

Supplemental document. List of studies considered in the review on neuropsychological deficits in child and adolescent internalizing and externalizing disorders

Author	Year	Name of the manuscript	Mental disorder	Assessed functions	General findings
Toren, Sadeh, & Wol	2000	Neurocognitive correlates of anxiety disorders in children:: Anxiety A preliminary report		Language skills and cognitive flexibility	Children and adolescents with anxiety score lower than a control group on all California Verbal Learning Test indexes
Vasa, Roberson Nay, Klein, Mannuzza, Moulton III, Guardino, & Pine	2007	Memory deficits in children with and at risk for anxiety disorders	Social phobia	Memory	Patients with ongoing social phobia demonstrated reduced visual but non-verbal memory scores compared to those without social phobia.
Chang, McCracken, & Piacentini, 2007	2007	Neurocognitive correlates of child obsessive compulsive disorder and Tourette syndrome	OCD and Tourette's	EFs, memory, attention, visuospatial skills	The spatial attention deficits for the OCD group are partially consistent with studies of OCD in adults that indicate deficits in spatial memory.
Favre, Hughes, Emslie, Stavinoha, Kennard, & Carmody	2008	Executive functioning in children and adolescents with major depressive disorder	Depression	EFs	The neurocognitive profiles of the depressed children and adolescents were intact.
Matthews, Coghill, & Rhodes	2008	Neuropsychological functioning in depressed adolescent girls.	Depression	EFs	The depressed teenagers showed performance deficits in visual memory tasks, a measure of motor speed, and in a spatial working memory test.
Brooks, Iverson, Sherman, & Roberge	2010	Identifying cognitive problems in children and adolescents with depression using computerized neuropsychological testing.	Depression	Memory, psychomotor speed, reaction time, complex attention and cognitive flexibility	Children and adolescents with depression have problems with reduced processing speed, memory for verbal information, and EFs.
Lundy, Silva, Kaemingk, Goodwin, and Quan	2010	Cognitive functioning and academic performance in elementary school children with anxious/depressed and withdrawn symptoms.	Anxiety and depression	Intelligence, attention, memory, EFs	Depressive symptomatology negatively affects performance on measures of cognitive and academic achievement in school-aged children and these findings are not affected by ethnicity.
Ornstein, Arnold, Manassis, Mendlowitz, & Schachar	2010	Neuropsychological performance in childhood OCD: a preliminary study	OCD	Inhibition of response, abstract reasoning and problem solving, planning ability, verbal and non-verbal fluency, working memory, speed of attention and information processing, and visual memory and learning and verbal.	Deficits and a trend towards performance differences between groups in terms of speed and psychomotor attention, cognitive flexibility, non-verbal fluency, planning ability and memory verbal and learning.
Utria, Rivera, & Valencia	2011	Association between neuropsychological disorders and emotional states in children from 8 to 11 years old from public schools in Bogotá	Anxiety and depression	Attention, memory, language	No association between neuropsychological disorders and emotional states was observed.

Baune, Czira, Smith, Mitchell, 2012 & Sinnamon		Neuropsychological performance in a sample of 13–25 year olds with a history of non-psychotic major depressive disorder	Non-psychotic depressive disorder	Executive functioning, working memory, attention, verbal memory and learning, planning and visuospatial skills	Participants with current or past major depressive disorder demonstrated deficiencies in EFs tasks that require conceptual skills and change in set, attention and working memory.
Delgado, & Valencia	2012	Neuropsychological exploration of attention and memory in child and adolescent victims of violence in Colombia: preliminary study.	PTSD and/or Depression	Executive functioning, working memory, attention, verbal memory and learning, planning and skills visospatal	The results allow us to conclude that the participants largely present lower scores in attention and memory and that this effect tends to be accentuated in the adolescence.
Bloch, Aviram, Faibel, Govezensky, Braw, Rabany, & Walter	2013	The correlation between impaired attention and emotional reactivity in depressed adolescent patients	Depression	Attention, speed, EFs, memory	Emotional reactivity correlated with care in depressed patients.
Delgado, & Valencia	2013	Comparison of the neuropsychological profile in a sample of children and adolescents with and without depressive symptoms	Depression	Attention, memory and EFs	Profile characterized by low performance in attention, semantic and logical memory, as well as difficulties in inhibitory control in the group with depressive symptoms.
Fonseca-Parra & Rey-Anacona	2013	Neuropsychological characteristics of children with oppositional defiant disorder.	ODD	Attention; memory; perception; language; constructive, metalinguistic, visuospatial, and conceptual skills; EFs; performance in reading, writing and mathematical tasks; and manual laterality	Reduced performance in graphic skills, linguistic comprehension, metalinguistic skills, conceptual skills, deferred verbal memory, verbal fluency, cognitive flexibility and planning-organization
Baune, Fuhr, Air, & Hering	2014	Neuropsychological functioning in adolescents and young adults with major depressive disorder—a review	Depressive disorders	EFs, working memory, psychomotor and processing speed, verbal fluidity, and visual-spatial) memory	Statistically significant neuropsychological deficits in major depressive disorder compared to controls in the cognitive domains of EFs, working memory, psychomotor and processing speed fluency and visual memory.
Evans, Kourros, Samanez-Larkin, & Garber	2014	The relationship between neurocognitive and psychosocial functioning in major depressive disorder: a systematic review.	Depression	EFs	Depression influences EFs, Attention, and Memory deficits
Holler, Kavanaugh, & Cook	2014	Executive functioning in adolescent depressive disorders	Depression	EFs	No differences were identified in the different EFs
Johnson	2014	Neuropsychiatric differences among adolescents with early and late onset conduct, and externalizing and internalizing disorders presenting to a specialist service	Internalizing and externalizing disorders (Conduct disorder)	EFs	EFs problems in the externalizing problem group versus the internalizing or mixed problem group (both types of symptoms)
Kavanaugh & Holler	2014	Executive functioning and self-reported depressive	Depression	EFs	No correlations between overall self-reported depressive symptoms and overall EFs, but negative correlations between select executive subdomains (e.g.,

		symptoms within an adolescent inpatient population			problem solving and response inhibition) and certain depressive symptom subdomains (e.g., negative mood and interpersonal problems).
Lewin, Larson, Park, McGuire, Murphy, & Storch	2014	Neuropsychological functioning in youth with obsessive compulsive disorder: an examination of executive function and memory impairment.	OCD	EFs and memory	Deficits in EFs and nonverbal memory performance were found, but these deficiencies were not associated with the severity of OCD
Abramovitch, Abramowitz, Mittelman, Stark, Ramsey, & Geller	2015	Research Review: Neuropsychological test performance in pediatric obsessive-compulsive disorder—a meta-analysis	OCD	EFs: planning, response inhibition / interference control, change of set / cognitive flexibility, verbal memory, non-verbal memory, processing speed, working memory, functions visospatial and attention	Small effects were found in all sub-domains, none of which were statistically significant.
Vilgis, Silk, & Vance	2015	Executive function and attention in children and adolescents with depressive disorders: a systematic review.	Depression	Attention and EFs	There is little support for EFs deficits in pediatric depression. However, there are numerous methodological problems that may explain the null results.
Wagner, Müller, Helmreich, Huss, & Tadić	2015	A meta-analysis of cognitive functions in children and adolescents with major depressive disorder.	Depression	Intelligence, EFs, verbal memory and attention	Cognitive deficits of children and adolescents with Major Depression were shown in several cognitive domains (inhibitory ability, phonemic verbal fluency, sustained attention, verbal memory and planning.
Evans, Kouros, Samanez-Larkin, & Garber	2016	Concurrent and short-term prospective relations among neurocognitive functioning, coping, and depressive symptoms in youth	Depression	EFs	Bootstrap analysis revealed that coping with primary and secondary control partially measured the relationship between working memory and depressive symptoms.
Romero, Benavides, Quesada, & Álvarez	2016	Behavior problems and executive functions in 5-year-old children.	Externalizing disorders	EFs	Relationship between increased aggressive behavior and decreased performance on executive tasks
Argumedos, Monterroza Díaz, Romero-Acosta, & Ramírez-Giraldo	2018	Neurocognitive performance focuses on attention, memory and executive function in children and adolescents with or without internalizing symptoms.	Internalizing disorders	Attention, memory and EFs	Levels of attention, memory, and EFs were similar for the anxious, depressed, and non-symptomatic groups
Oré-Maldonado, J. O.	2018	Importance of child neuropsychology in externalizing behaviors	Externalizing disorders	EFs	Relationship between the performance of some EFs and the manifestation of externalizing behaviors
Afzali, Oleary- Barrett, Séguin, & Conrod	2018	Effect of depressive symptoms on the evolution of neuropsychological functions over the course of adolescence	Depression	Spatial working memory, delayed memory, perceptual reasoning and inhibitory control	The findings suggest that depressive symptoms at the time of the study and the previous year were associated with poorer performance on delayed recall memory and perceptual reasoning tasks. The previous year's depressive symptoms were associated with poorer spatial working memory performance.

Franklin, Tsujimoto, Lewis, Tekok- Kilic, & Frijters	2018	Sex differences in self-regulatory executive functions are amplified by trait anxiety: the case of students at risk for academic failure	Anxiety	EFs	Deficits in self-regulatory EFs are associated with emotional and behavioral problems.
Mullin, Perks, Haraden, Snyder, & Hankin	2018	Subjective Executive Function Weaknesses Are Linked to Elevated Internalizing Symptoms Among Community Adolescents	Anxiety and depression	EFs	The analyses revealed strong associations between poorer EFs skills reported by parents and themselves and the severity of anxiety and depression symptoms. Problems with EFs were also associated with externalizing symptoms
Nelson, Kidwell, Nelson, Tomaso, Hankey, & Espy	2018	Preschool executive control and internalizing symptoms in elementary school	Anxiety and depression	EFs	These findings suggest that poor early executive control deficits may be a major risk factor for the development of internalized psychopathology in childhood.
Barzilay, Calkins, Moore, Wolf, Satterthwaite, Scott... & Gur	2019	Association between traumatic stress load, psychopathology, and cognition in the Philadelphia Neurodevelopmental Cohort	PTSD and Depression	EFs	Exposure to traumatic stress in community youth who seek non-psychiatric help is substantial and associated with more severe psychopathology and neurocognitive deficits in all domains, beyond PTSD and depression.
Li, Wang, Cao, Fang, Cao, Chen... & Hall	2019	Posttraumatic Stress Disorder and executive dysfunction among children and adolescents: A Latent Profile Analysis.	PTSD	EFs	The results explain the relationship between PTSD symptoms and deficits in EFs. So those children who have worse EFs will have more and more intense symptoms of PTSD when faced with a traumatic event.

Note. EFs: Executive Functions; OCD: Obsessive-Compulsive Disorder; ODD: Oppositional Defiant Disorder; PTSD: Posttraumatic Stress Disorder.