

# UAE Cognitive Function Paper 2

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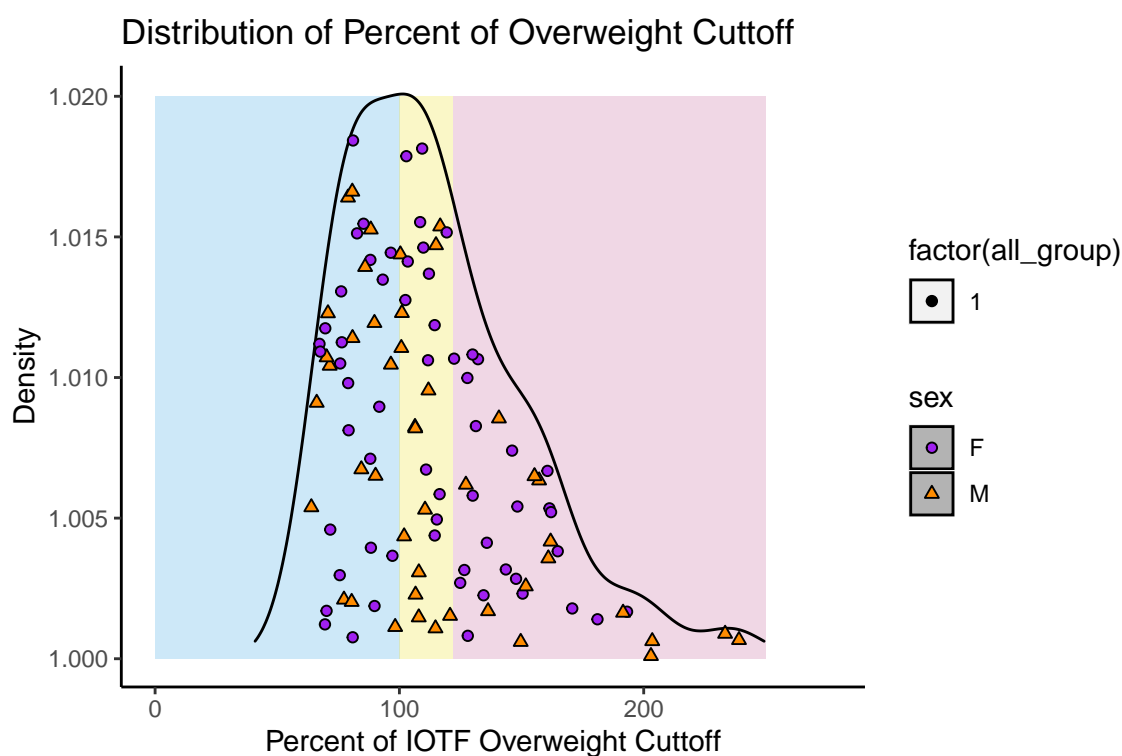
# 1 Measurement of Weight Status

We decided to use the International Obesity Task Force (IOTF) designation of weight status for the sample. They use smoothed, sex-specific BMI curves meant to match the the BMI cutoffs for overweight (OW;  $25 \text{ kg/m}^2$ ) and obesity (OB;  $30 \text{ kg/m}^2$ ) at age 18 yrs.

Rather than BMI-zscore or BMI-percentile, we chose to use percent of overweight cutoff because recent studies shows it has a tighter association with measured adiposity:

$$\text{BMI \% of overweight} = \frac{\text{childBMI}}{\text{BMI at age- and sex- adjusted overweight cutoff}} * 100$$

<100 % - indicates child BMI is below the overweight cutoff for age and sex (i.e., has healthy weight) 100 % - indicates child BMI is the same as the overweight cutoff for age and sex >100 % - indicates child BMI is above the overweight cutoff for age and sex (i.e., has overweight or obesity)



Density plot of percent of overweight by sex. The shaded regions indicated those with healthy weight (blue), overweight (yellow), and obesity (red). The points show density of participants by sex (purple circles = female, orange triangles = males).

## 2 Participant Characteristics

Table 1: Demographic Characteristics by Sex

Characteristic	All		Sex		
	N	N = 107	N	F, N = 61	M, N = 46
sex	107				
F		61 (57%)			
M		46 (43%)			
Age_yr	107	12.75 [7.31 - 17.84]	107	12.79 [7.31 - 17.84]	12.70 [8.04 - 17.54]
BMI	107	25.22 [12.71 - 55.52]	107	24.85 [12.71 - 47.60]	25.70 [13.60 - 55.52]
pOW	107	114.58 [63.95 - 239.00]	107	112.22 [67.29 - 193.18]	117.71 [63.95 - 239.00]
Father_ed	106	12.71 [0.00 - 18.00]	106	12.91 [0.00 - 18.00]	12.44 [6.00 - 18.00]
Unknown		1		0	1
Mother_ed	103	13.09 [0.00 - 18.00]	103	13.00 [3.00 - 18.00]	13.21 [0.00 - 18.00]
Unknown		4		1	3
Month_AED	103		103		
<25,000 AED		33 (32%)		17 (29%)	16 (36%)
25,000 - 55,000 AED		55 (53%)		33 (56%)	22 (50%)
55,000 - 75,000 AED		6 (5.8%)		4 (6.8%)	2 (4.5%)
> 75,000 AED		9 (8.7%)		5 (8.5%)	4 (9.1%)
Unknown		4		2	2
DadNationality	101		101		
Emirati		98 (97%)		58 (97%)	40 (98%)
Omani		1 (1.0%)		1 (1.7%)	0 (0%)
Yemeni		2 (2.0%)		1 (1.7%)	1 (2.4%)
Unknown		6		1	5
MomNationality	104		104		
Emirati		96 (92%)		55 (92%)	41 (93%)
Omani		1 (1.0%)		1 (1.7%)	0 (0%)
Yemeni		1 (1.0%)		0 (0%)	1 (2.3%)
Moroccan		2 (1.9%)		2 (3.3%)	0 (0%)
Egyptian		3 (2.9%)		2 (3.3%)	1 (2.3%)
Bahrani		1 (1.0%)		0 (0%)	1 (2.3%)
Unknown		3		1	2

<sup>1</sup> n (%); Mean [Range]

<sup>2</sup> Mean [Range]; n (%)

Table 2: Demographic Characteristics by Weight Status

Characteristic	N	HW	OW	OB	ANOVA	chi/fisher
sex	107					0.5111
F		24 (59%)	14 (48%)	23 (62%)		
M		17 (41%)	15 (52%)	14 (38%)		
Age_yr	107	11.85 [8.02 - 17.37]	12.84 [8.15 - 17.54]	13.69 [7.31 - 17.84]	0.01	
BMI	107	17.15 [12.71 - 22.72]	24.03 [18.70 - 28.86]	35.08 [21.87 - 55.52]	0	
pOW	107	80.86 [63.95 - 98.26]	109.66 [100.39 - 120.73]	155.80 [122.38 - 239.00]	0	
Father_ed	106	12.68 [6.00 - 18.00]	13.60 [6.00 - 18.00]	12.03 [0.00 - 18.00]	0.2014	
Unknown		0	0	1		
Mother_ed	103	13.28 [3.00 - 18.00]	13.93 [9.00 - 18.00]	12.25 [0.00 - 18.00]	0.1278	
Unknown		1	2	1		
Month_AED	103					0.8264
<25,000 AED		11 (28%)	10 (34%)	12 (35%)		
25,000 - 55,000 AED		23 (57%)	13 (45%)	19 (56%)		
55,000 - 75,000 AED		2 (5.0%)	3 (10%)	1 (2.9%)		
> 75,000 AED		4 (10%)	3 (10%)	2 (5.9%)		
Unknown		1	0	3		
DadNationality	101					0.0953
Emirati		40 (100%)	25 (96%)	33 (94%)		
Omani		0 (0%)	1 (3.8%)	0 (0%)		
Yemeni		0 (0%)	0 (0%)	2 (5.7%)		
Unknown		1	3	2		
MomNationality	104					0.6488
Emirati		38 (93%)	26 (93%)	32 (91%)		
Omani		0 (0%)	1 (3.6%)	0 (0%)		
Yemeni		0 (0%)	0 (0%)	1 (2.9%)		
Moroccan		1 (2.4%)	0 (0%)	1 (2.9%)		
Egyptian		2 (4.9%)	0 (0%)	1 (2.9%)		
Bahrani		0 (0%)	1 (3.6%)	0 (0%)		
Unknown		0	1	2		

<sup>1</sup> n (%); Mean [Range]

## 2.1 Associations between Demographics and Percent of Overweight Cutoff

### 2.1.1 t-test for sex

Welch Two Sample t-test

```
data:  pOW by sex
t = -0.72449, df = 78.92, p-value = 0.4709
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -20.558399  9.586342
sample estimates:
mean in group F mean in group M
      112.2213      117.7073
```

### 2.1.2 Correlation Matrix

Table 3: Correlations between percent of overweight cutoff and demographic characteristics

	Age_yr	Father_ed	Mother_ed	pOW
Age_yr				
Father_ed	0.03			
Mother_ed	-0.14	0.53*		
pOW	0.26*	-0.06	-0.14	

Table 4: P-values for the correlations between percent of overweight cutoff and demographic characteristics

	Age_yr	Father_ed	Mother_ed	pOW
Age_yr				
Father_ed	0.795			
Mother_ed	0.15	0		
pOW	0.006	0.544	0.154	

Only child age was associated with percent of overweight cutoff - older children tended to have higher percent of overweight cutoff indicating older children were more likely to have overweight or obesity. There was no association with father or mother education level, which differs from finding in the US. Hip to waist ratio was also not associated with percent of overweight cutoff.

### 2.1.3 One-Way ANOVA for Income Categories

Anova Table (Type III tests)

```
Response: pOW
      Sum Sq Df F value Pr(>F)
(Intercept) 424771  1 298.8582 <2e-16 ***
Month_AED    932  3  0.2185 0.8833
```

Residuals 140710 99

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

There was no difference in percent of overweight by monthly income category.

#### 2.1.4 Sensitivity Tests

Table 5: Linear Model: pOWcutoff - SES category + Maternal Education + Age + Sex

	b	se	t	p	
(Intercept)	81.112	25.541	3.176	0.002	**
Month_AED25,000 - 55,000 AED	8.066	8.383	0.962	0.338	
Month_AED55,000 - 75,000 AED	17.555	16.584	1.059	0.293	
Month_AED > 75,000 AED	1.710	15.696	0.109	0.913	
Mother_ed	-1.682	1.222	-1.376	0.172	
Age_yr	3.873	1.369	2.829	0.006	**

After controlling for family income, mother education, and child sex, child age was significantly associated with percent of overweight such that for each year older, the expected percent of overweight is predicted to increase 4.24% points.

### 3 Neuropsychological Assessments

Table 6: Neuropsychological Performance by Sex Status

Characteristic	All		Sex			ANOVA
	N	N = 107	N	F	M	
WASI-Block, T	107	45.04 (8.75) [22.00 - 75.00]	107	46.00 (7.98) [28.00 - 70.00]	43.76 (9.62) [22.00 - 75.00]	0.1914
WASI-Matrix, T	107	46.05 (9.56) [23.00 - 75.00]	107	47.69 (8.81) [25.00 - 67.00]	43.87 (10.17) [23.00 - 75.00]	0.0403
WASI-PRI, T	107	90.23 (15.55) [49.00 - 130.00]	107	93.36 (13.87) [53.00 - 128.00]	86.09 (16.80) [49.00 - 130.00]	0.0159
WASI-PRI, IQ	107	91.72 (12.94) [56.00 - 126.00]	107	94.30 (11.53) [60.00 - 124.00]	88.30 (14.01) [56.00 - 126.00]	0.017
Digit Forward, raw	107	8.62 (2.12) [4.00 - 15.00]	107	8.69 (2.27) [5.00 - 15.00]	8.52 (1.92) [4.00 - 12.00]	0.6887
Digit Forward, SS	107	9.24 (2.85) [2.00 - 16.00]	107	9.38 (2.82) [4.00 - 16.00]	9.07 (2.92) [2.00 - 15.00]	0.5783
Digit Backward, raw	107	6.24 (1.68) [3.00 - 11.00]	107	6.51 (1.86) [3.00 - 11.00]	5.89 (1.35) [4.00 - 10.00]	0.0599
Digit Backward, SS	107	8.17 (2.85) [3.00 - 16.00]	107	8.61 (2.94) [3.00 - 15.00]	7.59 (2.65) [3.00 - 16.00]	0.067
Digit Total, raw	107	14.87 (3.09) [8.00 - 23.00]	107	15.21 (3.44) [8.00 - 23.00]	14.41 (2.53) [9.00 - 21.00]	0.1866
Digit Total, SS	107	9.72 (2.86) [4.00 - 18.00]	107	10.03 (2.89) [4.00 - 16.00]	9.30 (2.81) [4.00 - 18.00]	0.1942
Coding, raw	107	44.84 (13.98) [14.00 - 80.00]	107	46.82 (13.75) [18.00 - 75.00]	42.22 (14.01) [14.00 - 80.00]	0.092
Coding, SS	107	7.35 (3.43) [1.00 - 19.00]				
Digit Total, SS			107	7.72 (2.99) [1.00 - 19.00]	6.85 (3.91) [1.00 - 17.00]	0.193

<sup>1</sup> Mean (SD) [Range]

Percent of overweight and height:weight ratio were not associated with any of the neuropsychological assessments. Number of comorbidities was associated with total digit span SS such that the higher number of comorbidities the lower the standard score.

Table 7: Neuropsychological Performance by Weight Status

Characteristic	N	HW	OW	OB	ANOVA
WASI-Block, T	107	45.10 (9.17) [22.00 - 75.00]	46.90 (8.17) [30.00 - 63.00]	43.51 (8.66) [27.00 - 64.00]	0.2989
WASI-Matrix, T	107	45.59 (9.75) [23.00 - 63.00]	46.66 (9.01) [28.00 - 67.00]	46.08 (10.00) [25.00 - 75.00]	0.9006
WASI-PRI, T	107	89.15 (16.06) [49.00 - 130.00]	92.76 (14.78) [58.00 - 121.00]	89.46 (15.76) [53.00 - 124.00]	0.5939
WASI-PRI, IQ	107	90.85 (13.47) [56.00 - 126.00]	93.79 (12.27) [65.00 - 118.00]	91.05 (13.01) [60.00 - 120.00]	0.6029
Digit Forward, raw	107	8.24 (1.88) [5.00 - 13.00]	8.45 (2.21) [4.00 - 13.00]	9.16 (2.23) [5.00 - 15.00]	0.1417
Digit Forward, SS	107	9.05 (2.57) [4.00 - 15.00]	9.07 (3.20) [2.00 - 14.00]	9.59 (2.92) [4.00 - 16.00]	0.655
Digit Backward, raw	107	6.12 (1.60) [4.00 - 10.00]	6.52 (1.86) [4.00 - 11.00]	6.16 (1.64) [3.00 - 11.00]	0.5902
Digit Backward, SS	107	8.27 (2.89) [3.00 - 15.00]	8.55 (3.01) [3.00 - 16.00]	7.76 (2.71) [3.00 - 14.00]	0.5151
Digit Total, raw	107	14.39 (2.85) [9.00 - 23.00]	14.97 (3.63) [9.00 - 23.00]	15.32 (2.90) [8.00 - 22.00]	0.4079
Digit Total, SS	107	9.78 (2.84) [4.00 - 16.00]	9.76 (3.35) [4.00 - 18.00]	9.62 (2.54) [4.00 - 15.00]	0.9676
Coding, raw	107	41.83 (14.27) [14.00 - 69.00]	45.93 (14.20) [23.00 - 80.00]	47.32 (13.23) [18.00 - 75.00]	0.1986
Digit Total, SS	107	7.83 (3.37) [1.00 - 17.00]	7.55 (3.43) [1.00 - 17.00]	6.65 (3.47) [1.00 - 19.00]	0.2959

<sup>1</sup> Mean (SD) [Range]

Performance on neuropsychological assessments did not differ by weight status. There were 5 people who had Performance IQ < 70 so all results are presented with and without those 5. Likely the PRI < 70 was due in part to attention/engagement and may not accurately reflect PRI.



### 3.1 Correlation Matrix

Table 8: Correlations between neuropsychological performance and percent of overweight

	blockT	matrixT	PRI	ds_fSS	ds_bSS	codingSS	age	pOW	nComorbid	CSHQ	SDQ
blockT											
matrixT	0.39*										
PRI	0.82*	0.83*									
ds_fSS	-0.03	0.15	0.07								
ds_bSS	0.15	0.16	0.21*	0.27*							
codingSS	0.34*	0.26*	0.33*	0.11	0.23*						
age	-0.13	0.06	-0.05	0.03	-0.33*	-0.25*					
pOW	-0.06	0	0	0.03	-0.16	-0.15	0.26*				
nComorbid	-0.12	-0.02	-0.05	-0.15	-0.16	-0.12	0.02	0.05			
CSHQ	-0.06	-0.01	-0.05	-0.05	-0.03	-0.02	-0.06	0.1	-0.07		
SDQ	-0.03	-0.09	-0.07	0.14	0.03	0.01	-0.08	0.1	-0.07	0.41*	

Table 9: Correlation p values between neuropsychological performance and percent of overweight

	blockT	matrixT	PRI	ds_fSS	ds_bSS	codingSS	age	pOW	nComorbid	CSHQ	SDQ
blockT											
matrixT	0										
PRI	0	0									
ds_fSS	0.76	0.113	0.446								
ds_bSS	0.112	0.096	0.032	0.005							
codingSS	0	0.007	0.001	0.277	0.018						
age	0.176	0.529	0.597	0.755	0.001	0.008					
pOW	0.561	0.983	0.998	0.768	0.106	0.135	0.006				
nComorbid	0.238	0.868	0.584	0.128	0.093	0.211	0.82	0.62			
CSHQ	0.634	0.944	0.647	0.667	0.808	0.841	0.619	0.401	0.566		
SDQ	0.791	0.341	0.46	0.165	0.741	0.949	0.439	0.318	0.445	0	

Percent of overweight and height:weight ratio were not associated with any of the neuropsychological assessments. Number of comorbidities was associated with total digit span SS such that the higher number of comorbidities the lower the standard score.

### 3.2 Correlation Matrix - IQ $\geq 70$

Table 10: Correlations between neuropsychological performance and percent of overweight

	blockT	matrixT	PRI	ds_fSS	ds_bSS	codingSS	age	pOW	nComorbid	CSHQ	SDQ
blockT											
matrixT	0.27*										
PRI	0.78*	0.8*									
ds_fSS	-0.03	0.19	0.1								
ds_bSS	0.09	0.09	0.13	0.28*							
codingSS	0.32*	0.26*	0.32*	0.1	0.23*						
age	-0.03	0.17	0.09	0.05	-0.3*	-0.23*					
pOW	-0.11	-0.03	-0.05	0.03	-0.19	-0.16	0.3*				
nComorbid	-0.22*	-0.09	-0.17	-0.15	-0.21*	-0.16	0.06	0.03			
CSHQ	-0.01	0.03	-0.01	-0.05	-0.03	-0.01	-0.11	0.08	-0.09		
SDQ	-0.05	-0.11	-0.11	0.14	0.03	0	-0.06	0.08	-0.07	0.44*	

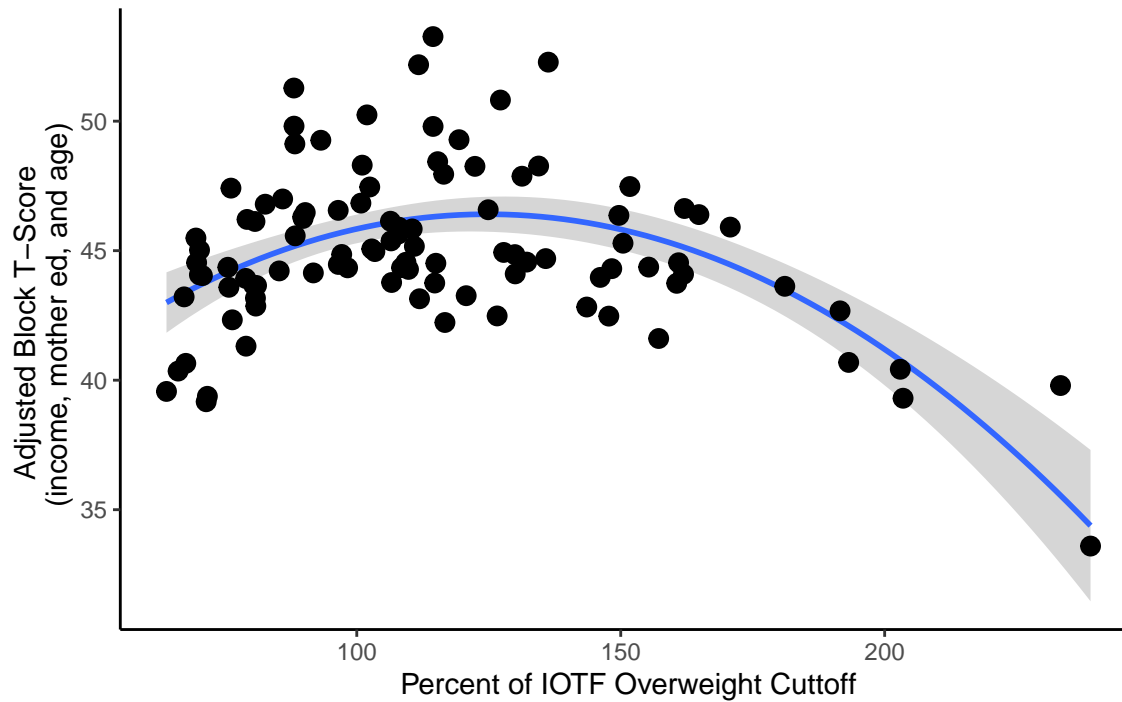
Table 11: Correlation p values between neuropsychological performance and percent of overweight

	blockT	matrixT	PRI	ds_fSS	ds_bSS	codingSS	age	pOW	nComorbid	CSHQ	SDQ
blockT											
matrixT	0.005										
PRI	0	0									
ds_fSS	0.794	0.06	0.313								
ds_bSS	0.385	0.388	0.205	0.004							
codingSS	0.001	0.008	0.001	0.321	0.019						
age	0.803	0.081	0.365	0.639	0.002	0.021					
pOW	0.281	0.791	0.619	0.743	0.062	0.101	0.002				
nComorbid	0.028	0.387	0.096	0.125	0.035	0.111	0.53	0.75			
CSHQ	0.922	0.786	0.96	0.693	0.836	0.935	0.364	0.501	0.461		
SDQ	0.636	0.271	0.285	0.176	0.799	0.967	0.544	0.443	0.515	0	

After exculding the 5 participants with  $IQ < 70$ , percent of overweight and height:weight ratio were not associated with any of the neuropsychological assessments. Number of comorbidities was still associated with total digit span SS such that the higher number of comorbidities the lower the standard score. After excluding the 5 participants, greater number of comorbidities was also associated with lower Block T-scores and backward digit span SS.

### 3.3 WASI - Block

Association between Percent of Overweight Cutoff and WASI Block



Analysis of Variance Table

```
Model 1: WASI_BlockT ~ Month_AED + Mother_ed + Age_yr + pOW_c100
Model 2: WASI_BlockT ~ Month_AED + Mother_ed + Age_yr + pOW_c100 + pOW_c100_sq
  Res.Df  RSS Df Sum of Sq    F  Pr(>F)
1     93 7126.3
2     92 6774.3  1    352.06 4.7812 0.03131 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

After looking at the association between Block T-score and percent of overweight, a non-linear association was suspected. Adding a quadratic term to the model significantly improved model fit.

Table 12: WASI Block model

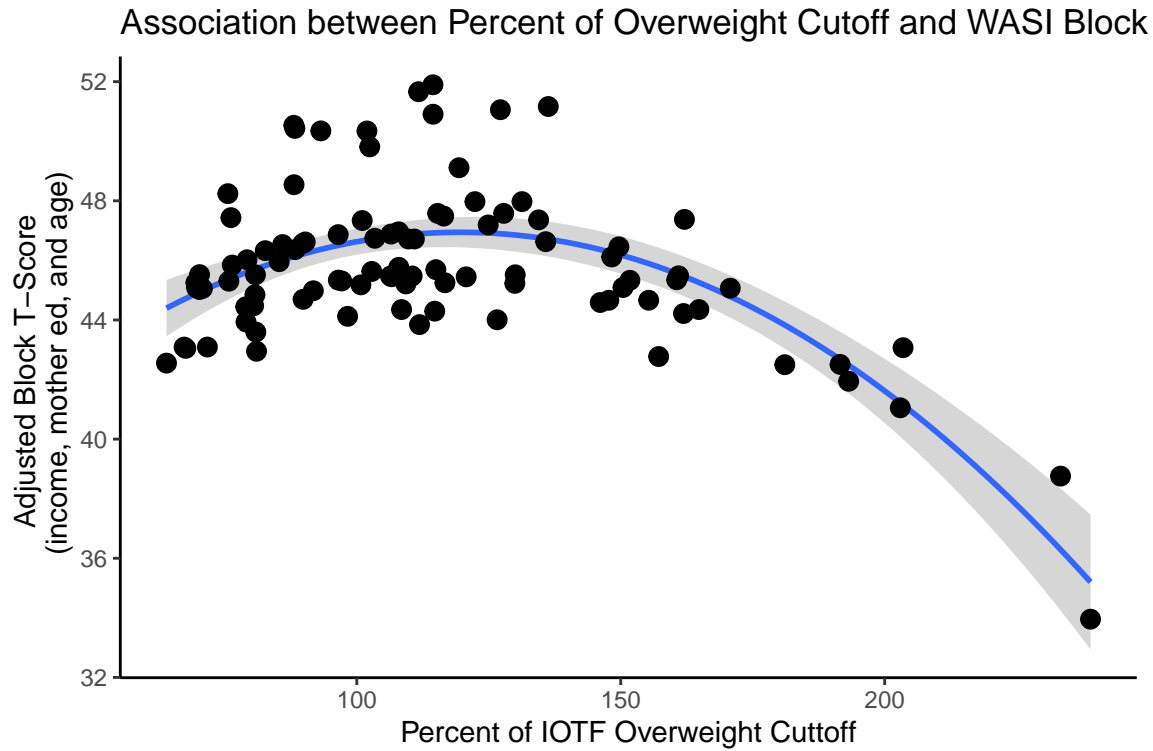
	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	52.135	6.110	8.532	0.000
Month_AED25,000 - 55,000 AED	2.024	2.004	1.010	0.315
Month_AED55,000 - 75,000 AED	5.156	4.002	1.288	0.201
Month_AED> 75,000 AED	8.257	3.697	2.233	0.028
Mother_ed	-0.151	0.295	-0.514	0.609
Age_yr	-0.503	0.336	-1.496	0.138
pOW_c100	0.061	0.040	1.538	0.127
pOW_c100_sq	-0.001	0.000	-2.187	0.031

After controlling for income, maternal education, age, and sex, there was a significant quadratic effect of percent of overweight on Block performance. The linear association between percent of overweight and performance becomes less positive as percent of overweight increases such that the slope changes from positive to negative at 131% of overweight cutoff. This indicates that both performance is worse in those with both low and height weight for their age and sex. Additionally, those whose families made >\$75,000 AED had Block T-Scores that were 8 point higher than those whose families made between \$25,000-\$55,000 AED.

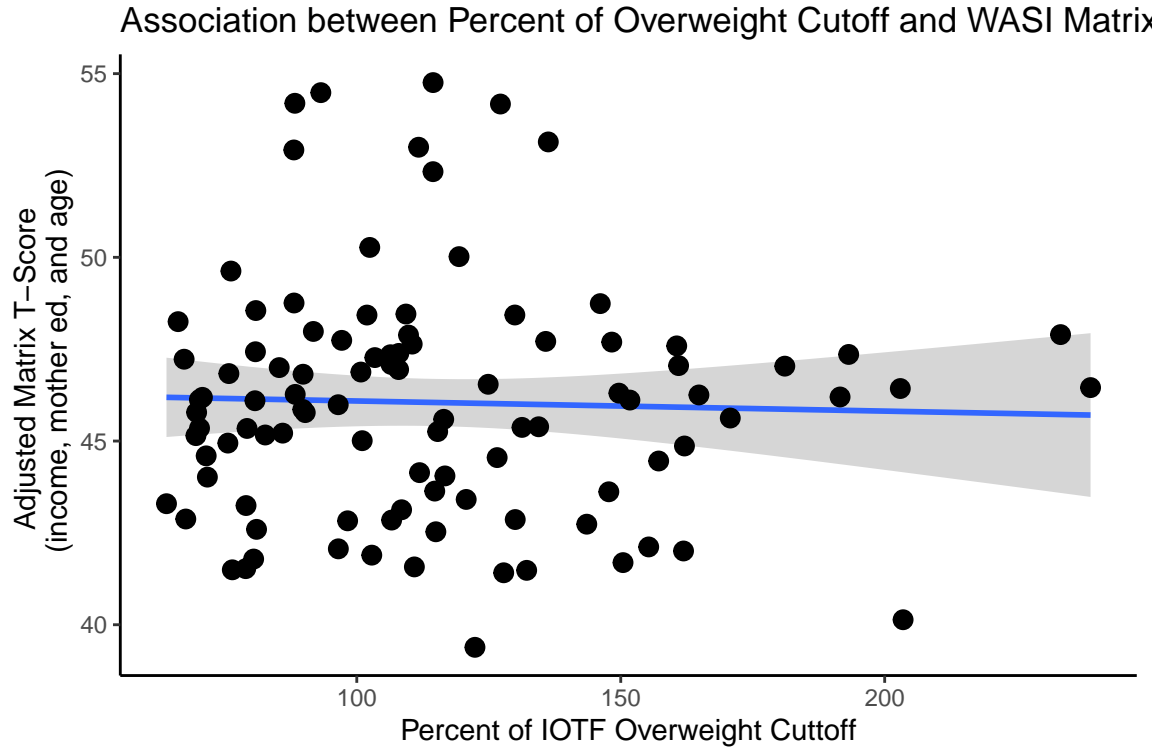
Table 13: WASI Block model - IQ  $\geq 70$

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	50.673	5.947	8.521	0.000
Month_AED25,000 - 55,000 AED	1.516	1.919	0.790	0.432
Month_AED55,000 - 75,000 AED	4.733	3.761	1.259	0.212
Month_AED> 75,000 AED	7.357	3.491	2.107	0.038
Mother_ed	-0.341	0.290	-1.176	0.243
Age_yr	-0.098	0.333	-0.295	0.768
pOW_c100	0.039	0.040	0.981	0.329
pOW_c100_sq	-0.001	0.000	-2.060	0.042

Pattern of results remained unchanged when restricting to IQ  $\geq 70$  with just a little loss in significance due to lower participant numbers.



### 3.4 WASI - Matrix



The model for Matrix performance was not improved by adding a quadratic term.

#### Analysis of Variance Table

```
Model 1: WASI_MatrixT ~ Month_AED + Mother_ed + Age_yr + pOW_c100
Model 2: WASI_MatrixT ~ Month_AED + Mother_ed + Age_yr + pOW_c100 + pOW_c100_sq
  Res.Df    RSS Df Sum of Sq    F Pr(>F)
1      93 8218.3
2      92 8099.4  1    118.9 1.3505 0.2482
```

Table 14: WASI Matrix model

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	35.341	6.609	5.348	0.000
Month_AED25,000 - 55,000 AED	3.966	2.174	1.825	0.071
Month_AED55,000 - 75,000 AED	6.576	4.304	1.528	0.130
Month_AED> 75,000 AED	9.524	4.050	2.352	0.021
Mother_ed	0.252	0.319	0.790	0.431
Age_yr	0.330	0.368	0.896	0.372
pOW_c100	-0.006	0.027	-0.215	0.830

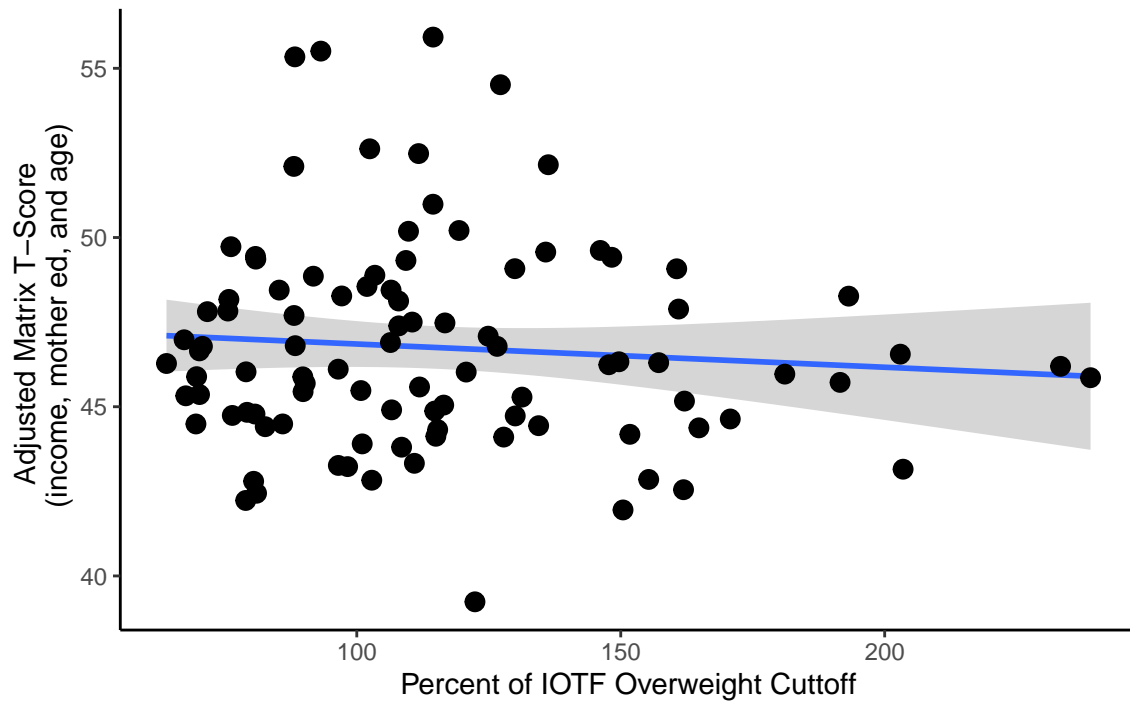
Matrix performance was not associated with percent of overweight. There was, however, a difference by income such that those whose families made >\$75,000 AED had Matrix T-Scores that were 9 points higher than those whose families made between \$25,000-\$55,000 AED.

Table 15: WASI Matrix model - IQ  $\geq 70$

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	33.474	6.418	5.215	0.000
Month_AED25,000 - 55,000 AED	2.939	2.107	1.395	0.167
Month_AED55,000 - 75,000 AED	5.807	4.082	1.422	0.158
Month_AED > 75,000 AED	7.943	3.862	2.057	0.043
Mother_ed	0.130	0.313	0.416	0.678
Age_yr	0.730	0.367	1.990	0.050
pOW_c100	-0.022	0.026	-0.836	0.406

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

### Association between Percent of Overweight Cutoff and WASI Matrix



### 3.5 WASI - PRI

#### Analysis of Variance Table

```

Model 1: WASI_PRI_IQ ~ Month_AED + Mother_ed + Age_yr + pOW_c100
Model 2: WASI_PRI_IQ ~ Month_AED + Mother_ed + Age_yr + pOW_c100 + pOW_c100_sq
  Res.Df  RSS Df Sum of Sq    F  Pr(>F)
1     93 14574
2     92 13869  1    705.69 4.6813 0.03308 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```

There is a trend for a quadratic term improving the model fit.

Table 16: WASI PRI model

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	90.396	8.743	10.339	0.000
Month_AED25,000 - 55,000 AED	6.129	2.868	2.137	0.035
Month_AED55,000 - 75,000 AED	11.605	5.726	2.027	0.046
Month_AED> 75,000 AED	16.144	5.290	3.052	0.003
Mother_ed	0.042	0.422	0.099	0.921
Age_yr	-0.276	0.481	-0.573	0.568
pOW_c100	0.099	0.057	1.743	0.085
pOW_c100_sq	-0.001	0.001	-2.164	0.033

### 3.6 Digit Span - Forward

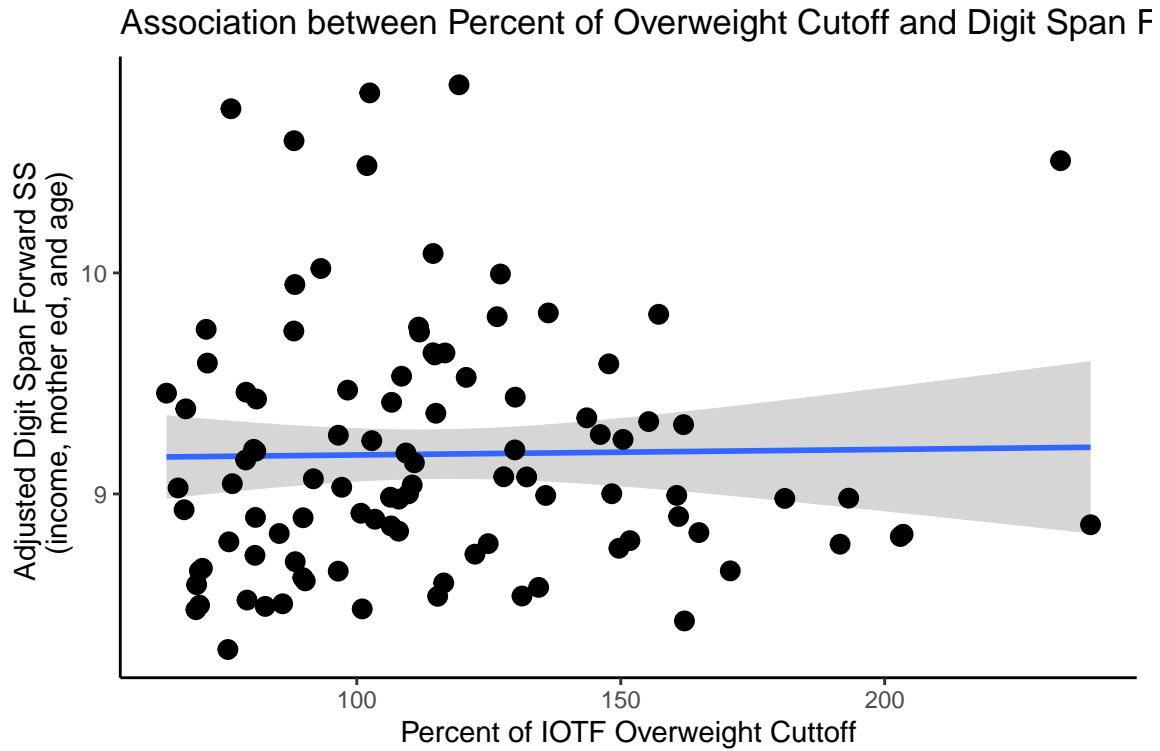


Table 17: Digist Span Forward SS model

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	7.870	2.051	3.838	0.000
Month_AED25,000 - 55,000 AED	-0.608	0.674	-0.901	0.370
Month_AED55,000 - 75,000 AED	1.253	1.336	0.938	0.351
Month_AED> 75,000 AED	0.158	1.257	0.126	0.900
Mother_ed	0.062	0.099	0.622	0.535
Age_yr	0.059	0.114	0.515	0.608
pOW_c100	0.000	0.008	-0.016	0.987

There was no association with percent of overweight or any other demographic variable.



Table 18: Digist Span Forward SS model - IQ  $\geq 70$ 

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	7.708	2.149	3.586	0.001
Month_AED25,000 - 55,000 AED	-0.578	0.705	-0.819	0.415
Month_AED55,000 - 75,000 AED	1.278	1.367	0.935	0.352
Month_AED> 75,000 AED	0.146	1.293	0.113	0.910
Mother_ed	0.059	0.105	0.565	0.573
Age_yr	0.074	0.123	0.604	0.548
pOW_c100	-0.001	0.009	-0.075	0.940

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

### 3.6.1 Sleep

Table 19: Digist Span Forward SS model - Sleep Interaction

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	6.747	2.272	2.970	0.004
Month_AED25,000 - 55,000 AED	-0.868	0.744	-1.167	0.248
Month_AED55,000 - 75,000 AED	1.704	1.450	1.175	0.245
Month_AED> 75,000 AED	1.304	1.386	0.941	0.350
Mother_ed	0.122	0.103	1.191	0.238
Age_yr	0.095	0.127	0.743	0.460
CSHQ_Total_no16_cmean	0.030	0.043	0.689	0.493
pOW_c100	-0.009	0.009	-0.978	0.332
CSHQ_Total_no16_cmean:pOW_c100	-0.002	0.001	-1.396	0.168

There was no interaction with percent of overweight.

Table 20: Digist Span Forward SS model - Sleep Interaction - IQ  $\geq 70$ 

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	6.452	2.338	2.760	0.008
Month_AED25,000 - 55,000 AED	-0.794	0.769	-1.033	0.306
Month_AED55,000 - 75,000 AED	1.748	1.473	1.187	0.240
Month_AED> 75,000 AED	1.319	1.405	0.939	0.352
Mother_ed	0.142	0.111	1.280	0.206
Age_yr	0.092	0.131	0.704	0.484
CSHQ_Total_no16_cmean	0.026	0.044	0.600	0.551
pOW_c100	-0.009	0.009	-0.929	0.357
CSHQ_Total_no16_cmean:pOW_c100	-0.002	0.001	-1.474	0.146

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

### 3.6.2 SDQ

Table 21: Digist Span Forward SS model - SDQ Interaction

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	6.833	2.080	3.284	0.001
Month_AED25,000 - 55,000 AED	-0.500	0.673	-0.743	0.460
Month_AED55,000 - 75,000 AED	0.872	1.369	0.637	0.526
Month_AED> 75,000 AED	-0.012	1.254	-0.009	0.993
Mother_ed	0.100	0.099	1.012	0.314
Age_yr	0.102	0.115	0.885	0.378
SDQ_TotalProb_raw_cmean	0.107	0.058	1.836	0.070
pOW_c100	0.000	0.008	0.045	0.964
SDQ_TotalProb_raw_cmean:pOW_c100	-0.003	0.002	-1.723	0.088

Table 22: Digist Span Forward SS model - SDQ Interaction - simple slopes

pOW_c100	SDQ_TotalProb_raw_cmean	pOW_c100.trend	SE	df	t.ratio	p.value
15.068	-5.0	0.013	0.012	90	1.115	0.268
15.068	0.0	0.000	0.008	90	0.045	0.964
15.068	5.3	-0.013	0.011	90	-1.232	0.221

There was a trend for an interaction between SDQ total problems and %IOTF-25 such that the association between %IOTF-25 and Digit Span Forward became more negative with increasing problems reported. However, despite becoming more negative, the association between %IOTF-25 and Digit Span Forward was not significant when looking at SDQ scores 1 SD above or below the mean.

Table 23: Digist Span Forward SS model - SDQ Interaction - IQ  $\geq 70$

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	6.757	2.169	3.115	0.002
Month_AED25,000 - 55,000 AED	-0.446	0.705	-0.633	0.529
Month_AED55,000 - 75,000 AED	0.931	1.400	0.665	0.508
Month_AED> 75,000 AED	0.039	1.290	0.030	0.976
Mother_ed	0.099	0.105	0.937	0.352
Age_yr	0.106	0.123	0.863	0.391
SDQ_TotalProb_raw_cmean	0.112	0.060	1.868	0.065
pOW_c100	0.000	0.009	0.055	0.957
SDQ_TotalProb_raw_cmean:pOW_c100	-0.003	0.002	-1.666	0.099

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

### 3.7 Digit Span - Backward

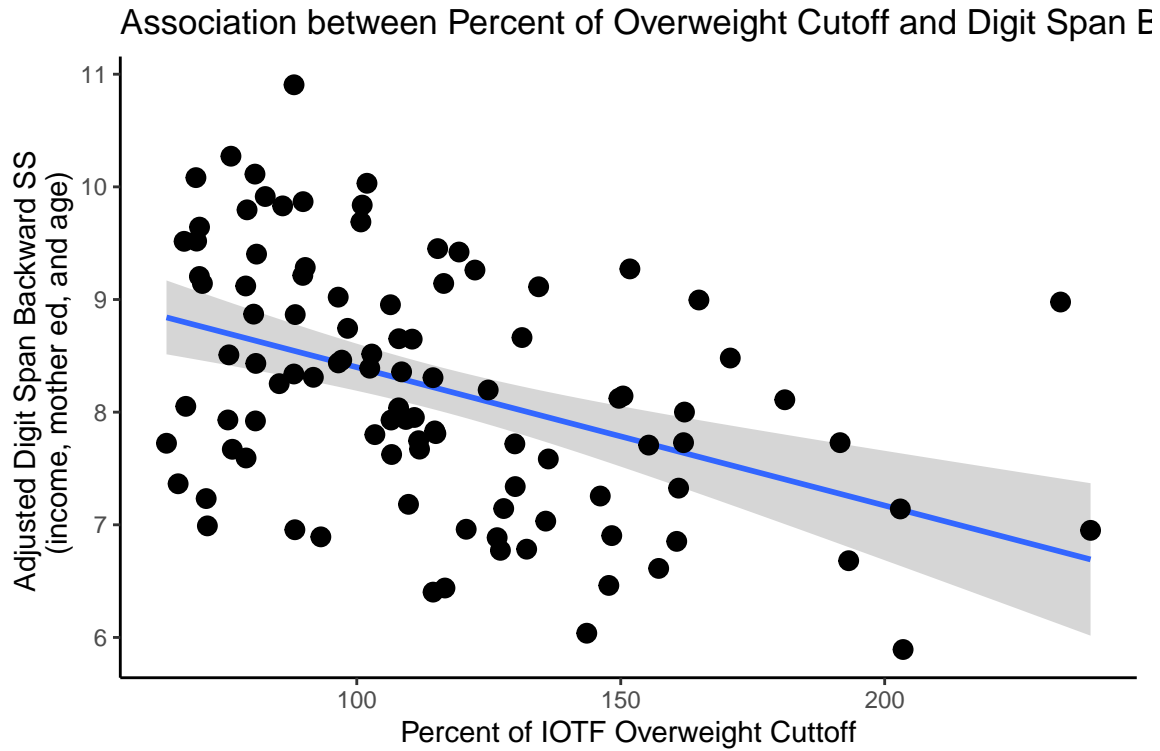


Table 24: Digist Span Backward SS model

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	11.357	1.958	5.800	0.000
Month_AED25,000 - 55,000 AED	0.546	0.644	0.847	0.399
Month_AED55,000 - 75,000 AED	1.469	1.275	1.152	0.252
Month_AED> 75,000 AED	-0.268	1.200	-0.223	0.824
Mother_ed	0.028	0.094	0.292	0.771
Age_yr	-0.293	0.109	-2.688	0.009
pOW_c100	-0.007	0.008	-0.828	0.410

There was no association with percent of overweight. There was, however, an association with age such that older children tended to have lower standard scores than younger children. Males also had a trend level lower performance than females.

Table 25: Digist Span Backward SS model - IQ  $\geq 70$ 

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	10.813	2.025	5.339	0.000
Month_AED25,000 - 55,000 AED	0.426	0.665	0.640	0.524
Month_AED55,000 - 75,000 AED	1.359	1.288	1.055	0.294
Month_AED> 75,000 AED	-0.538	1.218	-0.442	0.660
Mother_ed	0.046	0.099	0.468	0.641
Age_yr	-0.256	0.116	-2.211	0.030
pOW_c100	-0.009	0.008	-1.047	0.298

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

### 3.7.1 Sleep

Table 26: Digit Span Backward SS model - Sleep Interaction

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	10.336	2.576	4.012	0.000
Month_AED25,000 - 55,000 AED	0.169	0.843	0.201	0.842
Month_AED55,000 - 75,000 AED	0.141	1.644	0.086	0.932
Month_AED> 75,000 AED	-1.025	1.571	-0.652	0.517
Mother_ed	0.088	0.117	0.754	0.454
Age_yr	-0.237	0.144	-1.642	0.106
CSHQ_Total_no16_cmean	-0.018	0.049	-0.364	0.717
pOW_c100	-0.005	0.010	-0.437	0.664
CSHQ_Total_no16_cmean:pOW_c100	0.000	0.001	0.262	0.794

There was no interaction with percent of overweight.

Table 27: Digit Span Backward SS model - Sleep Interaction - IQ  $\geq 70$ 

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	10.215	2.656	3.846	0.000
Month_AED25,000 - 55,000 AED	0.167	0.873	0.191	0.849
Month_AED55,000 - 75,000 AED	0.121	1.673	0.072	0.943
Month_AED> 75,000 AED	-1.053	1.596	-0.660	0.512
Mother_ed	0.089	0.126	0.706	0.483
Age_yr	-0.228	0.149	-1.531	0.131
CSHQ_Total_no16_cmean	-0.019	0.050	-0.388	0.699
pOW_c100	-0.004	0.011	-0.422	0.675
CSHQ_Total_no16_cmean:pOW_c100	0.000	0.001	0.233	0.817

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

### 3.7.2 SDQ

Table 28: Digit Span Backward SS model - SDQ Interaction

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	11.180	2.029	5.511	0.000
Month_AED25,000 - 55,000 AED	0.482	0.656	0.735	0.464
Month_AED55,000 - 75,000 AED	1.409	1.335	1.056	0.294
Month_AED> 75,000 AED	-0.373	1.223	-0.305	0.761
Mother_ed	0.033	0.097	0.342	0.733
Age_yr	-0.277	0.112	-2.471	0.015
SDQ_TotalProb_raw_cmean	0.024	0.057	0.431	0.668
pOW_c100	-0.008	0.008	-0.981	0.329
SDQ_TotalProb_raw_cmean:pOW_c100	0.000	0.001	-0.132	0.895

There was no interaction with percent of overweight.

Table 29: Digit Span Backward SS model - SDQ Interaction - IQ  $\geq 70$

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	10.721	2.086	5.139	0.000
Month_AED25,000 - 55,000 AED	0.338	0.678	0.499	0.619
Month_AED55,000 - 75,000 AED	1.348	1.347	1.000	0.320
Month_AED> 75,000 AED	-0.639	1.240	-0.515	0.608
Mother_ed	0.047	0.101	0.463	0.645
Age_yr	-0.240	0.118	-2.030	0.045
SDQ_TotalProb_raw_cmean	0.016	0.058	0.272	0.786
pOW_c100	-0.010	0.009	-1.227	0.223
SDQ_TotalProb_raw_cmean:pOW_c100	0.000	0.001	0.089	0.929

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

### 3.8 Digit Span - Total

Table 30: Digist Span Total SS model

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	11.105	2.048	5.421	0.000
Month_AED25,000 - 55,000 AED	0.267	0.674	0.396	0.693
Month_AED55,000 - 75,000 AED	1.360	1.334	1.019	0.311
Month_AED> 75,000 AED	-0.424	1.255	-0.338	0.736
Mother_ed	0.037	0.099	0.372	0.711
Age_yr	-0.159	0.114	-1.396	0.166
pOW_c100	-0.006	0.008	-0.742	0.460

Table 31: Digist Span Total SS model - IQ >= 70

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	10.538	2.132	4.943	0.000
Month_AED25,000 - 55,000 AED	0.258	0.700	0.369	0.713
Month_AED55,000 - 75,000 AED	1.339	1.356	0.987	0.326
Month_AED> 75,000 AED	-0.587	1.283	-0.458	0.648
Mother_ed	0.055	0.104	0.531	0.597
Age_yr	-0.128	0.122	-1.052	0.296
pOW_c100	-0.008	0.009	-0.912	0.364

### 3.9 Coding

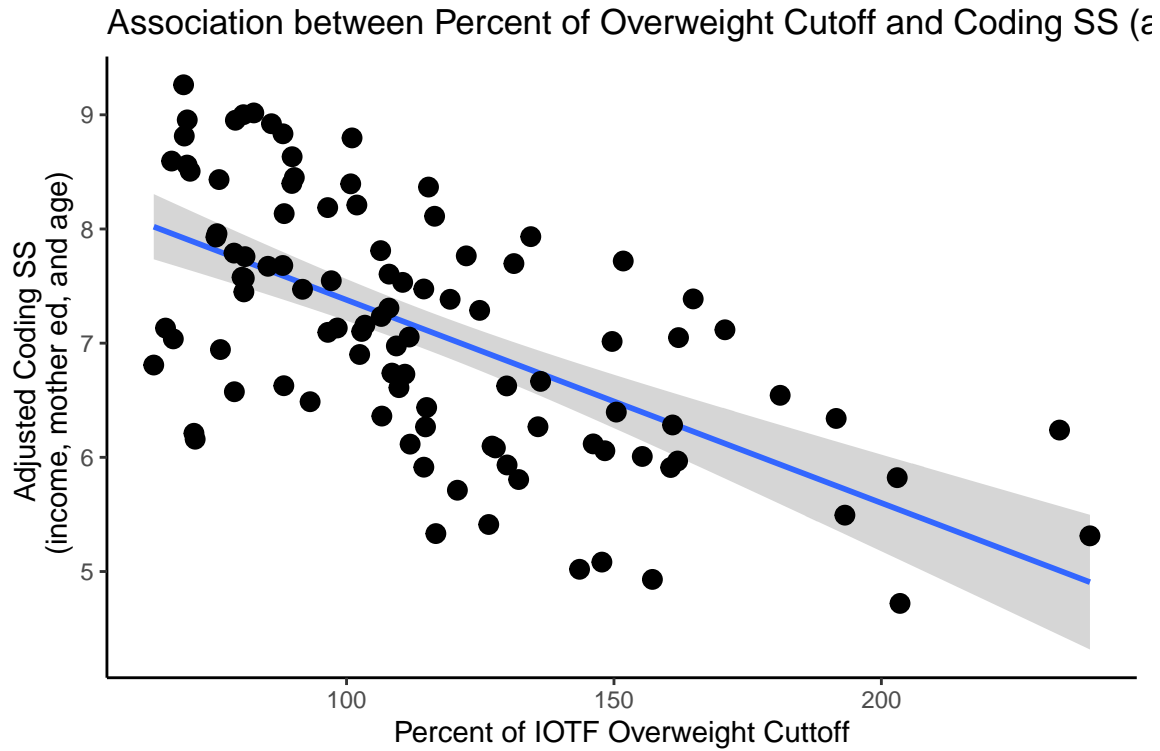


Table 32: Coding SS model

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	9.956	2.190	4.546	0.000
Month_AED25,000 - 55,000 AED	1.062	0.720	1.475	0.144
Month_AED55,000 - 75,000 AED	1.062	1.426	0.745	0.458
Month_AED> 75,000 AED	0.616	1.342	0.459	0.647
Mother_ed	-0.026	0.106	-0.243	0.808
Age_yr	-0.233	0.122	-1.910	0.059
pOW_c100	-0.014	0.009	-1.567	0.121

There was no association with percent of overweight. There was, however, an association with age such that older children had lower SS compared to younger children.

Table 33: Coding SS model - IQ  $\geq 70$ 

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	9.527	2.239	4.256	0.000
Month_AED25,000 - 55,000 AED	1.343	0.735	1.828	0.071
Month_AED55,000 - 75,000 AED	1.285	1.424	0.903	0.369
Month_AED > 75,000 AED	0.752	1.347	0.558	0.578
Mother_ed	-0.044	0.109	-0.401	0.689
Age_yr	-0.189	0.128	-1.476	0.144
pOW_c100	-0.017	0.009	-1.825	0.071

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

### 3.9.1 Sleep

Association between Percent of Overweight Cutoff and Coding performance

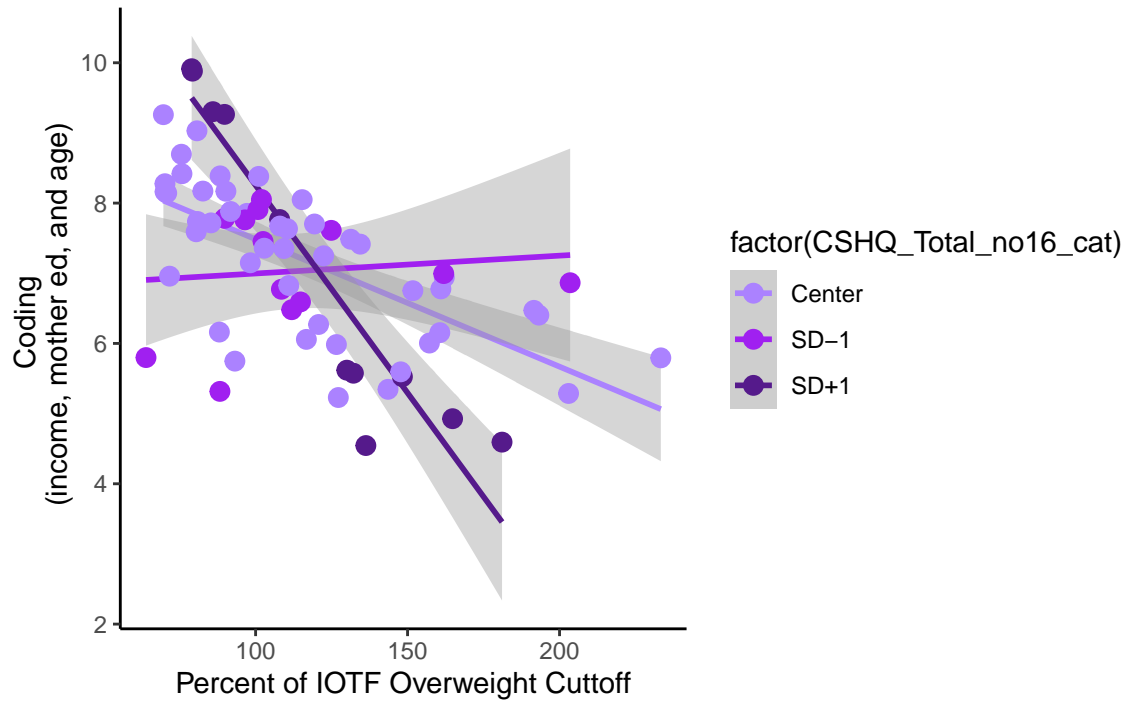




Table 34: Coding SS model - Sleep Interaction

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	8.647	2.662	3.248	0.002
Month_AED25,000 - 55,000 AED	0.941	0.871	1.080	0.284
Month_AED55,000 - 75,000 AED	1.187	1.699	0.698	0.488
Month_AED> 75,000 AED	-0.900	1.624	-0.554	0.581
Mother_ed	-0.014	0.120	-0.119	0.905
Age_yr	-0.118	0.149	-0.790	0.433
CSHQ_Total_no16_cmean	0.035	0.050	0.692	0.492
pOW_c100	-0.018	0.011	-1.710	0.092
CSHQ_Total_no16_cmean:pOW_c100	-0.002	0.001	-1.698	0.095

Table 35: Coding SS model - Sleep Interaction - Simple Slopes

pOW_c100	CSHQ_Total_no16_cmean	pOW_c100.trend	SE	df	t.ratio	p.value
16.319	-8	0.001	0.016	60	0.040	0.968
16.319	0	-0.018	0.011	60	-1.710	0.092
16.319	8	-0.037	0.015	60	-2.436	0.018

There was an trend for an interaction between sleep and %IOTF-25 such that the association between %IOTF-25 and coding became more negative with higher CSHQ total scores. At CSHQ total scores 1 SD above the mean, the association between %IOTF-25 was significant such that higher weight status was associated with slower cognitive processing speed.

Table 36: Coding SS model - Sleep Interaction - IQ  $\geq 70$ 

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	7.034	3.958	1.777	0.081
Month_AED25,000 - 55,000 AED	0.951	0.906	1.050	0.298
Month_AED55,000 - 75,000 AED	1.189	1.735	0.686	0.496
Month_AED> 75,000 AED	-0.903	1.654	-0.546	0.587
Mother_ed	-0.012	0.131	-0.088	0.930
Age_yr	-0.117	0.155	-0.755	0.453
CSHQ_Total_no16	0.034	0.051	0.662	0.510
pOW_c100	0.092	0.069	1.329	0.189
CSHQ_Total_no16:pOW_c100	-0.002	0.001	-1.625	0.110

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

### 3.9.2 SDQ

Table 37: Coding SS model - SDQ Interaction

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	10.058	2.217	4.537	0.000
Month_AED25,000 - 55,000 AED	0.914	0.717	1.273	0.206
Month_AED55,000 - 75,000 AED	1.555	1.459	1.066	0.289
Month_AED> 75,000 AED	0.659	1.336	0.493	0.623
Mother_ed	-0.035	0.106	-0.328	0.744
Age_yr	-0.223	0.123	-1.817	0.073
SDQ_TotalProb_raw_cmean	0.041	0.062	0.655	0.514
pOW_c100	-0.019	0.009	-2.083	0.040
SDQ_TotalProb_raw_cmean:pOW_c100	0.002	0.002	1.349	0.181

There was no interaction with percent of overweight.

Table 38: Coding SS model - SDQ Interaction - IQ  $\geq$  70

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	9.568	2.248	4.256	0.000
Month_AED25,000 - 55,000 AED	1.173	0.731	1.605	0.112
Month_AED55,000 - 75,000 AED	1.794	1.452	1.236	0.220
Month_AED> 75,000 AED	0.764	1.337	0.571	0.569
Mother_ed	-0.055	0.109	-0.503	0.616
Age_yr	-0.169	0.128	-1.325	0.189
SDQ_TotalProb_raw_cmean	0.040	0.062	0.640	0.524
pOW_c100	-0.022	0.009	-2.385	0.019
SDQ_TotalProb_raw_cmean:pOW_c100	0.002	0.002	1.430	0.156

Pattern of results remained unchanged when restricting to IQ  $\geq$  70.

## 4 Nback

Table 39: Nback Performance by Sex Status

Characteristic	N	N = 76
1-Back: Correct, %	76	83.33 (13.96) [33.33 - 93.33]
2-Back: Correct, %	76	52.11 (19.40) [0.00 - 86.67]
1-Back: False Alarm, %	76	2.60 (5.21) [0.00 - 40.00]
2-Back: False Alarm, %	76	5.50 (6.33) [0.00 - 35.56]
1-Back: Balanced Acc, %	76	90.37 (7.79) [58.89 - 96.67]
2-Back: Balanced Acc, %	76	73.30 (9.86) [44.44 - 91.11]
1-Back: d'	76	2.91 (0.64) [0.58 - 3.61]
2-Back: d'	76	1.67 (0.65) [-0.69 - 2.87]
1-Back: mean RT, ms	76	575.15 (112.58) [358.86 - 936.45]
2-Back: mean RT, ms	74	631.64 (113.03) [390.93 - 932.81]
Unknown		2
1-Back: median RT, ms	76	575,153.61 (112,578.80) [358,856.32 - 936,453.24]
2-Back: median RT, ms	74	631,640.45 (113,026.97) [390,926.44 - 932,813.43]
Unknown		2

<sup>1</sup> Mean (SD) [Range]

Table 40: Nback Performance by Weight Status

Characteristic	N	HW	OW	OB
1-Back: Correct, %	76	78.85 (17.19) [33.33 - 93.33]	86.98 (8.56) [66.67 - 93.33]	85.38 (17.19) [33.33 - 93.33]
2-Back: Correct, %	76	48.74 (21.24) [0.00 - 86.67]	54.60 (13.92) [33.33 - 73.33]	53.85 (21.24) [0.00 - 86.67]
1-Back: False Alarm, %	76	3.37 (3.74) [0.00 - 15.56]	1.59 (1.74) [0.00 - 6.67]	2.56 (7.97) [0.00 - 35.56]
2-Back: False Alarm, %	76	6.05 (7.97) [0.00 - 35.56]	4.55 (3.10) [0.00 - 8.89]	5.64 (6.05) [0.00 - 35.56]
1-Back: Balanced Acc, %	76	87.74 (9.34) [58.89 - 96.67]	92.70 (4.84) [80.00 - 96.67]	91.41 (7.97) [58.89 - 96.67]
2-Back: Balanced Acc, %	76	71.34 (11.18) [47.78 - 91.11]	75.03 (7.32) [62.22 - 86.67]	74.10 (11.18) [47.78 - 91.11]
1-Back: d'	76	2.65 (0.69) [0.58 - 3.61]	3.08 (0.49) [1.83 - 3.61]	3.08 (0.69) [0.58 - 3.61]
2-Back: d'	76	1.58 (0.78) [-0.26 - 2.70]	1.78 (0.50) [0.89 - 2.87]	1.69 (0.78) [-0.26 - 2.70]
1-Back: mean RT, ms	76	590.83 (120.33) [358.86 - 936.45]	559.75 (98.70) [406.19 - 799.87]	570.10 (120.33) [358.86 - 936.45]
2-Back: mean RT, ms	74	641.93 (116.35) [390.93 - 846.23]	636.91 (89.49) [509.25 - 816.43]	615.70 (116.35) [390.93 - 846.23]
Unknown		1	0	1
1-Back: median RT, ms	76	590,834.55 (120,329.00) [358,856.32 - 936,453.24]	559,754.55 (98,698.70) [406,186.04 - 799,870.15]	570,101.00 (120,329.00) [358,856.32 - 936,453.24]
2-Back: median RT, ms	74	641,926.62 (116,351.74) [390,926.44 - 846,234.98]	636,905.66 (89,488.39) [509,247.46 - 816,426.58]	615,697.00 (116,351.74) [390,926.44 - 846,234.98]
Unknown		1	0	1

<sup>1</sup> Mean (SD) [Range]

There was a trend for children with HW to have lower percent correct hits and ballanced accuracy during 1-back compared to those with overweight or obesity. There was a significant effect for 1-back d' such that those with HW showed lower sensitivity. May be due to those with lower weights being included in the HW category as <85th percentile.

#### 4.0.1 Correlation Matrix

Table 41: Correlations between Nback performance and percent of overweight

	B1_pFA	B2_pFA	B1_BalAcc	B2_BalAcc	B1_dprime	B2_dprime	B1_RT	B2_RT	pOW
B1_pFA									
B2_pFA	0.52*								
B1_BalAcc	-0.46*	-0.23*							
B2_BalAcc	-0.05	-0.21	0.53*						
B1_dprime	-0.64*	-0.33*	0.91*	0.43*					
B2_dprime	-0.17	-0.48*	0.54*	0.89*	0.48*				
B1_RT	0.08	0.02	-0.61*	-0.53*	-0.48*	-0.46*			
B2_RT	0.07	0.12	-0.4*	-0.26*	-0.3*	-0.24*	0.51*		
pOW	0.01	-0.03	0.22	0.17	0.27*	0.13	-0.14	-0.19	
nComorbid	0.09	-0.01	0.11	0.01	0.09	0.09	-0.02	0.04	-0.07
CSHQ	0.28*	-0.08	-0.19	-0.01	-0.18	0	0.02	-0.24	0.24
SDQ	0.27*	-0.02	-0.2	-0.19	-0.19	-0.22	0.14	0.07	0.1
Age_yr	-0.31*	-0.19	0.58*	0.45*	0.63*	0.44*	-0.44*	-0.18	0.28*

Table 42: Correlation p values between Nback performance and percent of overweight

	B1_pFA	B2_pFA	B1_BalAcc	B2_BalAcc	B1_dprime	B2_dprime	B1_RT	B2_RT	pOW
B1_pFA									
B2_pFA	0								
B1_BalAcc	0	0.042							
B2_BalAcc	0.678	0.067	0						
B1_dprime	0	0.004	0	0					
B2_dprime	0.138	0	0	0	0				
B1_RT	0.516	0.856	0	0	0	0			
B2_RT	0.532	0.316	0	0.024	0.01	0.044	0		
pOW	0.946	0.808	0.058	0.147	0.021	0.274	0.225	0.109	
nComorbid	0.463	0.918	0.364	0.96	0.434	0.456	0.839	0.76	0.537
CSHQ	0.031	0.543	0.157	0.968	0.157	0.992	0.884	0.068	0.071
SDQ	0.019	0.851	0.085	0.098	0.103	0.052	0.242	0.534	0.413
Age_yr	0.007	0.102	0	0	0	0	0	0.124	0.015

Percent of overweight was positively correlated with 1-back d' sensitivity.

#### 4.0.2 Correlation Matrix - IQ $\geq 70$

Table 43: Correlations between neuropsychological performance and percent of overweight

	B1_pFA	B2_pFA	B1_BalAcc	B2_BalAcc	B1_dprime	B2_dprime	B1_RT	B2_RT	pOW
B1_pFA									
B2_pFA	0.52*								
B1_BalAcc	-0.47*	-0.24*							
B2_BalAcc	-0.05	-0.22	0.52*						
B1_dprime	-0.65*	-0.34*	0.91*	0.42*					
B2_dprime	-0.17	-0.49*	0.53*	0.89*	0.48*				
B1_RT	0.08	0.02	-0.63*	-0.55*	-0.5*	-0.48*			
B2_RT	0.07	0.11	-0.44*	-0.31*	-0.33*	-0.27*	0.51*		
pOW	0.01	-0.02	0.23*	0.18	0.28*	0.13	-0.14	-0.18	
nComorbid	0.09	-0.01	0.11	0.02	0.1	0.09	-0.02	0.05	-0.08
CSHQ	0.29*	-0.07	-0.16	0.04	-0.16	0.02	0.04	-0.2	0.23
SDQ	0.27*	-0.02	-0.21	-0.2	-0.2	-0.23*	0.13	0.07	0.1
Age_yr	-0.31*	-0.18	0.6*	0.48*	0.65*	0.45*	-0.43*	-0.16	0.27*

Table 44: Correlation p values between neuropsychological performance and percent of overweight

	B1_pFA	B2_pFA	B1_BalAcc	B2_BalAcc	B1_dprime	B2_dprime	B1_RT	B2_RT	pOW
B1_pFA									
B2_pFA	0								
B1_BalAcc	0	0.036							
B2_BalAcc	0.666	0.053	0						
B1_dprime	0	0.003	0	0					
B2_dprime	0.137	0	0	0	0				
B1_RT	0.522	0.892	0	0	0	0			
B2_RT	0.534	0.356	0	0.008	0.004	0.023	0		
pOW	0.943	0.834	0.048	0.118	0.017	0.248	0.245	0.129	
nComorbid	0.463	0.943	0.329	0.886	0.395	0.421	0.877	0.686	0.516
CSHQ	0.026	0.622	0.22	0.783	0.221	0.857	0.735	0.129	0.084
SDQ	0.02	0.836	0.077	0.084	0.094	0.048	0.255	0.564	0.403
Age_yr	0.007	0.115	0	0	0	0	0	0.168	0.018

After excluding those with performance IQ < 70, percent of overweight was positively correlated with both 1-back d' sensitivity and balanced accuracy.

## 4.1 Nback - Load x Percent of Overweight

### 4.1.1 Ballanced Accuracy

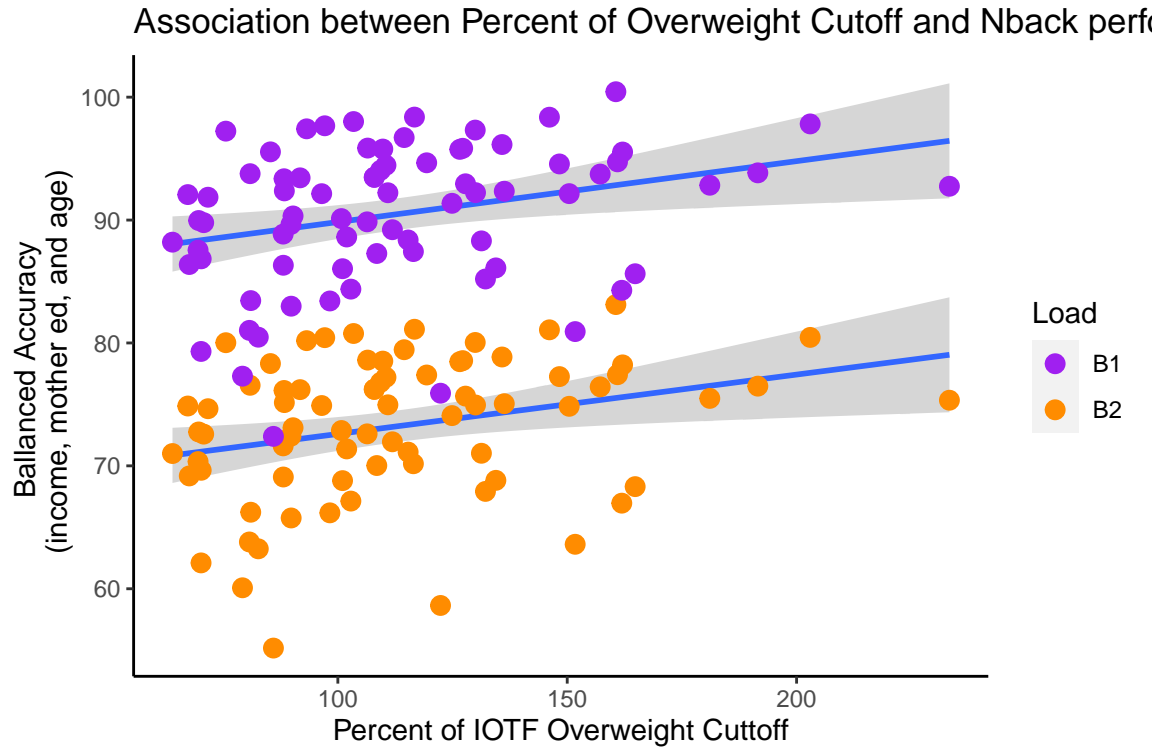


Table 45: Nback Load x Percent of Overweight: Ballanced Accuracy

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	175.239	58.413	3	68	1.530	0.215
Mother_ed	5.737	5.737	1	68	0.150	0.699
Age_yr	1256.769	1256.769	1	68	32.921	0.000
pOW_c100	6.030	6.030	1	68	0.158	0.692
Load	9723.431	9723.431	1	73	254.708	0.000
pOW_c100:Load	0.068	0.068	1	73	0.002	0.966

There was no interaction and no main effect of percent of overweight. There was a significant effect of Load with better ballanced accuracy in 1- than 2-back. Age was positively associated with ballanced accuracy overall.

Table 46: Nback Load x Percent of Overweight: Ballanced Accuracy - IQ  $\geq 70$ 

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	132.923	44.308	3	67	1.152	0.335
Mother_ed	2.565	2.565	1	67	0.067	0.797
Age_yr	1412.316	1412.316	1	67	36.735	0.000
pOW_c100	7.804	7.804	1	67	0.203	0.654
Load	9580.339	9580.339	1	72	249.187	0.000
pOW_c100:Load	0.000	0.000	1	72	0.000	0.998

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

#### 4.1.2 False Alarms

Table 47: Nback Load x Percent of Overweight: False Alarms

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	23.963	7.988	3	68	0.476	0.700
Mother_ed	11.680	11.680	1	68	0.696	0.407
Age_yr	99.420	99.420	1	68	5.927	0.018
pOW_c100	10.679	10.679	1	68	0.637	0.428
Load	303.891	303.891	1	73	18.117	0.000
pOW_c100:Load	1.863	1.863	1	73	0.111	0.740

There was no interaction and no main effect of percent of overweight. There was a significant effect of Load with lower false alarm percentage in 1- than 2-back. Age was negatively associated with false alarm percentage overall.

Table 48: Nback Load x Percent of Overweight: False Alarms - IQ  $\geq 70$ 

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	24.041	8.014	3	67	0.473	0.702
Mother_ed	11.859	11.859	1	67	0.700	0.406
Age_yr	99.366	99.366	1	67	5.862	0.018
pOW_c100	10.557	10.557	1	67	0.623	0.433
Load	307.712	307.712	1	72	18.155	0.000
pOW_c100:Load	1.516	1.516	1	72	0.089	0.766

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

#### 4.1.3 d'



Table 49: Nback Load x Percent of Overweight: d'

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	0.623	0.208	3	68	1.006	0.396
Mother_ed	0.063	0.063	1	68	0.306	0.582
Age_yr	8.020	8.020	1	68	38.851	0.000
pOW_c100	0.025	0.025	1	68	0.120	0.730
Load	49.133	49.133	1	73	238.018	0.000
pOW_c100:Load	0.278	0.278	1	73	1.347	0.250

There was no interaction and no main effect of percent of overweight. There was a significant effect of Load with better d' in 1- than 2-back. Age was positively associated with d' overall.

Table 50: Nback Load x Percent of Overweight: d' - IQ  $\geq 70$ 

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	0.505	0.168	3	67	0.805	0.496
Mother_ed	0.000	0.000	1	67	0.001	0.974
Age_yr	8.856	8.856	1	67	42.338	0.000
pOW_c100	0.032	0.032	1	67	0.154	0.696
Load	48.884	48.884	1	72	233.696	0.000
pOW_c100:Load	0.283	0.283	1	72	1.354	0.248

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

#### 4.1.4 RT

Table 51: Nback Load x Percent of Overweight: mean RT

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	0.012	0.004	3	67.107	0.632	0.597
Mother_ed	0.004	0.004	1	67.401	0.657	0.420
Age_yr	0.060	0.060	1	68.331	9.556	0.003
pOW_c100	0.002	0.002	1	68.035	0.289	0.592
Load	0.114	0.114	1	71.634	18.226	0.000
pOW_c100:Load	0.001	0.001	1	71.693	0.115	0.735

There was no interaction and no main effect of percent of overweight. There was a significant effect of Load with better mean RT in 1- than 2-back. Age was positively associated with mean RT overall.

Table 52: Nback Load x Percent of Overweight: mean RT - IQ  $\geq 70$

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	0.014	0.005	3	66.065	0.759	0.521
Mother_ed	0.002	0.002	1	66.386	0.249	0.619
Age_yr	0.057	0.057	1	67.292	9.020	0.004
pOW_c100	0.002	0.002	1	66.969	0.271	0.604
Load	0.117	0.117	1	70.592	18.504	0.000
pOW_c100:Load	0.001	0.001	1	70.648	0.085	0.772

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

## 4.2 Nback: Percent of Overweight x N Comorbidities

### 4.2.1 Balanced Accuracy

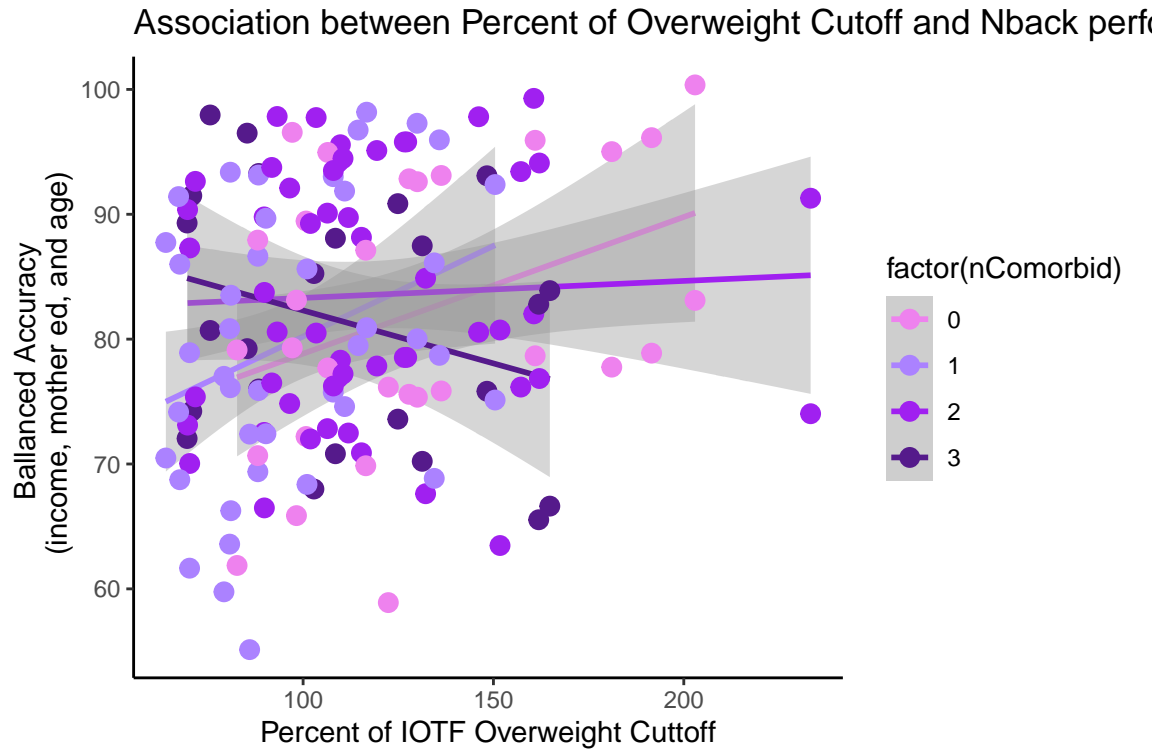


Table 53: Nback nComorbid x Percent of Overweight: Ballanced Accuracy

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	63.578	5.117	67.278	12.424	0.000
Month_AED25,000 - 55,000 AED	2.726	1.795	66.000	1.519	0.134
Month_AED55,000 - 75,000 AED	5.785	3.614	66.000	1.601	0.114
Month_AED> 75,000 AED	1.681	3.190	66.000	0.527	0.600
Mother_ed	0.218	0.247	66.000	0.881	0.381
Age_yr	1.610	0.292	66.000	5.507	0.000
pOW_c100	0.085	0.038	66.000	2.234	0.029
nComorbid	1.018	0.867	66.000	1.175	0.244
LoadB2	-17.259	1.002	74.000	-17.223	0.000
pOW_c100:nComorbid	-0.053	0.021	66.000	-2.486	0.015

Table 54: Nback nComorbid x Percent of Overweight: Balanced Accuracy simple slopes

pOW_c100	nComorbid	pOW_c100.trend	SE	df	t.ratio	p.value
13.141	0	0.085	0.038	66	2.234	0.029
13.141	1	0.032	0.024	66	1.315	0.193
13.141	2	-0.021	0.026	66	-0.808	0.422
13.141	3	-0.073	0.040	66	-1.831	0.072

After controlling for Load, there was a significant interaction between percent of overweight and number of comorbidities such that the association between percent of overweight and balanced accuracy becomes more negative with increasing number of comorbidities. With zero comorbidities there was a significant positive association such that if percent of overweight increased by 10, ballanced accuracy is expected to increased by almost 1 percent (0.9). There was not a significant association for those with 1 or 2 comorbidities but a trend for a negative association for those with 3 comorbidities such that if percent of overweight increased by 10, balanced accuracy would be expected to decrease by almost 1 percent (0.7). There was a significant effect of Load with better balanced accuracy in 1- than 2-back. Age was positively associated with balanced accuracy overall.

Table 55: Nback nComorbid x Percent of Overweight: Ballanced Accuracy - IQ &gt;=70

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	65.545	5.086	66.301	12.886	0.000
Month_AED25,000 - 55,000 AED	2.195	1.769	65.000	1.241	0.219
Month_AED55,000 - 75,000 AED	5.301	3.534	65.000	1.500	0.138
Month_AED> 75,000 AED	1.589	3.113	65.000	0.510	0.611
Mother_ed	0.063	0.252	65.000	0.249	0.805
Age_yr	1.656	0.286	65.000	5.790	0.000
pOW_c100	0.081	0.037	65.000	2.179	0.033
nComorbid	1.031	0.845	65.000	1.219	0.227
LoadB2	-17.177	1.012	73.000	-16.968	0.000
pOW_c100:nComorbid	-0.049	0.021	65.000	-2.364	0.021

Pattern of results remained unchanged when restricting to IQ >=70.

#### 4.2.2 False Alarms

Table 56: Nback nComorbid x Percent of Overweight: Percent False Alarm

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	8.006	4.092	66.877	1.957	0.055
Month_AED25,000 - 55,000 AED	0.488	1.437	66.000	0.340	0.735
Month_AED55,000 - 75,000 AED	-3.246	2.894	66.000	-1.121	0.266
Month_AED> 75,000 AED	-0.614	2.555	66.000	-0.240	0.811
Mother_ed	0.104	0.198	66.000	0.527	0.600
Age_yr	-0.543	0.234	66.000	-2.321	0.023
pOW_c100	-0.024	0.030	66.000	-0.799	0.427
nComorbid	-0.179	0.694	66.000	-0.258	0.797
LoadB2	2.963	0.665	74.000	4.457	0.000
pOW_c100:nComorbid	0.028	0.017	66.000	1.651	0.103

After controlling for Load, there was no interaction between percent of overweight and number of comorbidities. There was a significant effect of Load with better balanced accuracy in 1- than 2-back. Age was positively associated with balanced accuracy overall.

Table 57: Nback nComorbid x Percent of Overweight: Percent False Alarms - IQ  $\geq 70$

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	8.005	4.200	65.839	1.906	0.061
Month_AED25,000 - 55,000 AED	0.483	1.463	65.000	0.330	0.742
Month_AED55,000 - 75,000 AED	-3.250	2.923	65.000	-1.112	0.270
Month_AED> 75,000 AED	-0.615	2.574	65.000	-0.239	0.812
Mother_ed	0.103	0.209	65.000	0.493	0.624
Age_yr	-0.543	0.237	65.000	-2.295	0.025
pOW_c100	-0.024	0.031	65.000	-0.793	0.431
nComorbid	-0.179	0.699	65.000	-0.256	0.799
LoadB2	3.003	0.673	73.000	4.465	0.000
pOW_c100:nComorbid	0.028	0.017	65.000	1.635	0.107

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

### 4.2.3 d'

Association between Percent of Overweight Cutoff and Nback perfor

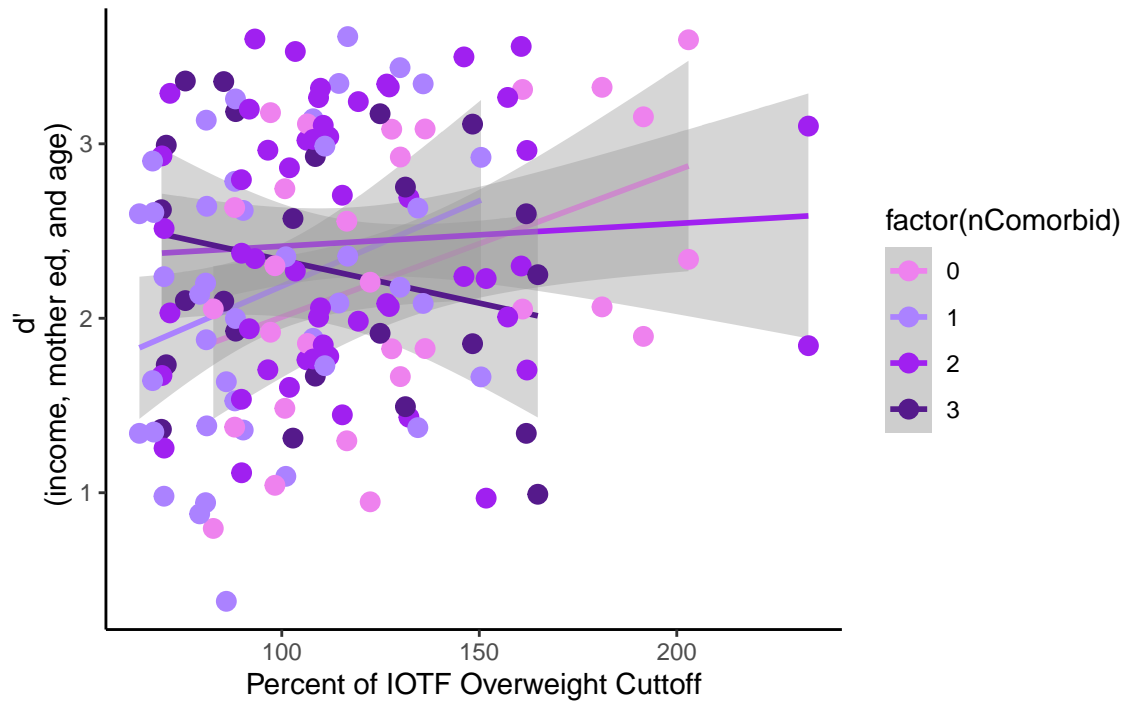


Table 58: Nback nComorbid x Percent of Overweight: d'

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	0.910	0.359	67.432	2.535	0.014
Month_AED25,000 - 55,000 AED	0.092	0.126	66.000	0.732	0.467
Month_AED55,000 - 75,000 AED	0.411	0.253	66.000	1.622	0.110
Month_AED> 75,000 AED	0.062	0.224	66.000	0.279	0.781
Mother_ed	0.019	0.017	66.000	1.078	0.285
Age_yr	0.122	0.020	66.000	5.931	0.000
pOW_c100	0.006	0.003	66.000	2.268	0.027
nComorbid	0.099	0.061	66.000	1.625	0.109
LoadB2	-1.259	0.074	74.000	-16.925	0.000
pOW_c100:nComorbid	-0.004	0.001	66.000	-2.511	0.014

Table 59: Nback nComorbid x Percent of Overweight: d' simple slopes

pOW_c100	nComorbid	pOW_c100.trend	SE	df	t.ratio	p.value
13.141	0	0.006	0.003	66	2.268	0.027
13.141	1	0.002	0.002	66	1.345	0.183
13.141	2	-0.001	0.002	66	-0.800	0.427
13.141	3	-0.005	0.003	66	-1.839	0.070

After controlling for Load, there was a significant interaction between percent of overweight and number of

comorbidities such that the association between percent of overweight and  $d'$  becomes more negative with increasing number of comorbidities. With zero comorbidities there was a significant positive association such that if percent of overweight increased by 10,  $d'$  is expected to increased by 0.06. There was not a significant association for those with 1 or 2 comorbidities but a trend for a negative association for those with 3 comorbidities such that if percent of overweight increased by 10,  $d'$  would be expected to decrease by 0.05. There was a significant effect of Load with better balanced accuracy in 1- than 2-back. Age was positively associated with balanced accuracy overall.

Table 60: Nback nComorbid x Percent of Overweight:  $d' - IQ \geq 70$

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	1.038	0.359	66.449	2.893	0.005
Month_AED25,000 - 55,000 AED	0.058	0.125	65.000	0.468	0.641
Month_AED55,000 - 75,000 AED	0.380	0.249	65.000	1.525	0.132
Month_AED> 75,000 AED	0.056	0.220	65.000	0.257	0.798
Mother_ed	0.009	0.018	65.000	0.496	0.622
Age_yr	0.125	0.020	65.000	6.171	0.000
pOW_c100	0.006	0.003	65.000	2.210	0.031
nComorbid	0.100	0.060	65.000	1.669	0.100
LoadB2	-1.260	0.075	73.000	-16.714	0.000
pOW_c100:nComorbid	-0.004	0.001	65.000	-2.392	0.020

Pattern of results remained unchanged when restricting to  $IQ \geq 70$ .

#### 4.2.4 RT

Table 61: Nback nComorbid x Percent of Overweight: mean RT

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	0.737	0.076	66.590	9.675	0.000
Month_AED25,000 - 55,000 AED	-0.026	0.027	65.313	-0.958	0.342
Month_AED55,000 - 75,000 AED	-0.054	0.054	65.328	-1.002	0.320
Month_AED> 75,000 AED	0.006	0.047	65.157	0.124	0.902
Mother_ed	0.002	0.004	65.556	0.513	0.610
Age_yr	-0.013	0.004	66.397	-3.018	0.004
pOW_c100	-0.001	0.001	65.484	-1.605	0.113
nComorbid	-0.001	0.013	65.402	-0.108	0.914
LoadB2	0.058	0.013	72.872	4.481	0.000
pOW_c100:nComorbid	0.001	0.000	65.322	1.698	0.094

After controlling for Load, there was no interaction between percent of overweight and number of comorbidities. There was a significant effect of Load with better balanced accuracy in 1- than 2-back. Age was positively associated with balanced accuracy overall.

Table 62: Nback nComorbid x Percent of Overweight: mean RT - IQ  $\geq 70$ 

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	0.754	0.077	65.490	9.742	0.000
Month_AED25,000 - 55,000 AED	-0.030	0.027	64.272	-1.119	0.267
Month_AED55,000 - 75,000 AED	-0.058	0.054	64.273	-1.079	0.284
Month_AED> 75,000 AED	0.005	0.047	64.114	0.108	0.915
Mother_ed	0.001	0.004	64.523	0.145	0.885
Age_yr	-0.013	0.004	65.356	-2.926	0.005
pOW_c100	-0.001	0.001	64.444	-1.668	0.100
nComorbid	-0.001	0.013	64.355	-0.101	0.920
LoadB2	0.059	0.013	71.842	4.524	0.000
pOW_c100:nComorbid	0.001	0.000	64.270	1.795	0.077

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

### 4.3 Nback: Percent of Overweight x Sleep

#### 4.3.1 Balanced Accuracy

Table 63: Nback CSHQ Total x Percent of Overweight: Ballanced Accuracy

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	60.383	6.335	50.85	9.531	0.000
Month_AED25,000 - 55,000 AED	5.381	2.169	50.00	2.480	0.017
Month_AED55,000 - 75,000 AED	7.022	4.416	50.00	1.590	0.118
Month_AED> 75,000 AED	4.275	3.698	50.00	1.156	0.253
Mother_ed	0.002	0.298	50.00	0.007	0.995
Age_yr	2.038	0.360	50.00	5.664	0.000
pOW_c100	0.016	0.027	50.00	0.610	0.545
CSHQ_Total_no16_cmean	-0.151	0.131	50.00	-1.154	0.254
LoadB2	-17.514	1.163	58.00	-15.056	0.000
pOW_c100:CSHQ_Total_no16_cmean	0.000	0.004	50.00	-0.074	0.941

There was no interaction between percent of overweight and total CSHQ score. There was a significant effect of Load with better balanced accuracy in 1- than 2-back. Age was positively associated with balanced accuracy overall.

Table 64: Nback CSHQ x Percent of Overweight: Ballanced Accuracy - IQ &gt;=70

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	62.827	6.315	49.862	9.948	0.000
Month_AED25,000 - 55,000 AED	4.524	2.162	49.000	2.093	0.042
Month_AED55,000 - 75,000 AED	6.438	4.316	49.000	1.492	0.142
Month_AED> 75,000 AED	3.918	3.609	49.000	1.086	0.283
Mother_ed	-0.187	0.307	49.000	-0.609	0.545
Age_yr	2.102	0.352	49.000	5.965	0.000
pOW_c100	0.014	0.026	49.000	0.552	0.583
CSHQ_Total_no16_cmean	-0.125	0.128	49.000	-0.976	0.334
LoadB2	-17.414	1.179	57.000	-14.769	0.000
pOW_c100:CSHQ_Total_no16_cmean	0.001	0.004	49.000	0.244	0.809

Pattern of results remained unchanged when restricting to IQ >=70.

#### 4.3.2 False Alarms

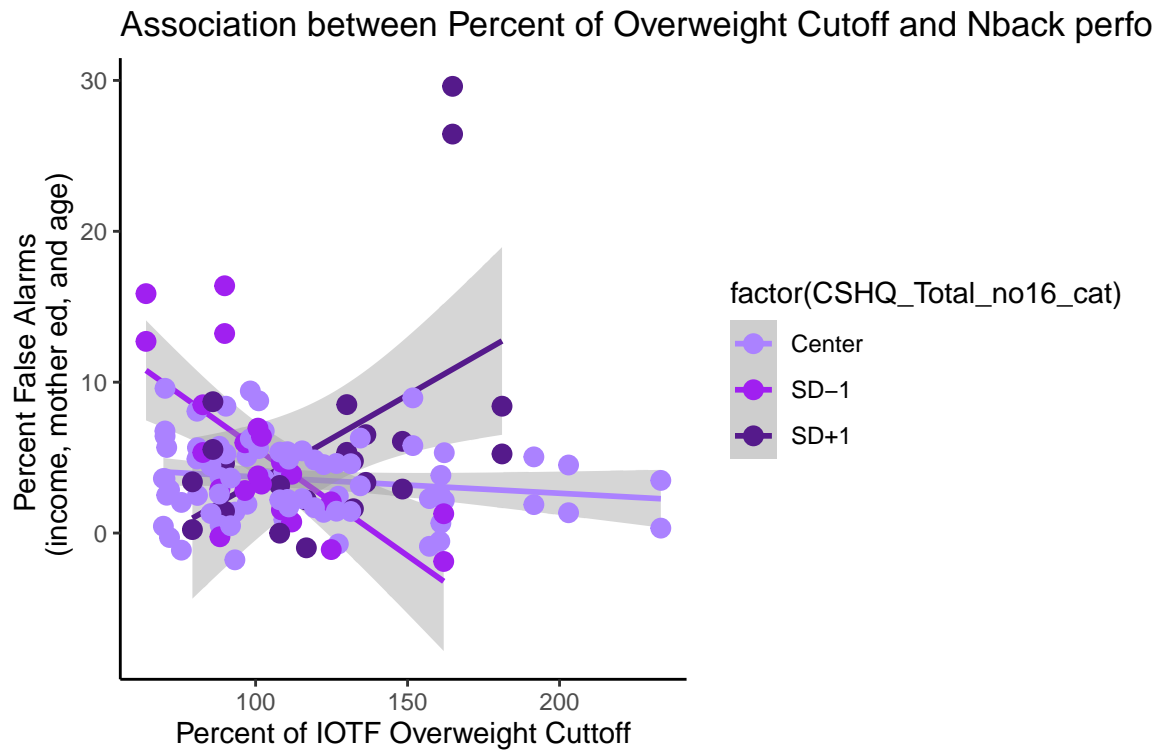




Table 65: Nback CSHQ x Percent of Overweight: Percent False Alarms

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	8.149	4.449	50.832	1.832	0.073
Month_AED25,000 - 55,000 AED	-0.671	1.524	50.000	-0.441	0.661
Month_AED55,000 - 75,000 AED	-2.162	3.102	50.000	-0.697	0.489
Month_AED> 75,000 AED	-3.118	2.597	50.000	-1.201	0.236
Mother_ed	0.236	0.209	50.000	1.127	0.265
Age_yr	-0.686	0.253	50.000	-2.713	0.009
pOW_c100	-0.001	0.019	50.000	-0.029	0.977
CSHQ_Total_no16_cmean	-0.099	0.092	50.000	-1.078	0.286
LoadB2	3.164	0.808	58.000	3.916	0.000
pOW_c100:CSHQ_Total_no16_cmean	0.012	0.003	50.000	4.618	0.000

Table 66: Nback CSHQ x Percent of Overweight: Percent False Alarms simple slopes

pOW_c100	CSHQ_Total_no16_cmean	pOW_c100.trend	SE	df	t.ratio	p.value
14.659	-8	-0.096	0.029	50	-3.301	0.002
14.659	0	-0.001	0.019	50	-0.029	0.977
14.659	8	0.094	0.027	50	3.560	0.001

After controlling for Load, there was a significant interaction between percent of overweight and CSHQ Total score such that the association between percent of overweight and percent False Alarms becomes more negative with increasing sleep score (worse). There was a significant negative association between percent of overweight and percent false alarms when sleep was 1 SD lower than average, no association at average sleep score, and a significant negative association when sleep scores were 1 SD greater than average. When sleep was 1 SD below average, if percent of overweight increased by 10, false alarms are expected to be 1 percent lower (0.9). At 1 SD above the mean, if percent of overweight increased by 10, false alarms would be expected to be almost 1 percent (0.9) higher.

Table 67: Nback CSHQ x Percent of Overweight: Percent False Alarms - no outlier

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	7.258	3.151	50.622	2.304	0.025
Month_AED25,000 - 55,000 AED	-0.688	1.074	49.000	-0.640	0.525
Month_AED55,000 - 75,000 AED	-1.147	2.191	49.000	-0.524	0.603
Month_AED> 75,000 AED	-2.189	1.835	49.000	-1.193	0.239
Mother_ed	0.078	0.149	49.000	0.526	0.602
Age_yr	-0.449	0.181	49.000	-2.479	0.017
pOW_c100	-0.015	0.013	49.000	-1.106	0.274
CSHQ_Total_no16_cmean	-0.133	0.065	49.000	-2.050	0.046
LoadB2	3.333	0.804	57.000	4.147	0.000
pOW_c100:CSHQ_Total_no16_cmean	0.006	0.002	49.000	2.816	0.007

Pattern of results remained unchanged when removing outlier.

Table 68: Nback CSHQ x Percent of Overweight: Percent False Alarms - IQ  $\geq 70$ 

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	8.627	4.582	49.792	1.883	0.066
Month_AED25,000 - 55,000 AED	-0.845	1.569	49.000	-0.538	0.593
Month_AED55,000 - 75,000 AED	-2.281	3.132	49.000	-0.728	0.470
Month_AED > 75,000 AED	-3.190	2.619	49.000	-1.218	0.229
Mother_ed	0.198	0.223	49.000	0.887	0.379
Age_yr	-0.673	0.256	49.000	-2.631	0.011
pOW_c100	-0.001	0.019	49.000	-0.049	0.961
CSHQ_Total_no16_cmean	-0.094	0.093	49.000	-1.009	0.318
LoadB2	3.218	0.820	57.000	3.924	0.000
pOW_c100:CSHQ_Total_no16_cmean	0.012	0.003	49.000	4.609	0.000

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

#### 4.3.3 d'

Table 69: Nback CSHQ x Percent of Overweight: d'

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	0.815	0.429	51.006	1.901	0.063
Month_AED25,000 - 55,000 AED	0.286	0.147	50.000	1.951	0.057
Month_AED55,000 - 75,000 AED	0.431	0.299	50.000	1.445	0.155
Month_AED > 75,000 AED	0.323	0.250	50.000	1.293	0.202
Mother_ed	-0.004	0.020	50.000	-0.175	0.862
Age_yr	0.152	0.024	50.000	6.254	0.000
pOW_c100	0.002	0.002	50.000	0.867	0.390
CSHQ_Total_no16_cmean	-0.007	0.009	50.000	-0.841	0.405
LoadB2	-1.271	0.086	58.000	-14.857	0.000
pOW_c100:CSHQ_Total_no16_cmean	0.000	0.000	50.000	-1.310	0.196

After controlling for Load, there no interaction between percent of overweight and CSHQ Total score.

Table 70: Nback CSHQ x Percent of Overweight: Percent False Alarms - IQ  $\geq 70$ 

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	0.965	0.431	50.011	2.242	0.029
Month_AED25,000 - 55,000 AED	0.235	0.147	49.000	1.594	0.117
Month_AED55,000 - 75,000 AED	0.396	0.294	49.000	1.348	0.184
Month_AED> 75,000 AED	0.302	0.246	49.000	1.227	0.226
Mother_ed	-0.015	0.021	49.000	-0.711	0.480
Age_yr	0.156	0.024	49.000	6.496	0.000
pOW_c100	0.001	0.002	49.000	0.817	0.418
CSHQ_Total_no16_cmean	-0.006	0.009	49.000	-0.674	0.504
LoadB2	-1.273	0.087	57.000	-14.624	0.000
pOW_c100:CSHQ_Total_no16_cmean	0.000	0.000	49.000	-1.034	0.306

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

#### 4.3.4 RT

Table 71: Nback Sleep Total Problems x Percent of Overweight: d'

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	0.803	0.092	50.184	8.698	0.000
Month_AED25,000 - 55,000 AED	-0.057	0.032	49.327	-1.812	0.076
Month_AED55,000 - 75,000 AED	-0.072	0.064	49.393	-1.111	0.272
Month_AED> 75,000 AED	-0.016	0.054	49.317	-0.305	0.762
Mother_ed	0.005	0.004	49.697	1.111	0.272
Age_yr	-0.020	0.005	50.357	-3.695	0.001
pOW_c100	0.000	0.000	49.957	-0.379	0.707
CSHQ_Total_no16_cmean	0.000	0.002	50.424	-0.010	0.992
LoadB2	0.056	0.016	57.039	3.621	0.001
pOW_c100:CSHQ_Total_no16_cmean	0.000	0.000	49.963	-0.195	0.846

After controlling for Load, there no interaction between percent of overweight and Sleep Total Problems.

Table 72: Nback Sleep Total Problems x Percent of Overweight: Percent False Alarms - IQ  $\geq 70$ 

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	0.819	0.095	49.113	8.647	0.000
Month_AED25,000 - 55,000 AED	-0.063	0.032	48.308	-1.940	0.058
Month_AED55,000 - 75,000 AED	-0.075	0.065	48.362	-1.164	0.250
Month_AED > 75,000 AED	-0.019	0.054	48.292	-0.347	0.730
Mother_ed	0.004	0.005	48.679	0.779	0.440
Age_yr	-0.019	0.005	49.325	-3.589	0.001
pOW_c100	0.000	0.000	48.929	-0.410	0.684
CSHQ_Total_no16_cmean	0.000	0.002	49.363	0.078	0.938
LoadB2	0.058	0.016	56.019	3.665	0.001
pOW_c100:CSHQ_Total_no16_cmean	0.000	0.000	48.898	-0.054	0.957

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

## 4.4 Nback: Percent of Overweight x SDQ

### 4.4.1 Balanced Accuracy

Table 73: Nback SDQ Total Problems x Percent of Overweight: Ballanced Accuracy

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	68.318	5.537	73.431	12.340	0.000
Month_AED25,000 - 55,000 AED	3.596	1.810	67.000	1.987	0.051
Month_AED55,000 - 75,000 AED	4.434	3.622	67.000	1.224	0.225
Month_AED > 75,000 AED	1.854	3.223	67.000	0.575	0.567
Mother_ed	0.083	0.245	67.000	0.340	0.735
Age_yr	1.680	0.276	67.000	6.079	0.000
SDQ_TotalProb_raw	-0.240	0.179	118.889	-1.345	0.181
LoadB2	-16.776	2.370	72.000	-7.078	0.000
SDQ_TotalProb_raw:LoadB2	-0.036	0.200	72.000	-0.181	0.857

There was no interaction between percent of overweight and SDQ total problems score. There was a significant effect of Load with better balanced accuracy in 1- than 2-back. Age was positively associated with balanced accuracy overall.

Table 74: Nback SDQ Total Problems x Percent of Overweight: Ballanced Accuracy - IQ  $\geq 70$

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	70.579	5.454	72.634	12.940	0.000
Month_AED25,000 - 55,000 AED	2.901	1.775	66.000	1.635	0.107
Month_AED55,000 - 75,000 AED	3.911	3.510	66.000	1.114	0.269
Month_AED > 75,000 AED	1.607	3.119	66.000	0.515	0.608
Mother_ed	-0.087	0.247	66.000	-0.351	0.727
Age_yr	1.738	0.268	66.000	6.474	0.000
SDQ_TotalProb_raw	-0.245	0.175	119.770	-1.401	0.164
LoadB2	-16.630	2.387	71.000	-6.967	0.000
SDQ_TotalProb_raw:LoadB2	-0.042	0.201	71.000	-0.208	0.836

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

#### 4.4.2 False Alarms

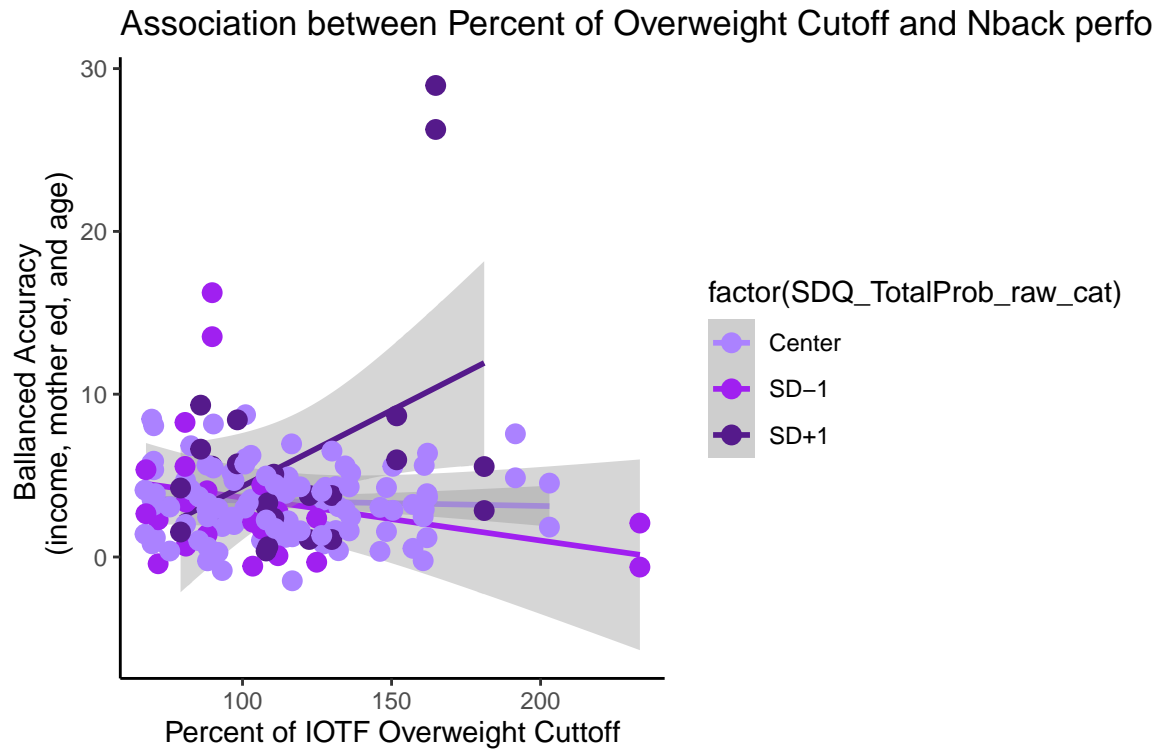


Table 75: Nback SDQ Total Problems x Percent of Overweight: Percent False Alarms

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	3.973	4.108	70.932	0.967	0.337
Month_AED25,000 - 55,000 AED	0.929	1.355	67.000	0.686	0.495
Month_AED55,000 - 75,000 AED	-1.300	2.712	67.000	-0.479	0.633
Month_AED> 75,000 AED	-0.264	2.413	67.000	-0.109	0.913
Mother_ed	0.160	0.183	67.000	0.876	0.384
Age_yr	-0.522	0.207	67.000	-2.523	0.014
SDQ_TotalProb_raw	0.226	0.125	102.048	1.805	0.074
LoadB2	6.043	1.387	72.000	4.357	0.000
SDQ_TotalProb_raw:LoadB2	-0.312	0.117	72.000	-2.666	0.009

Table 76: Nback SDQ Total Problems x Percent of Overweight: Percent False Alarms simple slopes

SDQ_TotalProb_raw	Load	SDQ_TotalProb_raw.trend	SE	df	t.ratio	p.value
10.716	B1	0.226	0.125	102.048	1.805	0.074
10.716	B2	-0.085	0.125	102.048	-0.681	0.497

After controlling for Load, there was a significant interaction between percent of overweight and SDQ Total Problems such that the association between percent of overweight and percent False Alarms becomes more positive with increasing total problems. At 1SD below the mean and meal Total Problems, the association between percent of overweight and percent false alarms was not significant. At 1 SD above the mean total problems, the association between percent of overweight and false alarms was significant. For a child who was 10 points higher on percent of overweight, it would be expected that they would have 0.6 percentage points higher false alarm rate.

Table 77: Nback CSHQ x Percent of Overweight: Percent False Alarms - no outlier

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	6.855	2.332	66.266	2.939	0.005
Month_AED25,000 - 55,000 AED	0.637	0.814	64.000	0.783	0.437
Month_AED55,000 - 75,000 AED	-1.143	1.739	64.000	-0.657	0.513
Month_AED> 75,000 AED	0.304	1.476	64.000	0.206	0.838
Mother_ed	0.013	0.115	64.000	0.110	0.913
Age_yr	-0.431	0.134	64.000	-3.214	0.002
pOW_c100	0.001	0.011	64.000	0.070	0.944
SDQ_TotalProb_raw_cmean	-0.072	0.072	64.000	-0.996	0.323
LoadB2	2.831	0.615	72.000	4.604	0.000
pOW_c100:SDQ_TotalProb_raw_cmean	0.001	0.002	64.000	0.482	0.631

The interaction was no longer significant after removing the outliers.

Table 78: Nback CSHQ x Percent of Overweight: Percent False Alarms - IQ  $\geq 70$ 

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	3.617	4.205	69.753	0.860	0.393
Month_AED25,000 - 55,000 AED	1.024	1.383	66.000	0.741	0.461
Month_AED55,000 - 75,000 AED	-1.228	2.735	66.000	-0.449	0.655
Month_AED > 75,000 AED	-0.230	2.429	66.000	-0.095	0.925
Mother_ed	0.184	0.192	66.000	0.954	0.344
Age_yr	-0.530	0.209	66.000	-2.535	0.014
SDQ_TotalProb_raw	0.229	0.126	100.441	1.814	0.073
LoadB2	6.119	1.398	71.000	4.377	0.000
SDQ_TotalProb_raw:LoadB2	-0.315	0.117	71.000	-2.678	0.009

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

#### 4.4.3 d'

Table 79: Nback SDQ Total Problems x Percent of Overweight: d'

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	1.290	0.382	74.538	3.379	0.001
Month_AED25,000 - 55,000 AED	0.133	0.124	67.000	1.074	0.287
Month_AED55,000 - 75,000 AED	0.304	0.249	67.000	1.220	0.227
Month_AED > 75,000 AED	0.034	0.221	67.000	0.155	0.877
Mother_ed	0.009	0.017	67.000	0.513	0.609
Age_yr	0.129	0.019	67.000	6.799	0.000
SDQ_TotalProb_raw	-0.017	0.013	124.533	-1.383	0.169
LoadB2	-1.229	0.176	72.000	-6.973	0.000
SDQ_TotalProb_raw:LoadB2	-0.002	0.015	72.000	-0.152	0.880

After controlling for Load, there no interaction between percent of overweight and SDQ Total Problems.

Table 80: Nback SDQ Total Problems x Percent of Overweight: Percent False Alarms - IQ  $\geq 70$ 

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	1.445	0.377	73.781	3.829	0.000
Month_AED25,000 - 55,000 AED	0.088	0.122	66.000	0.716	0.477
Month_AED55,000 - 75,000 AED	0.269	0.242	66.000	1.112	0.270
Month_AED > 75,000 AED	0.018	0.215	66.000	0.084	0.934
Mother_ed	-0.003	0.017	66.000	-0.153	0.879
Age_yr	0.133	0.018	66.000	7.185	0.000
SDQ_TotalProb_raw	-0.018	0.012	125.214	-1.450	0.150
LoadB2	-1.231	0.178	71.000	-6.909	0.000
SDQ_TotalProb_raw:LoadB2	-0.002	0.015	71.000	-0.146	0.884

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

#### 4.4.4 RT

Table 81: Nback SDQ Total Problems x Percent of Overweight: d'

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	0.699	0.082	71.442	8.556	0.000
Month_AED25,000 - 55,000 AED	-0.038	0.027	66.380	-1.426	0.159
Month_AED55,000 - 75,000 AED	-0.043	0.054	66.332	-0.795	0.430
Month_AED> 75,000 AED	-0.005	0.048	66.361	-0.114	0.910
Mother_ed	0.003	0.004	66.678	0.867	0.389
Age_yr	-0.013	0.004	67.074	-3.279	0.002
SDQ_TotalProb_raw	0.003	0.003	107.752	1.064	0.290
LoadB2	0.060	0.031	72.695	1.895	0.062
SDQ_TotalProb_raw:LoadB2	0.000	0.003	74.695	-0.028	0.978

After controlling for Load, there no interaction between percent of overweight and SDQ Total Problems.

Table 82: Nback SDQ Total Problems x Percent of Overweight: Percent False Alarms - IQ >=70

	Estimate	Std. Error	df	t value	Pr(> t )
(Intercept)	0.713	0.083	70.210	8.581	0.000
Month_AED25,000 - 55,000 AED	-0.043	0.027	65.354	-1.571	0.121
Month_AED55,000 - 75,000 AED	-0.046	0.054	65.293	-0.856	0.395
Month_AED> 75,000 AED	-0.007	0.048	65.317	-0.147	0.884
Mother_ed	0.002	0.004	65.681	0.541	0.591
Age_yr	-0.013	0.004	66.047	-3.174	0.002
SDQ_TotalProb_raw	0.003	0.003	106.357	1.059	0.292
LoadB2	0.062	0.032	71.608	1.952	0.055
SDQ_TotalProb_raw:LoadB2	0.000	0.003	73.596	-0.063	0.950

Pattern of results remained unchanged when restricting to IQ >=70.

## 4.5 Nback x Load - sleep models

### 4.5.1 Ballanced Accuracy

Table 83: Nback Load x CSHQ Total: Ballanced Accuracy

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	286.205	95.402	3	52	2.450	0.074
Mother_ed	0.003	0.003	1	52	0.000	0.993
Age_yr	1480.574	1480.574	1	52	38.019	0.000
CSHQ_Total_no16	59.235	59.235	1	52	1.521	0.223
Load	653.026	653.026	1	57	16.769	0.000
CSHQ_Total_no16:Load	95.504	95.504	1	57	2.452	0.123



There was no interaction and no main effect of total sleep score. There was a significant effect of Load with better balanced accuracy in 1- than 2-back. Age was positively associated with balanced accuracy overall.

Table 84: Nback Load x CSHQ Total: Ballanced Accuracy - IQ  $\geq 70$

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	218.981	72.994	3	51	1.879	0.145
Mother_ed	12.731	12.731	1	51	0.328	0.570
Age_yr	1630.912	1630.912	1	51	41.981	0.000
CSHQ_Total_no16	28.486	28.486	1	51	0.733	0.396
Load	696.040	696.040	1	56	17.916	0.000
CSHQ_Total_no16:Load	122.452	122.452	1	56	3.152	0.081

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

#### 4.5.2 Flase Alarms

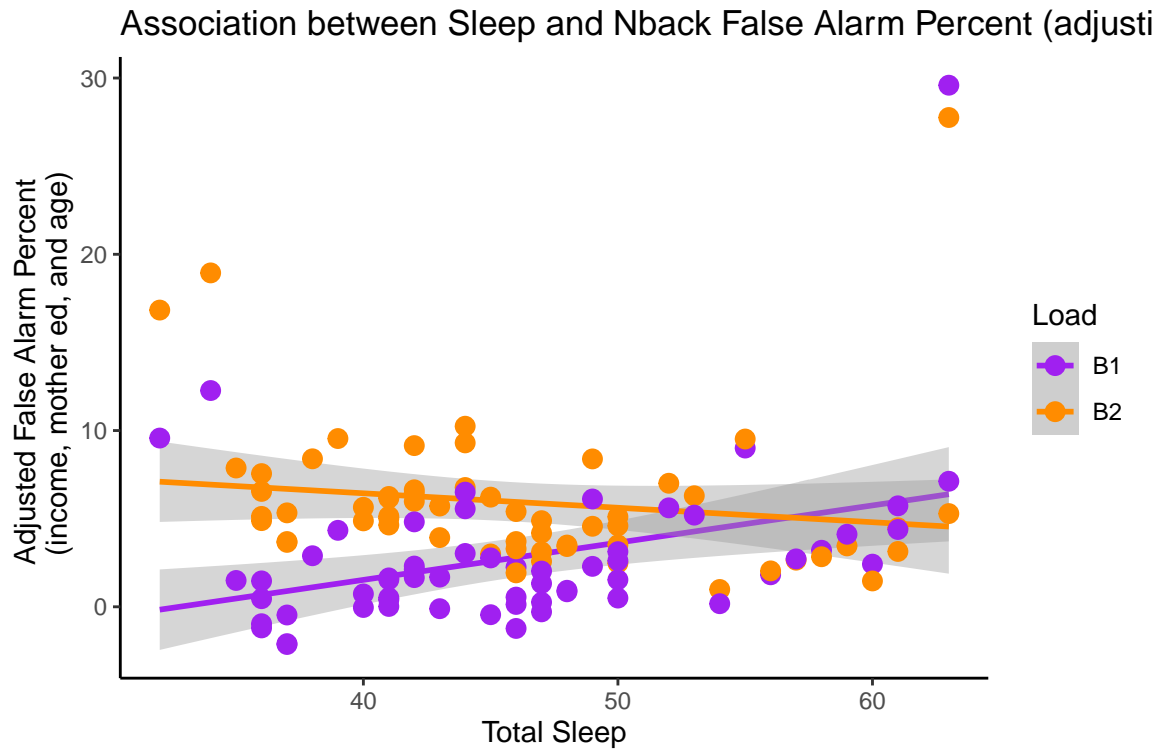


Table 85: Nback Load x CSHQ Total: Percent False Alarms'

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	19.549	6.516	3	52	0.386	0.764
Mother_ed	44.511	44.511	1	52	2.636	0.111
Age_yr	84.559	84.559	1	52	5.008	0.030
CSHQ_Total_no16	19.503	19.503	1	52	1.155	0.287
Load	228.979	228.979	1	57	13.560	0.001
CSHQ_Total_no16:Load	154.544	154.544	1	57	9.152	0.004

Table 86: Nback Load x PCSHQ Total: Percent False Alarms' simple slopes

CSHQ_Total_no16	Load	CSHQ_Total_no16.trend	SE	df	t.ratio	p.value
45.966	B1	0.247	0.105	78.831	2.352	0.021
45.966	B2	-0.047	0.105	78.831	-0.446	0.656

There was a significant interaction between load and total sleep score such that 1-back percent False Alarms was positively related to total sleep score while there was no association for 2-back. Age was positively associated with percent False Alarms overall.

Table 87: Nback Load x CSHQ Total: Percent False Alarms no outlier'

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	19.290	6.430	3	51	0.379	0.768
Mother_ed	8.764	8.764	1	51	0.517	0.475
Age_yr	104.990	104.990	1	51	6.192	0.016
CSHQ_Total_no16	25.666	25.666	1	51	1.514	0.224
Load	186.506	186.506	1	56	10.999	0.002
CSHQ_Total_no16:Load	118.340	118.340	1	56	6.979	0.011

Pattern of results remained unchanged when removing 1 outlier.

Table 88: Nback Load x CSHQ Total: Percent False Alarms - IQ  $\geq 70$ 

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	19.451	6.484	3	51	0.377	0.770
Mother_ed	43.665	43.665	1	51	2.542	0.117
Age_yr	85.124	85.124	1	51	4.955	0.030
CSHQ_Total_no16	17.309	17.309	1	51	1.008	0.320
Load	223.090	223.090	1	56	12.986	0.001
CSHQ_Total_no16:Load	149.942	149.942	1	56	8.728	0.005

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

#### 4.5.3 d'

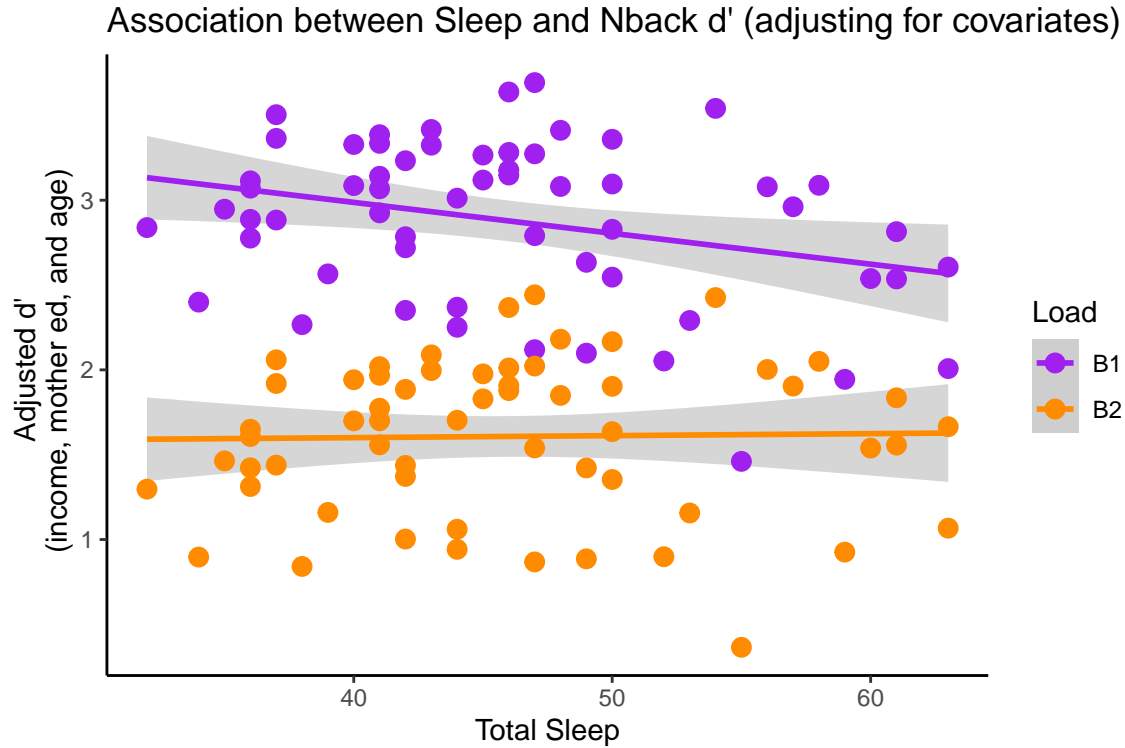


Table 89: Nback Load x CSHQ Total: d'

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	1.041	0.347	3	52	1.669	0.185
Mother_ed	0.029	0.029	1	52	0.139	0.711
Age_yr	9.279	9.279	1	52	44.654	0.000
CSHQ_Total_no16	0.438	0.438	1	52	2.106	0.153
Load	3.861	3.861	1	57	18.582	0.000
CSHQ_Total_no16:Load	0.675	0.675	1	57	3.247	0.077

Table 90: Nback Load x PCSHQ Total: d' simple slopes

CSHQ_Total_no16	Load	CSHQ_Total_no16.trend	SE	df	t.ratio	p.value
45.966	B1	-0.021	0.009	94.926	-2.223	0.029
45.966	B2	-0.001	0.009	94.926	-0.151	0.880

There was a trend-level interaction between load and total sleep score such that 1-back d' was significantly negatively associated with toaal sleep score while 2-back was not associated.

Table 91: Nback Load x CSHQ Total: d' - IQ  $\geq 70$ 

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	0.810	0.270	3	51	1.278	0.292
Mother_ed	0.185	0.185	1	51	0.875	0.354
Age_yr	10.337	10.337	1	51	48.943	0.000
CSHQ_Total_no16	0.246	0.246	1	51	1.167	0.285
Load	3.796	3.796	1	56	17.973	0.000
CSHQ_Total_no16:Load	0.688	0.688	1	56	3.257	0.077

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

## 4.6 Nback - SDQ

### 4.6.1 Ballanced Accuracy

Table 92: Nback Load x SDQ Total: Ballanced Accuracy

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	165.224	55.075	3	67	1.437	0.240
Mother_ed	4.435	4.435	1	67	0.116	0.735
Age_yr	1416.255	1416.255	1	67	36.954	0.000
SDQ_TotalProb_raw	116.577	116.577	1	67	3.042	0.086
Load	1919.858	1919.858	1	72	50.094	0.000
SDQ_TotalProb_raw:Load	1.250	1.250	1	72	0.033	0.857

There was no interaction but there was a trending main effect of total SDQ score. Higher SDQ scores were associated with lower balanced accuracy overall. There was a significant effect of Load with better balanced accuracy in 1- than 2-back. Age was positively associated with balanced accuracy overall.

Table 93: Nback Load x SDQ Total: Ballanced Accuracy - IQ  $\geq 70$ 

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	115.856	38.619	3	66	1.001	0.398
Mother_ed	4.756	4.756	1	66	0.123	0.727
Age_yr	1617.208	1617.208	1	66	41.910	0.000
SDQ_TotalProb_raw	132.940	132.940	1	66	3.445	0.068
Load	1872.735	1872.735	1	71	48.532	0.000
SDQ_TotalProb_raw:Load	1.670	1.670	1	71	0.043	0.836

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

#### 4.6.2 Flase Alarms

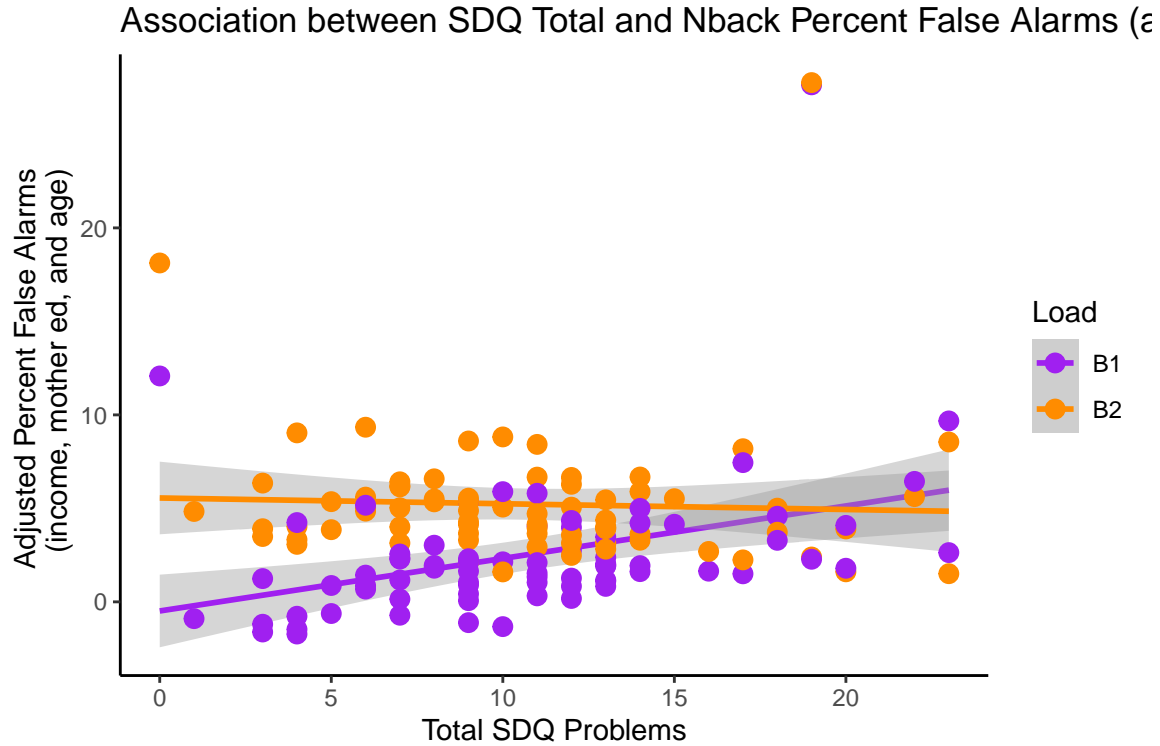


Table 94: Nback Load x SDQ Total: Percent False Alarms'

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	16.500	5.500	3	67	0.419	0.740
Mother_ed	10.076	10.076	1	67	0.768	0.384
Age_yr	83.563	83.563	1	67	6.366	0.014
SDQ_TotalProb_raw	5.299	5.299	1	67	0.404	0.527
Load	249.126	249.126	1	72	18.980	0.000
SDQ_TotalProb_raw:Load	93.324	93.324	1	72	7.110	0.009

Table 95: Nback Load x SDQ Total: Percent False Alarms' simple slopes

SDQ_TotalProb_raw	Load	SDQ_TotalProb_raw.trend	SE	df	t.ratio	p.value
10.716	B1	0.226	0.125	102.048	1.805	0.074
10.716	B2	-0.085	0.125	102.048	-0.681	0.497

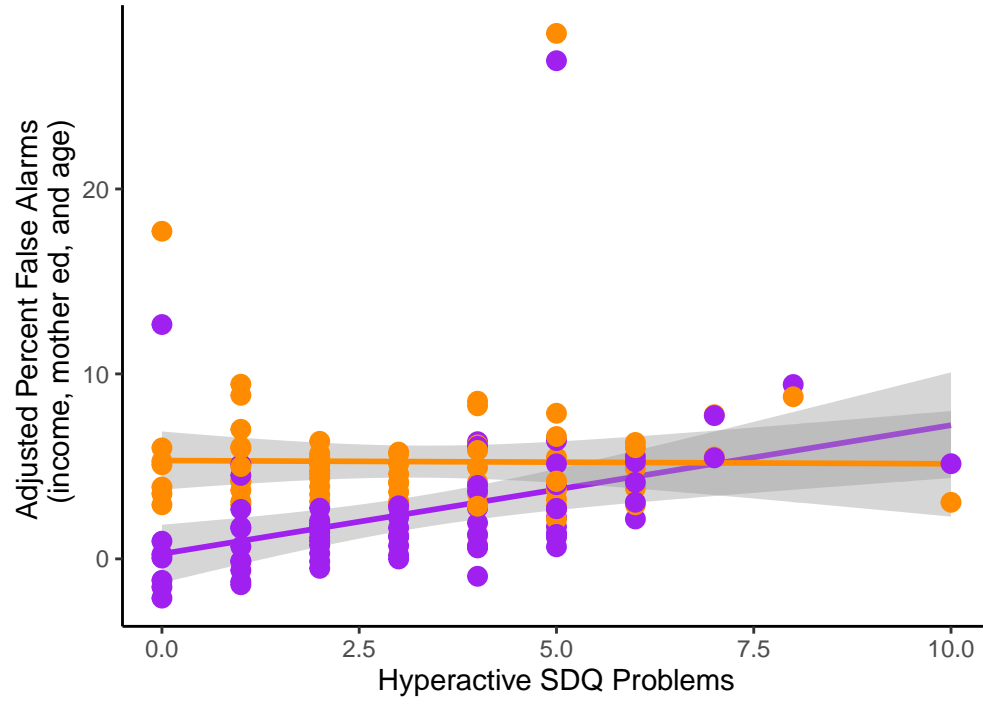
There was a significant interaction between load and total sleep score such that there was a trend for 1-Back percent False Alarms positively associated with SDQ total score. There was no association for 2-back. There was a significant effect of Load with lower percent False Alarms in 1- than 2-back. Age was positively associated with percent False Alarms overall.

Table 96: Nback Load x SDQ Total: Percent False Alarms - IQ  $\geq 70$ 

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	17.669	5.890	3	66	0.445	0.722
Mother_ed	12.042	12.042	1	66	0.910	0.344
Age_yr	85.044	85.044	1	66	6.425	0.014
SDQ_TotalProb_raw	5.432	5.432	1	66	0.410	0.524
Load	253.550	253.550	1	71	19.157	0.000
SDQ_TotalProb_raw:Load	94.943	94.943	1	71	7.173	0.009

Pattern of results remained unchanged when restricting to IQ  $\geq 70$ .

Association between SDQ Hyperactive and Nback Percent False Alarms



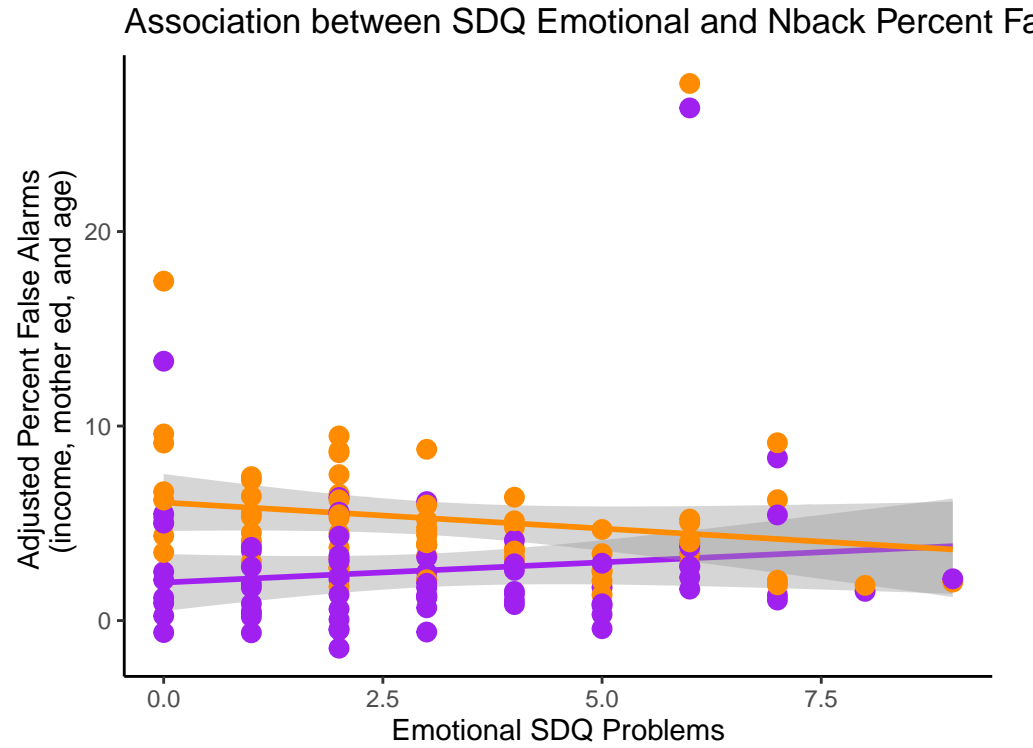
#### 4.6.2.1 Hyperactivity Problems

Table 97: Nback Load x SDQ Hyperactivity: Percent False Alarms'

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	22.017	7.339	3	64	0.542	0.656
Mother_ed	7.214	7.214	1	64	0.532	0.468
Age_yr	73.804	73.804	1	64	5.446	0.023
SDQ_HyperactiveProb_raw	3.810	3.810	1	64	0.281	0.598
Load	273.946	273.946	1	69	20.216	0.000
SDQ_HyperactiveProb_raw:Load	83.227	83.227	1	69	6.142	0.016

Table 98: Nback Load x SDQ Hyperactivity: Percent False Alarms' simple slopes

SDQ_HyperactiveProb_raw	Load	SDQ_HyperactiveProb_raw.trend	SE	df	t.ratio	p.value
3.254	B1	0.505	0.315	95.988	1.603	0.112
3.254	B2	-0.208	0.315	95.988	-0.660	0.511



#### 4.6.2.2 Emotional Problems

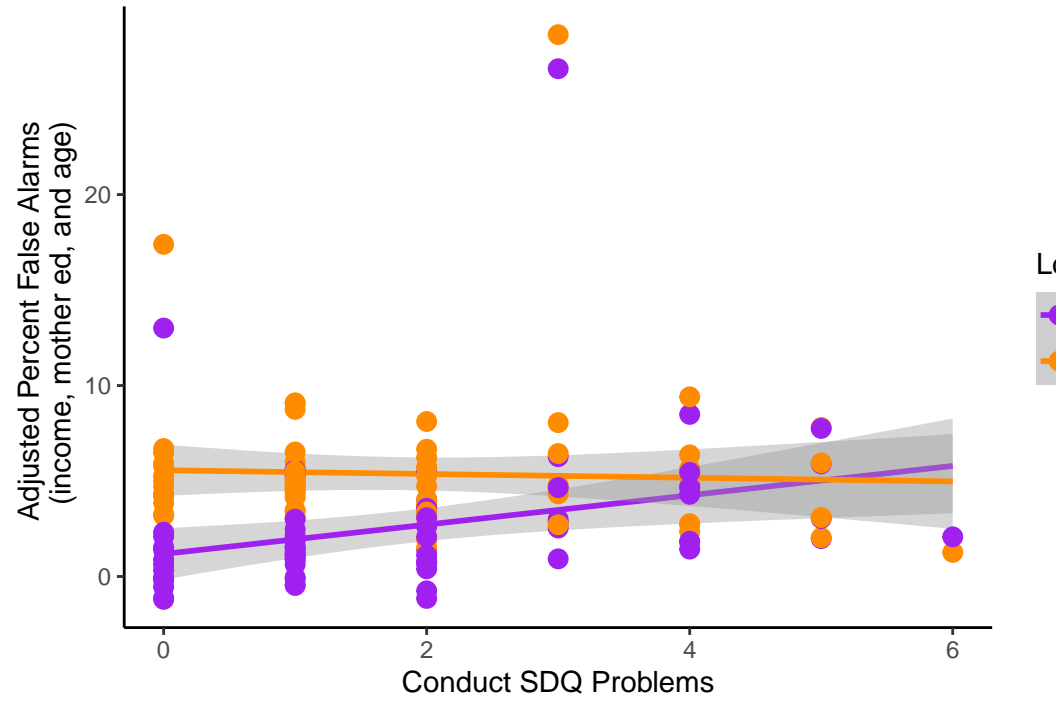
Table 99: Nback Load x SDQ Emotional: Percent False Alarms'

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	21.243	7.081	3	65	0.508	0.678
Mother_ed	18.261	18.261	1	65	1.311	0.256
Age_yr	118.668	118.668	1	65	8.517	0.005
SDQ_EmotionProb_raw	2.345	2.345	1	65	0.168	0.683
Load	209.338	209.338	1	70	15.024	0.000
SDQ_EmotionProb_raw:Load	40.184	40.184	1	70	2.884	0.094

Table 100: Nback Load x SDQ Emotional: Percent False Alarms' simple slopes

SDQ_EmotionProb_raw	Load	SDQ_EmotionProb_raw.trend	SE	df	t.ratio	p.value
3.069	B1	0.134	0.29	101.815	0.461	0.646
3.069	B2	-0.342	0.29	101.815	-1.179	0.241

# Association between SDQ Conduct and Nback Percent False



## 4.6.2.3 Conduct Problems

Table 101: Nback Load x SDQ Conduct: Percent False Alarms'

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	16.630	5.543	3	64	0.399	0.754
Mother_ed	9.445	9.445	1	64	0.680	0.413
Age_yr	73.284	73.284	1	64	5.278	0.025
SDQ_ConductProb_raw	2.093	2.093	1	64	0.151	0.699
Load	279.060	279.060	1	69	20.098	0.000
SDQ_ConductProb_raw:Load	62.763	62.763	1	69	4.520	0.037

Table 102: Nback Load x SDQ Conduct: Percent False Alarms' simple slopes

SDQ_ConductProb_raw	Load	SDQ_ConductProb_raw.trend	SE	df	t.ratio	p.value
1.845	B1	0.584	0.439	97.205	1.331	0.186
1.845	B2	-0.282	0.439	97.205	-0.643	0.522

## 4.6.2.4 Peer Problems



Table 103: Nback Load x SDQ Peer: Percent False Alarms'

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	20.255	6.752	3	66	0.469	0.705
Mother_ed	24.686	24.686	1	66	1.714	0.195
Age_yr	130.753	130.753	1	66	9.080	0.004
SDQ_PeerProb_raw	19.770	19.770	1	66	1.373	0.246
Load	117.066	117.066	1	71	8.130	0.006
SDQ_PeerProb_raw:Load	12.287	12.287	1	71	0.853	0.359

#### 4.6.3 d'

Table 104: Nback Load x SDQ Total: d'

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	0.439	0.146	3	67	0.690	0.561
Mother_ed	0.056	0.056	1	67	0.263	0.609
Age_yr	9.799	9.799	1	67	46.232	0.000
SDQ_TotalProb_raw	0.705	0.705	1	67	3.326	0.073
Load	10.305	10.305	1	72	48.623	0.000
SDQ_TotalProb_raw:Load	0.005	0.005	1	72	0.023	0.880

There was no interaction between load and total SDA score but there was a main effect of total SDQ such that d' was worse with increasing (worse) SDQ Total Problem score. There was a significant effect of Load with better d' in 1- than 2-back. Age was positively associated with d' overall.

Table 105: Nback Load x SDQ Total: d' - IQ &gt;=70

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
Month_AED	0.306	0.102	3	66	0.474	0.702
Mother_ed	0.005	0.005	1	66	0.023	0.879
Age_yr	11.093	11.093	1	66	51.623	0.000
SDQ_TotalProb_raw	0.801	0.801	1	66	3.726	0.058
Load	10.257	10.257	1	71	47.732	0.000
SDQ_TotalProb_raw:Load	0.005	0.005	1	71	0.021	0.884

Pattern of results remained unchanged when restricting to IQ >=70.