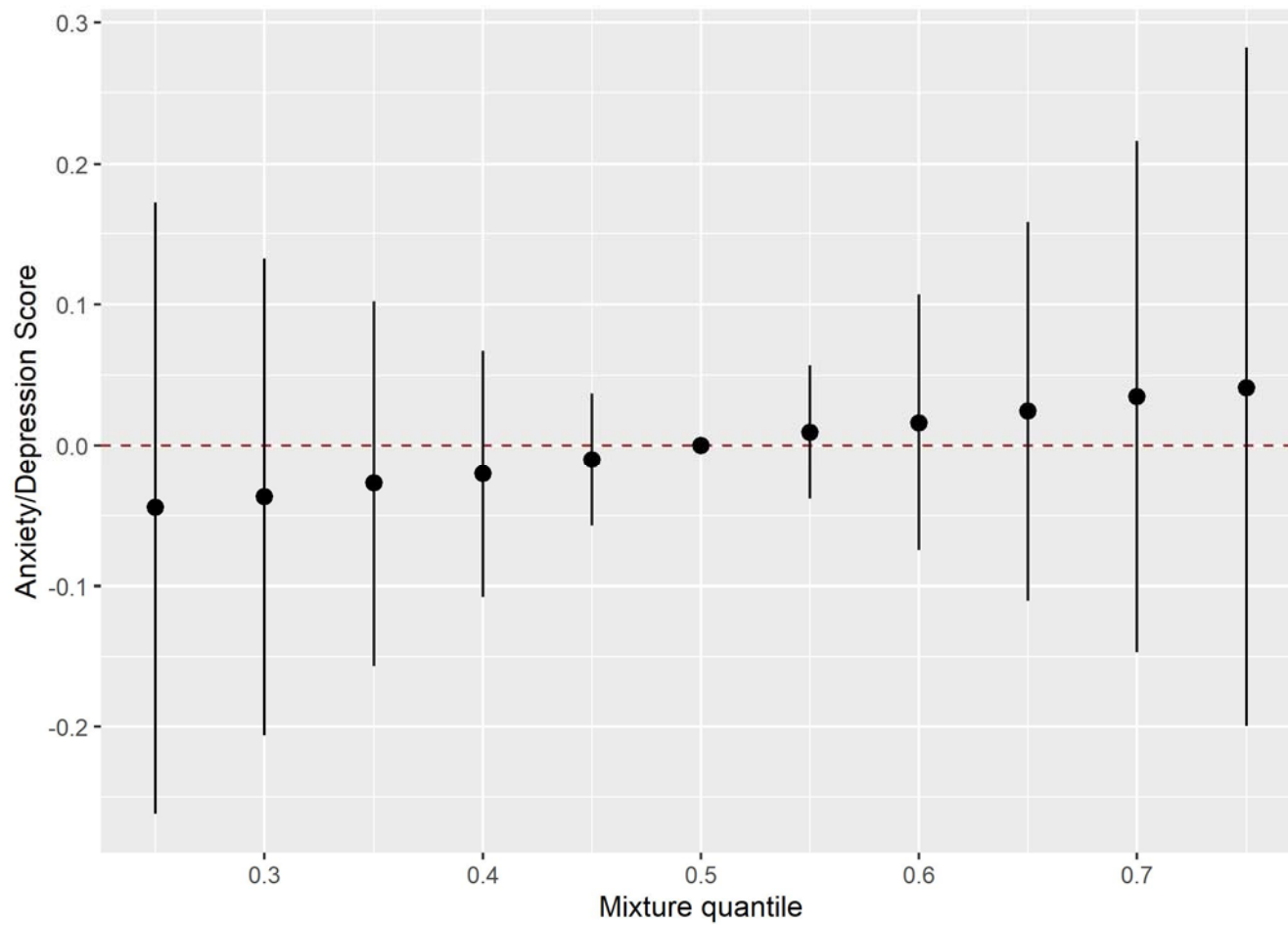
*p<0.05

Supplemental Figure 1. Overall effect of the chemical mixture (estimates and 95% credible intervals) on problematic behavior captured by CBCL. This figure plots the estimated change in raw score of each CBCL scale when chemical exposures are all at a particular percentile compared to when chemical exposures are all at the 50th percentile, VHEMBE study, Limpopo, South Africa.
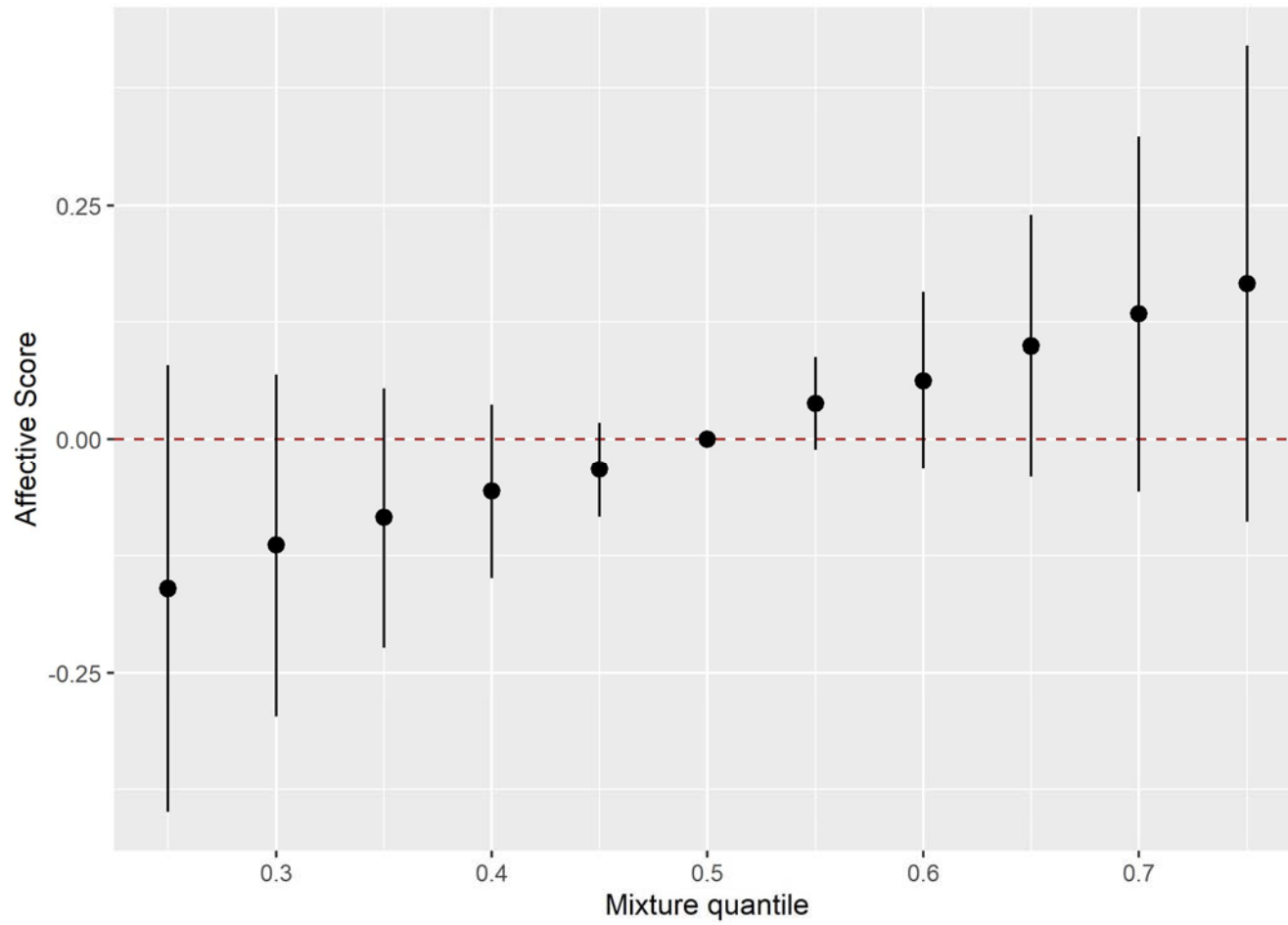
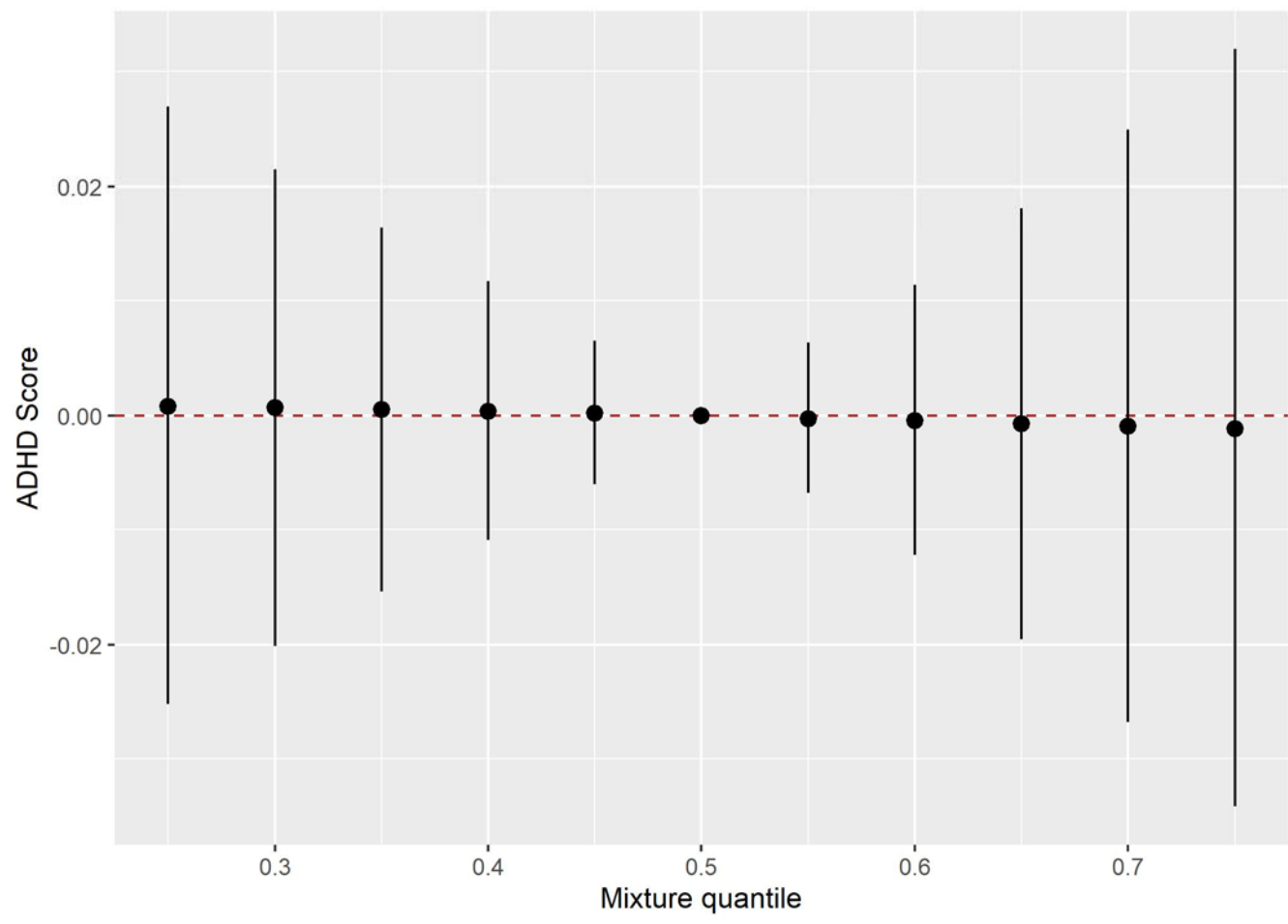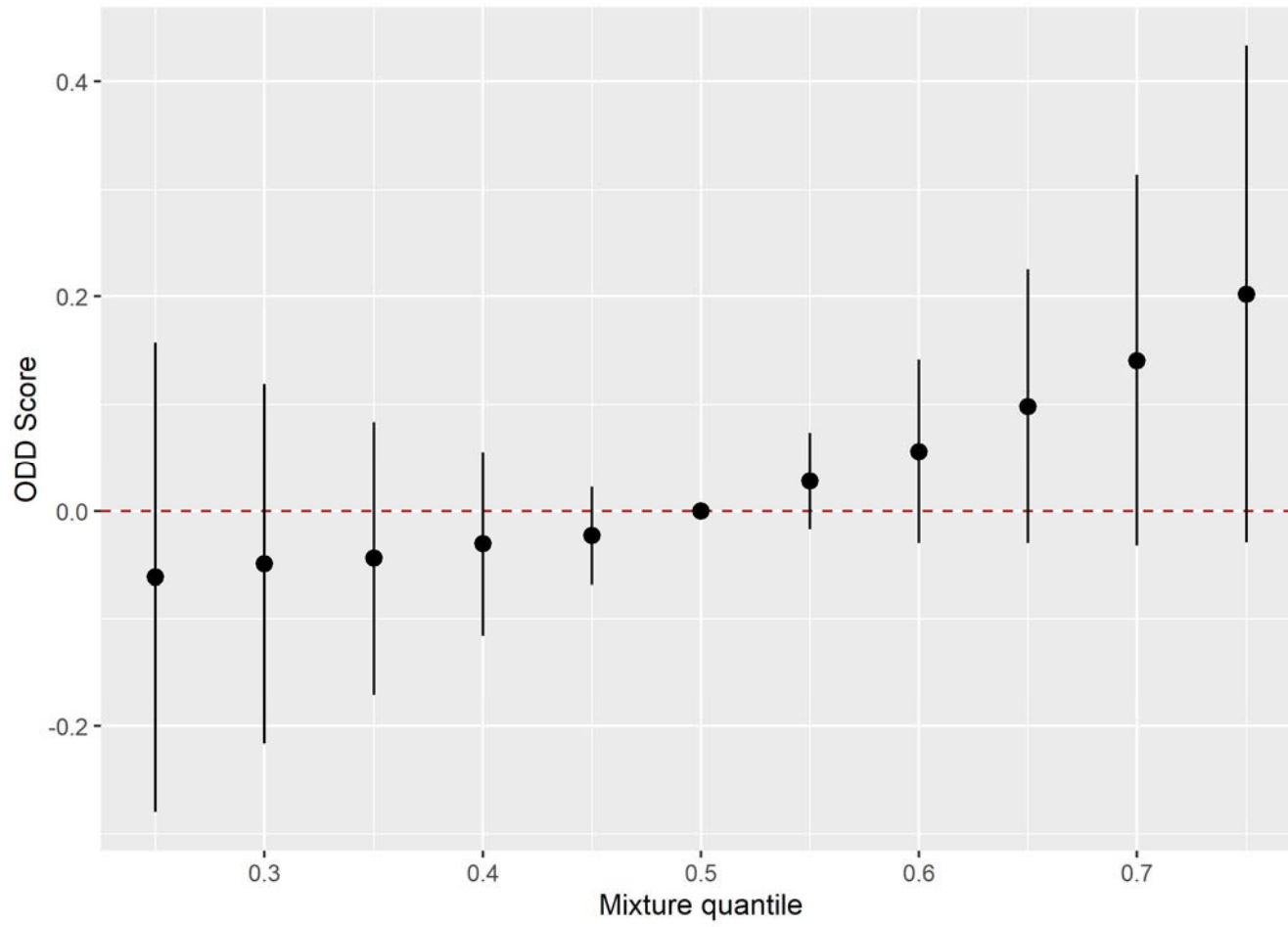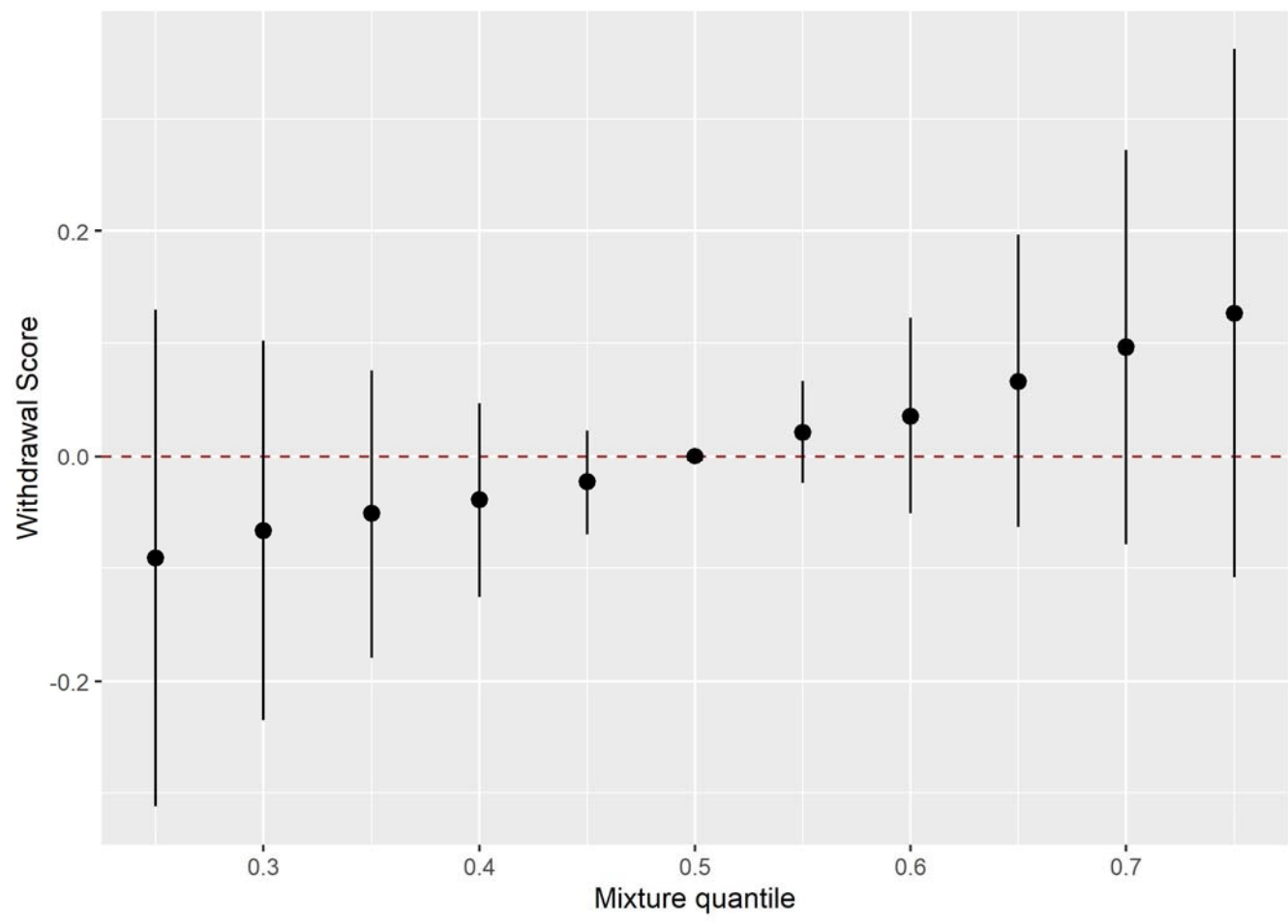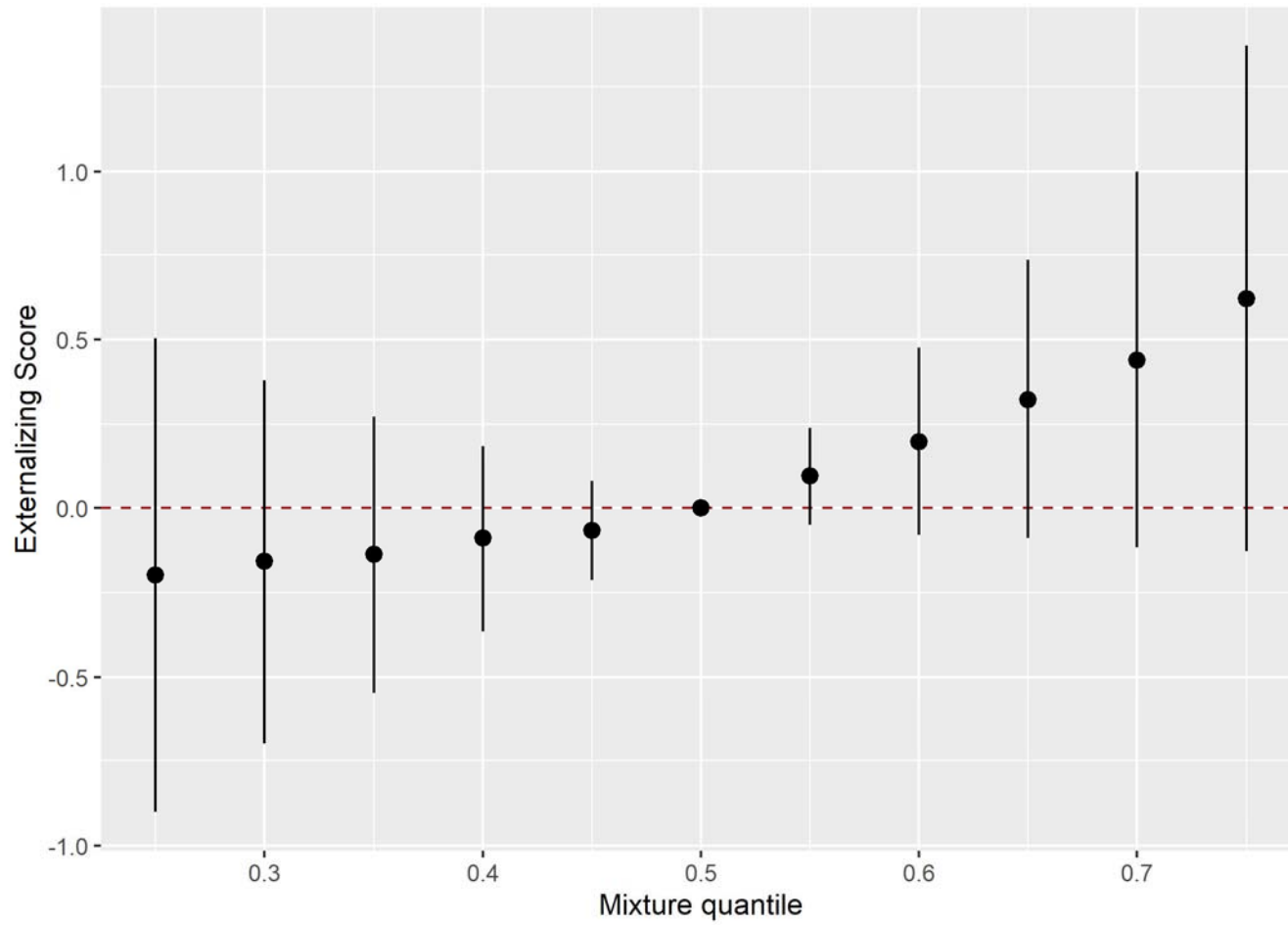(a) Pervasive Developmental Disorder

(b) Anxiety

(c) Affective
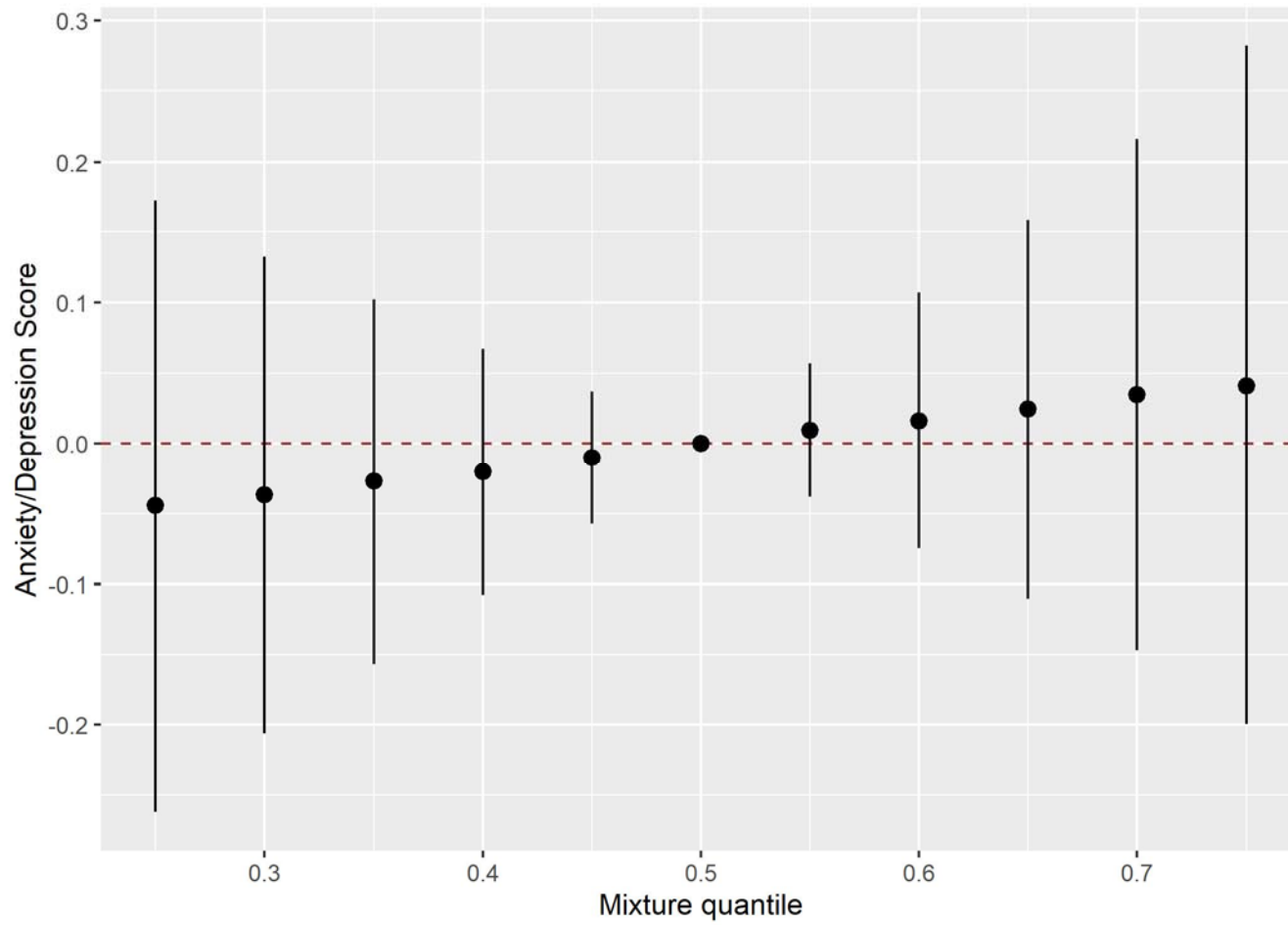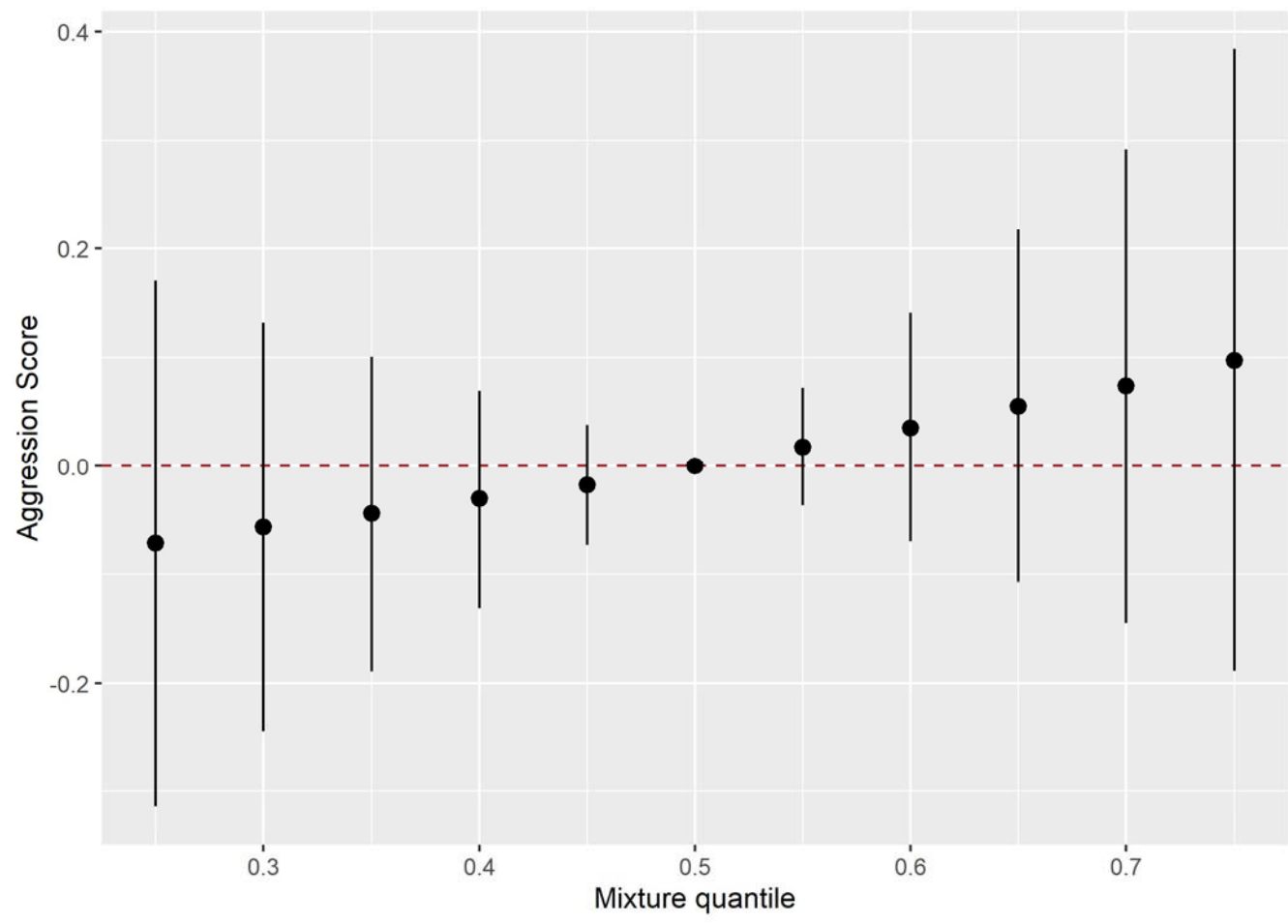
(d) ADHD

(e) Oppositional-defiant

(f) Withdrawn

(g) Externalizing

(h) Anxious/ Depressed

(i) Aggressive

(j) Attention