Attention deficits and bias in children and adolescents with major depressive disorder: a systematic review

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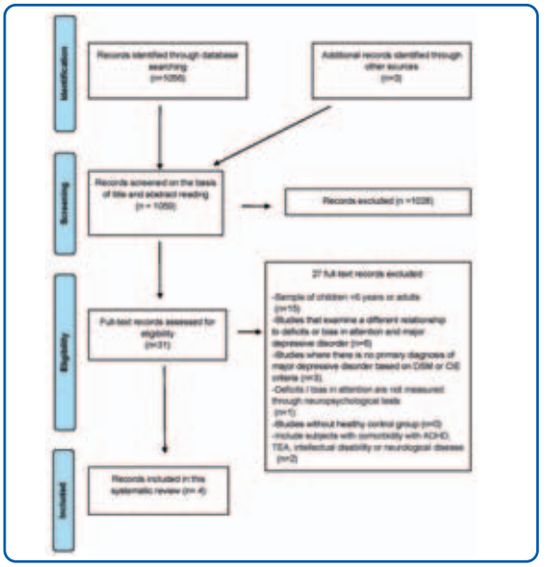
Introduction

While cognitive impairment in Major Depressive Disorder has been well established in adults (Baune et al., 2010; Elliott, 1998) little is known about this impairment in children and adolescents with Major Depressive Disorder.
The aim of this paper is to review the literature on attention deficits and bias described in children and adolescents with Major Depressive Disorder and to identify the neuropsychological tests used to measure these deficits.

Method

A systematic review was performed using PUBMED database (September 2017), according to the bibliography published in the last 10 years with the following inclusion criteria:
a) Population between 6 and 18 years
b) Studying the association between deficits / bias in attention and Major Depressive Disorder
c) Established diagnosis of Major Depressive Disorder defined on the ICD or DSM (Any edition)
d) To measure the deficit / bias in attention through neuropsychological tests
e) Case-control studies that include a healthy control group

Figure 1. Modified diagram PRISMA version for the selection process



Results

Four studies were identified, three of which find clinically significant differences between the performance of subjects with Major Depressive Disorder and the healthy control group. The average age of the subjects of the study indicates that mainly the studies have focused on adolescent population (see table 1). The domains of the most studied areas of attention have been: Vigilance and sustained attention, selective attention and inhibition, attention flexibility and reaction time, although the tasks used for their study are very heterogeneous. The studies found deficits in inhibition, impulsivity, sustained attention, attention flexibility and slower reaction time.

Tabe 1. Comparative table of studies on deficits/bias in attention and Major Depressive Disorder in children and adolescents

Authors	Year	Country	Sample (N)		Sample % Boys		Age M (SD)		Domain	Test used	Results
			MDD	CG	MDD	CG	MDD	CG			
Günter et al.	2011	Germany	61	64	48%	58%	13.8 (1.6)	13.6 (1.9)	Vigilance and sustained attention Selective attention Inhibition	Simple reaction time task (Zimmermann & Fimm, 2007) The visual setshifting task (de Sonneville, 2000) A visual and acoustic discrimination task (Zimmermann & Fimm, 2007) A go/no-go paradigm (Zimmermann & Fimm, 2007).	Children with MDD were impaired in the go/no-go task (inhibitory deficits) and in the set-shifting task (SAS)
Maalouf et al.	2011	EEUU	20	17	15%	47%	15.3 (1.6)	15.2 (1.8)	Vigilance and sustained attention	Rapid Visual Processing (RVP) task of Cambridge Neuropsychological Tests Automated Battery (CANTAB)	MDD group had more false alarms and more impulsive response style
Mathews et al.	2008	United Kingdom	14	14	0%	0%	14.4 (1.1)	14.3 (1.0)	Attentional flexibility Reaction time	Attentional set-shifting task (Kempton et al., 1999) Reaction time test (Sahakian and Owen, 1992)	No significant differences between groups
Brooks et al.	2010	EEUU	30	30	26.7%	Matched controls	14.6 (2.1)	Matche controls	Attentional flexibility Vigilance and sustained attention	Shifting Attention Test of CNS Vital Signs Computerized test battery (Gualtieri et al., 2004) Continuous Performance Test of CNS Vital Signs Computerized test battery (Gualtieri et al., 2004)	Lower performance in sustained attention, shifting attention, and inhibition tests

MDD Major Depressive Disorder; CG Control group

Conclusions

The review points to the existence of attention deficits and bias, similar to those described in adults, in children and adolescents with a Major Depressive Disorder. More studies are needed that confirm this existence, as well as long-term studies that investigate how these deficits / bias affect the functioning, course and prognosis of this population.

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