

**Aggravation of symptom severity in adult attention-
deficit/hyperactivity disorder by latent *Toxoplasma gondii* infection
- A case-control study**

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Supplement

Supplementary Table 1. Diagnostic instruments.

ADHD	Self-rating instrument for the diagnosis of ADHD in adults ADHD Self-Rating Scale (ADHD-SR, German Version ¹ , covers DSM-IV criteria; Cut-off >15) Wender-Utah-Rating-Scale–German short version (WURS-k; retrospective assessment of ADHD in childhood; mother rating; Cut-off >30 ²)
Comorbid disorders	Structured clinical interview for DSM-IV (SCID-I, SCID-II; covering axis-I and personality disorders; German version ³); Self-rating instrument for specific assessment of borderline-typical symptoms (BSL-23, short-version ⁴); multiple-choice self-report inventory for assessment of depression (Beck Depression Inventory (BDI-II) ⁵ , revised version 1996); self-rating form to assess autistic symptoms (Autismus-Spektrum-Quotienten (AQ), Cut-off 30 ⁶)
Demographics, anamnesis, risk factors:	Additional semi-structured interview
Conners adult ADHD rating scale, self-rated, long version, (CAARS-S:L)	The self-report instrument contains 66 Items and 9 subscales. Four factor-derived scales assess ADHD-related behavior and symptoms cross-sectional (inattentive symptoms/memory problems, hyperactivity, impulsivity/emotional instability and self-concept). A 12-item ADHD Index and a Inconsistency Index are included. CAARS-S:L met the criteria standards for good fit with regard to reliability, internal consistency and validity. ⁷⁻⁹
Specific socioeconomic status and risk-factor questionnaire	A specific “socioeconomic and risk factor questionnaire” was administered capturing (a) data on socioeconomic status and educational background of participants; (b) data on behavioral risk factors for infection with T. gondii

Supplementary Table 2. Results of diagnostic instruments in ADHD patients and controls.

	N	Mean	SD	Minimum	Maximum
ADHD					
Score WURS-k	69	43.0	14.0	11	75
Score ADHS-SR	70	32.0	8.8	13	51
Score BDI-II	70	17.8	9.6	1	41
BSL-23 mean	70	0.9	0.7	0.1	2.9
Controls					
Score WURS-k	70	10.2	9.0	0	56
Score ADHS-SR	70	5.8	4.8	0	19
Score BDI-II	70	4.4	3.9	0	21
BSL-23 mean	69	0.18	0.2	0	0.9

Supplementary Table 3. Linear regression model of *Toxoplasma gondii* seropositivity and ADHD Index, ADHD cases only.

Minimal model (n=70)	ADHD Index (adjusted R ² = 0.060)			
	95% CI			p-value
	B	Lower	Upper	
(Intercept)	21.17	19.64	22.70	<0.001
<i>T. gondii</i> (pos)	3.41	0.48	6.34	0.023
Final model (n=70)	ADHD Index (adjusted R ² = 0.163)			
	95% CI			p-value
	B	Lower	Upper	
(Intercept)	19.81	18.13	21.48	<0.001
<i>T. gondii</i> (pos)	3.60	0.83	6.37	0.012
BPD	3.96	0.86	7.07	0.013
Anxiety disorder	2.61	-0.49	5.7	0.098

ADHD Index, Conners' Adult ADHD Rating Scale ADHD Index, long version; *T. gondii*, *Toxoplasma gondii*; pos, seropositive; ADHD, attention-deficit/hyperactivity disorder; BPD, borderline personality disorder; significant results in bold

Supplementary Table 4. Stepwise regression analysis of serointensity and CAARS, all cases.

Minimal model (n=139)	CAARS I/EL (adjusted R ² = 0.033)				CAARS SKP (adjusted R ² = 0.003)			
	95% CI			p-value	95% CI			p-value
	B	Lower	Upper		B	Lower	Upper	
(Intercept)	12.51	10.93	14.08	<0.001	7.69	6.79	8.59	<0.001
IgG [U/ml]	0.04	0.01	0.08	0.018	0.01	-0.01	0.03	0.234
Final model (n=139)	CAARS I/EL (adjusted R ² = 0.696)				CAARS SKP (adjusted R ² = 0.492)			
	95% CI			p-value	95% CI			p-value
	B	Lower	Upper		B	Lower	Upper	
(Intercept)	5.77	4.58	6.96	<0.001	4.47	3.61	5.33	<0.001
IgG [U/ml]	0.02	0.00	0.04	0.093	0.00	-0.01	0.02	0.627
ADHD	12.11	10.22	13.99	<0.001	5.07	3.68	6.47	<0.001
BPD	4.97	1.72	8.23	0.003	3.72	1.55	5.89	<0.001
Gender: male	-	-	-	-	-	-	-	-
Anxiety disorder	2.63	-0.14	5.40	0.063	2.67	0.71	4.63	0.008
Antidepressants	2.58	-0.48	5.64	0.098	-	-	-	-
Hypnotics, sedatives	-5.11	-11.39	1.17	0.110	-	-	-	-
Axis II other than BPD	-	-	-	-	2.05	-0.65	4.75	0.135

CAARS, self-rated Conners' Adult ADHD Rating Scale; I/EL, impulsivity and emotional lability; SKP, problems with self-concept; IgG, immunoglobulin G; ADHD, attention-deficit/hyperactivity disorder; BPD, borderline personality disorder; significant results in bold

Supplementary Table 5. Stepwise regression analysis of serointensity and CAARS subscales, all cases.

Minimal model (n=139)	CAARS UA (adjusted R ² = 0.031)				UA-DSM (adjusted R ² = 0.034)			
	95% CI			p-value	95% CI			p-value
	B	Lower	Upper		B	Lower	Upper	
(Intercept)	13.74	12.23	15.25	0.000	10.11	8.78	11.44	<0.001
IgG [U/ml]	0.04	0.01	0.07	0.022	0.04	0.01	0.07	0.016
Final model (n=139)	CAARS UA (adjusted R ² = 0.683)				UA-DSM (adjusted R ² = 0.747)			
	95% CI			p-value	95% CI			p-value
	B	Lower	Upper		B	Lower	Upper	
(Intercept)	6.20	4.79	7.60	0.000	4.05	3.13	4.96	<0.001
IgG [U/ml]	0.01	-0.01	0.03	0.352	0.01	0.00	0.03	0.120
ADHD	12.53	10.71	14.35	0.000	12.03	10.69	13.37	<0.001
BPD	-	-	-	-	-	-	-	-
Gender: male	2.17	0.51	3.82	0.011	-	-	-	-
Anxiety disorder	3.07	0.36	5.78	0.027	3.45	1.38	5.52	0.001
Antidepressants	2.10	-0.50	4.70	0.112	-	-	-	-

CAARS, self-rated Conners' Adult ADHD Rating Scale; UA, inattention/memory problems; UA-DSM, inattention/memory problems according to DSM; IgG, immunoglobulin G; ADHD, attention-deficit/hyperactivity disorder; BPD, borderline personality disorder; significant results in bold

Supplementary Table 6. Linear regression model of avidity and ADHD Index, ADHD cases only.

Minimal model (n=70)	ADHD Index (adjusted R ² = 0.062)			
		95% CI		
	B	Lower	Upper	p-value
(Intercept)	21.19	19.68	22.70	<0.001
Avidity	7.88	1.19	14.57	0.022
Final model (n=70)	ADHD Index (adjusted R ² = 0.159)			
		95% CI		
	B	Lower	Upper	p-value
(Intercept)	19.89	18.23	21.55	<0.001
Avidity	7.98	1.65	14.32	0.014
BPD	3.72	0.62	6.83	0.019
Anxiety disorder	2.72	-0.38	5.83	0.084

ADHD Index, Conners' Adult ADHD Rating Scale ADHD Index, long version; ADHD, attention-deficit/hyperactivity disorder; BPD, borderline personality disorder; significant results in bold

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