Research in Developmental Disabilities 70 (2017) 175–184

Contents lists available at ScienceDirect

Research in Developmental Disabilities

journal homepage: www.elsevier.com/locate/redevdis

Inattention and hyperactivity/impulsivity among children with attention-deficit/hyperactivity-disorder, autism spectrum disorder, and intellectual disability

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ARTICLE INFO

Number of completed reviews is 2.

Keywords:
Co-occurring neurodevelopmental disorders
Inattention
Hyperactivity/impulsivity
Autism spectrum disorder
Intellectual disability
Attention-deficit/hyperactivity disorder

ABSTRACT

Background: Attention-Deficit/Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), and Intellectual Disability (ID) are common co-occurring neurodevelopmental disorders; however, limited research exists regarding the presentation and severity of overlapping symptomology, particularly inattention and hyperactivity/impulsivity, when a child is diagnosed with one of more of these neurodevelopmental disorders.

Aims: As difficulties with inattention and hyperactivity/impulsivity are symptoms frequently associated with these disorders, the current study aims to determine the differences in the severity of inattention and hyperactivity/impulsivity in children diagnosed with ADHD, ASD, ID, and co-occurring diagnosis of ADHD/ID, ASD/ADHD, and ASD/ID.

Methods and procedures: Participants in the current study included 113 children between the ages of 6 and 11 who were diagnosed with ADHD, ASD, ID, ADHD/ID, ASD/ADHD, or ASD/ID. Two MANOVA analyses were used to compare these groups witih respsect to symptom (i.e., inattention, hyperactivity/impulsivity) severity.

Outcomes and results: Results indicated that the majority of diagnostic groups experienced elevated levels of both inattention and hyperactivity/impulsivity. However, results yielded differences in inattention and hyperactivity/impulsivity severity. In addition, differences in measure sensitivity across behavioral instruments was found.

Conclusions and implications: Children with neurodevelopmental disorders often exhibit inattention and hyperactivity/impulsivity, particularly those with ADHD, ASD, ASD/ADHD, and ADHD/ID; therefore, differential diagnosis may be complicated due to similarities in ADHD symptom severity. However, intellectual abilities may be an important consideration for practitioners in the differential diagnosis process as children with ID and ASD/ID exhibited significantly less inattention and hyperactive/impulsive behaviors. Additionally, the use of multiple behavior rating measures in conjunction with other assessment procedures may help practitioners determine the most appropriate diagnosis.

What this Paper Adds

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http://dx.doi.org/10.1016/j.ridd.2017.09.009
Received 18 February 2017; Received in revised form 18 August 2017; Accepted 15 September 2017

Attention-Deficit/Hyperactivity Disorder, Autism Spectrum Disorder, and Intellectual Disability are neurodevelopmental disorders that exhibit some overlap in symptoms, including inattention and hyperactivity/impulsivity. The current paper adds to the extant literature by providing additional information about how symptoms of inattention and hyperactivity/impulsivity are presented in ADHD, ASD, and ID as well as co-occurring ADHD/ID, ASD/ADHD, and ASD/ID. Comparing the severity of inattention and hyperactivity/impulsivity ratings across these disorders has direct implications for practitioners, particularly during the diagnostic process. The current paper presents results that will help practitioners better understand the presentation of inattention and hyperactivity/impulsivity across these diagnostic categories as well as how this knowledge may impact diagnostic considerations.

1. Introduction

1.1. DSM-IV-TR, DSM-5, and Co-occurring neurodevelopmental disorders

The recent shift from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition − Text Revision (DSM-IV-TR; American Psychiatric Association, 2000) to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; APA, 2013) has changed how several disorders are defined. With regard to neurodevelopmental disorders, these changes have impacted how clinicians conceptualize and diagnose Autism Spectrum Disorder (ASD), Attention-Deficit/Hyperactivity Disorder (ADHD), and Intellectual Disability (ID). Modifications range from simple (e.g., change in name or age of onset) to more complex (e.g., criteria for diagnosis). One of the most profound changes is the acknowledgement of the co-occurrence of these neurodevelopmental disorders.

ADHD, ASD, and ID are common co-occurring disorders (APA, 2013). Notably, ID is one of the more common co-occurring diagnoses in individuals with ASD as approximately between 30% and 80% of children with ASD also meet criteria for ID (Baio, 2014; Itzchak, Lahat, Burgin, & Zachor, 2008; Leyfer et al., 2006). Children with dual diagnoses of ASD and ID do not respond as positively to treatment as they tend to exhibit slower gains in skills acquisition than children with either diagnosis in isolation (APA, 2013; Matson & Shoemaker, 2009). Given the high rates of co-occurring ID and ASD plus the negative impact that a dual diagnosis has on outcomes, the DSM-5 requires that clinicians determine if intellectual impairments are co-occurring with ASD. In addition to being commonly diagnosed in conjunction with ASD, ID can also co-occur with individuals who have ADHD. In fact, individuals who have ID are at greater risk for an ADHD diagnosis (APA, 2013; Neece, Baker, Blacher, & Crnic, 2011; Neece, Baker, Crnic, & Blacher, 2013; Strømme & Diseth, 2000) with prevalence rates of co-occurring ADHD and ID as high as 14% (Dekker & Koot, 2003) in comparison to the 1% in the general population (APA, 2013). Estimated prevalence rates of co-occurring ASD and ADHD in children range from 20% to 50% (Azizian, 2005; Levy et al., 2010).

DSM-5 criteria do not preclude clinicians from making a co-occurring diagnosis of ASD/ADHD or ADHD/ID (APA, 2013). However, in order for an ADHD diagnosis to be made in conjunction with ASD or ID, deficits in inattention and hyperactivity/impulsivity should be more severe than expected given the child's mental age. Thus, in theory, not all children with ID who experience elevated levels of ADHD symptoms will meet criteria for an ADHD diagnosis due to delays in intellectual development in comparison to same-age peers without ID.

Although the DSM-5 deems a dual diagnosis of ADHD and ID appropriate when developmental functioning is taken into consideration, the research regarding the possibility of co-occurring ADHD and ID is mixed. Some research has suggested that ADHD is not prevalent in children who have intellectual disabilities when controlling for their developmental age (Burack, Evans, Klaiman, & Iarocci, 2001). However, other research has demonstrated that ADHD may be an appropriate diagnosis for those with ID and shown that, even when controlling for mental age, children with ID still exhibit clinically significant levels of inattention and hyperactivity/impulsivity (Antshel, Phillips, Gordon, Barley, & Faraon, 2006; Hastings, Beck, Daley, & Hill, 2005; Voigt, Barbaresi, Colligan, Weaver, & Katusic, 2006). Given the symptom overlap and conflicting research regarding co-occurring ADHD and ID, clinicians may struggle with differential diagnosis and determining if a diagnosis of ADHD/ID or solely ID best explains elevated ADHD symptoms in children with ID.

Differential diagnosis difficulties also exist with ASD and ADHD. In fact, the DSM-IV-TR indicated that, due to symptom overlap, co-occurring diagnoses of ADHD and Pervasive Developmental Disorder (now referred to as ASD) were mutually exclusive (APA, 2000). The DSM-5, however, indicates that ASD may co-occur with ADHD when the individual shows elevated inattention, hyperactivity, and/or impulsivity that exceed peers of similar mental age (APA, 2013). Nevertheless, given the limited research, it may be difficult for clinicians to tease apart if inattention and hyperactivity/impulsivity are best explained by a single diagnosis of ADHD or ASD or a co-occurring diagnosis of ASD/ADHD.

1.2. Common overlapping symptoms across neurodevelopmental disorders

There are several examples of overlapping symptoms across ADHD, ASD, and ID. Inattention and hyperactivity/impulsivity are both commonly seen in ADHD and ID. For example, Neece et al., (2013) found that approximately 40% of adolescents with ID exhibited elevated levels of inattention and/or hyperactivity/impulsivity in comparison to their typically developing, same-age counterparts. Simonoff, Pickles, and Gringras (2007) also reported that hyperactivity was more associated with children with ID in comparison to inattention. When comparing the ADHD symptom severity levels of children with ADHD and ADHD/ID, Ahuja, Martin, Langley, and Thapar (2013) did not find any significant differences, indicating that both children with ADHD and ADHD/ID exhibited the similar levels of inattention and hyperactivity/impulsivity. Previous research has also shown that in children with ID and ADHD, parent-reported ADHD symptom severity decreased as children age (Hastings et al., 2005). Furthermore, intelligence level impacts ADHD symptom severity in children; Voigt et al. (2006) found that children with ID met criteria for an ADHD diagnosis more