



Review

Neurocognitive impairments among youth with pediatric bipolar disorder: A systematic review of neuropsychological research



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ABSTRACT

Background: Pediatric bipolar disorder (PBD) has emerged as a field of research in which neuropsychological studies are continuously providing new empirical findings. Despite this, a comprehensive framework for neurocognitive impairments is still lacking, and most of the evidence remains unconnected. We addressed this question through a systematic review of neuropsychological research, with the aim of elucidating the main issues concerning this topic.

Method: A comprehensive search of databases (PubMed, PsycINFO) was performed. Published manuscripts between 1990 and January 2014 were identified. Overall, 124 studies fulfilled inclusion criteria. Methodological differences between studies required a descriptive review of findings.

Results: Evidence indicates that verbal/visual-spatial memory, processing speed, working memory, and social cognition are neurocognitive domains impaired in PBD youth. Furthermore, these deficits are greater among those who suffer acute affective symptoms, PBD type I, and/or attention deficit hyperactivity disorder (ADHD) comorbidity. In addition, several neurocognitive deficits imply certain changes in prefrontal cortex activity and are somewhat associated with psychosocial and academic disabilities. Strikingly, these deficits are consistently similar to those encountered in ADHD as well as severe mood dysregulation (SMD). Besides, some neurocognitive impairments appear before the onset of the illness and tend to maintain stable across adolescence. Finally, any therapy has not yet demonstrated to be effective on diminishing these neurocognitive impairments.

Limitations: More prolonged follow-up studies aimed at delineating the course of treatment and the response to it are warranted.

Conclusions: Despite noteworthy research on the neurocognitive profile of PBD, our knowledge is still lagging behind evidence from adult counterparts.

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1. Introduction

Pediatric bipolar disorder (PBD) is a mental disorder affecting roughly 2% of youth less than 18-years-old (Merikangas et al., 2011; Van Meter et al., 2011). Likewise, for 55–60% of adults with bipolar disorder (ABD), the pathology begins in childhood and adolescence (Perlis et al., 2004), frequently exhibiting subthreshold forms of the disorder (Shaw et al., 2005; Youngstrom et al., 2005). The persistence of this psychopathology into early adulthood leads to high levels of morbidity and disability (Birmaher et al., 2009; Wozniak et al., 2011), greatly hampering both academic achievements and psychosocial development (Goldstein et al., 2009).

Despite growing and conclusive evidence concerning psychopathology, course, and treatment in PBD (Goldstein and Birmaher, 2012; Torrent et al., 2012; Peruzzolo et al., 2013), a comprehensive framework specifically focused on neurocognitive impairments among PBD youth is still lacking. Accordingly, unlike adult counterparts, the profusion of neurocognitive PBD findings remains disseminated and apparently unconnected (Savitz et al., 2005; Manove and Levy, 2010). This lack of systematicity hinders the progress toward delineating current knowledge and best practice.

To date, this is the first systematic review aimed at parsing the main neurocognitive characteristics among PBD youth. Particularly, we sought to elucidate six issues, namely: (i) Which neurocognitive domains are impaired? (ii) Which modulating variables affect findings on these neurocognitive impairments? (iii) Which clinical correlates are related to these neurocognitive impairments? (iv) How specific are these neurocognitive impairments compared to those encountered in other childhood mental disorders? (v) Which is the evolution of these neurocognitive impairments? (vi) What interventions have already been proven effective on treating these neurocognitive impairments?

2. Method

2.1. Search strategy

A literature search was carried out through PsycINFO and PubMed databases from 1990 to January 2014. Terms employed

included indexing terms (e.g. MeSH) and free texts: [(cognition OR cognitive impairment) AND (youth OR pediatric OR child OR adolescent) AND (bipolar disorder)].

2.2. Selection criteria

Inclusion criteria included youth: (i) diagnosed with bipolar disorder type I (BDI), bipolar disorder type II (BD II), or bipolar disorder not otherwise specified (BD NOS) according to DSM-IV-TR criteria (American Psychiatric Association (APA), 2000); (ii) aged 6–18 years-old; (iii) assessed with neuropsychological tests, among other instruments. Thus, 124 manuscripts fulfilled inclusion criteria. Thirteen of them were partial revisions. The remainder were original papers.

2.3. Data extraction

For any manuscript, the following variables were recorded: (i) neurocognitive domain assessed; (ii) neuropsychological test used; (iii) influence of modulating variables; (iv) comparative group employed; (v) clinical correlates measured; (vi) data from follow-up assessment and treatment.

2.4. Method of analysis

There was remarkable heterogeneity among selected studies concerning outcome measures and assessment instruments. For these reasons, we present a descriptive review of the studies instead of a meta-analysis.

3. Results

3.1. Neuropsychological domains impaired in PBD

The first goal of our review was to determine which neuropsychological domains were impaired in PBD compared to healthy control (HC) youth. Main findings related to this issue concern attention (selective/sustained attention), memory (verbal/visual-spatial memory), processing speed, executive functions (working

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