Research in Autism Spectrum Disorders 6 (2012) 1406–1411

Contents lists available at SciVerse ScienceDirect

Research in Autism Spectrum Disorders

Journal homepage: http://ees.elsevier.com/RASD/default.asp

The relationship between symptoms of autism spectrum disorders and psychotropic medication use in infants and toddlers

Max Horovitz, Johnny L. Matson *, Alyse Barker

Louisiana State University, United States

ARTICLE INFO

Article history:
Received 3 April 2011
Accepted 24 May 2011

Keywords:
Psychotropic medication
ASD
BISCUIT
Infants
Toddlers

ABSTRACT

Little research has been conducted to date on the relationship between psychotropic medication use and autism spectrum disorders (ASDs). Participants in the current study were placed into one of four groups: ASD on psychotropic medications ($N = 33$), ASD off psychotropic medications ($N = 45$), atypically developing on psychotropic medications ($N = 30$) and atypically developing off psychotropic medications ($N = 45$). Severity of autistic symptoms were compared between the groups based on total scores on the *Baby and Infant Screen for Children with aUtIsm Traits, Part 1(BISCUIT Part-1*). Toddlers with ASD on psychotropic medications had significantly higher ratings than any other group. No such relationship was found within the atypically developing group. The results suggest a relationship between psychotropic medication use and severity of autistic symptoms in infants and toddlers. Implications of these results are discussed.

1. Introduction

Autism spectrum disorders (ASDs) are conditions with common defining features including social impairments, communication deficits, and repetitive behaviors (Gillberg, 2010; Matson & Shoemaker, 2009; Matson & Wilkins, 2009; Matson et al., 1996; Matson, Dempsey, & LoVullo, 2009; Matson, González, & Wilkins, 2009; Matson, LoVullo, Rivet, & Boisjoli, 2009; Sevin et al., 1995). Common comorbidities of ASDs include intellectual disabilities, maladaptive behaviors, and psychopathology (Bakken et al., 2010; Bryson, Bradley, Thompson, & Wainwright, 2008; Hartley, Sikora, & McCoy, 2008; La Malfa, Lassi, Bertelli, Salvini, & Placidi, 2004; Matson & Neal, 2009a; Matson, Smiroldo, Hamilton, & Baglio, 1997; Matson, Wilkins, & Macken, 2009; Rose, Bramham, Young, Paliokostas, & Xenitidis, 2009). These comorbidities add to the challenge of treating individuals with ASDs (Matson, Hess, & Boisjoli, 2010).

Psychotropic medications are often used to treat individuals with ASDs (Matson & LoVullo, 2009). These medications are associated with reductions in problem behaviors, such as aggression and hyperactivity, but are less effective in ameliorating the defining features of ASDs (Aman & Langworthy, 2000; Farmer & Aman, 2009; Singh et al., 2010; West, Waldrop, & Brunssen, 2009). Psychotropic medications commonly prescribed to children with ASDs include antipsychotics, antidepressants, anti-anxiety medications, antiepileptic drugs (AEDs)/mood stabilizers, and psychostimulants (Aman, Lam, & Van Bourgondien, 2005; Mandell et al., 2008; Oswald & Sonenklar, 2007; Rosenberg et al., 2010). The most recent estimates of psychotropic medication use among children with ASDs range from 35 to 57% (Aman, Lam, & Collier-Crespin, 2003; Green et al., 2006; Oswald & Sonenklar, 2007; Rosenberg et al., 2010). In a 1995 internet survey, 52% of parents reported psychotropic medications were being used to treat their children's ASDs (Green et al., 2006). Similarly, in a study by

* Corresponding author at: Department of Psychology, Louisiana State University, Baton Rouge, LA 70803, United States.
E-mail address: johnmatson@aol.com (J.L. Matson).

1750-9467/$ – see front matter © 2012 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.rasd.2011.05.013

Oswald and Sonenklar (2007), 57% of children under the age of 21, with ASDs, were prescribed at least one psychotropic or anticonvulsant medication in 2002. In survey data collected by Aman et al. (2003), 51.6% of individuals diagnosed with ASDs aged 2–46 were prescribed psychotropic or AEDs. Rosenberg et al. (2010) found a prevalence rate of 35% for the use of psychotropic medications among individuals aged 18 and younger with ASDs.

The frequency of psychotropic medication use varies with age and severity of disability (Aman et al., 2005). In children with ASDs, the use of psychotropic medications has been found to increase with age (Aman et al., 2003, 2005; Aman, Van Bourgondien, Wolford, & Sarphare, 1995; Witwer & Lecavalier, 2005). However, rates of psychotropic medication use as high as 18% were found in Medicaid-enrolled children aged 0–2, and rates as high as 32%, in Medicaid-enrolled children aged 3–5 (Mandell et al., 2008). Like increased age, more severe intellectual disability and more severe autism are correlated with greater use of antipsychotics, mood stabilizers, sedatives/anxiolytics, and AEDs (Aman et al., 2005). Less severe intellectual disability and less severe autism, however, are associated with greater psychostimulant medication use (Aman et al., 2005).

The aim of the present study was to examine the relationship between severity of ASD and psychotropic medication use in infants and toddlers aged 17–36 months. In previous research, ASD severity was determined through caregiver's subjective ratings of autism as mild, moderate, or severe. In the present study, a psychometrically sound measure of ASD symptom severity, the *Baby and Infant Screen for Children with aUtIsm Traits, Part 1(BISCUIT Part-1*), was used to provide more objective criteria of ASD severity. Based on the existing literature, it was hypothesized that those with ASD on psychotropic medications would have significantly higher total *BISCUIT Part-1* scores than any other group. Additionally it was hypothesized that both ASD groups would score higher than the non-ASD groups, regardless of use of psychotropic medications.

2. Methods

2.1. Participants

A total of 153 caregivers of toddlers aged 17 through 36 months ($M = 26.53$, $SD = 4.68$) served as participants in the current study. All toddlers received services through EarlySteps, Louisiana's Early Intervention System under the Individuals with Disabilities Education Act, Part C, which provides services to infants and toddlers and their families from birth to 36 months. To qualify for this program, children must have a developmental delay or a medical condition likely to result in a developmental delay. Groups were randomly selected in SPSS from a larger sample to ensure that no group was more than 1.5 times larger than the other groups, in order to protect against the violation of statistical assumptions (Leech, Barrette, & Morgan, 2008). The current sample of toddlers was comprised of 68.6% males and 31.4% females. Regarding ethnicity of children as reported by caregivers, 51.0% were Caucasian, 39.9% African American, 3.3% Hispanic, and 5.9% were classified as other or unknown ethnicity. Demographic information, in addition to mean *M-CHAT* scores and seizure disorder information, by group is included in Table 1. The presence or absence of seizure disorders was based on parent report on the demographic section of the *BISCUIT Part-1*. Participants were placed into one of the following groups based on the diagnostic criteria outlined below: ASD on psychotropic medications (ASD+; $N = 33$), ASD not on psychotropic medications (ASD−; $N = 45$), atypically developing on psychotropic medications (Atyp+; $N = 30$), and atypically developing not on psychotropic medications (Atyp−; $N = 45$).

Children in the ASD+ and ASD− groups had a diagnosis of either Autistic Disorder or PDD-NOS. These diagnoses were made, blind to *BISCUIT* scores, by a licensed clinical psychologist (second author) with over 30 years of experience working with individuals with developmental disabilities. Diagnoses were made based on a combination of scores on the Modified Checklist for Autism in Toddlers (M-CHAT) (Robins, Fein, Barton, & Green, 2001), the Battelle Developmental Inventory, Second Edition (BDI-2) (Newborg, 2005), DSM-IV-TR (APA, 2000) criteria, and clinical judgment.

Table 1
Demographic and other important variables based on diagnostic group and presence of psychotropic medications.

	ASD on psychotropic medication (ASD+)	ASD not on psychotropic medication (ASD−)	Atypically developing on psychotropic medication (Atyp+)	Atypically developing not on psychotropic medication (Atyp−)
Age (in months), mean (SD)	26.61 (4.26)	26.84 (4.92)	26.10 (3.94)	26.47 (5.26)
Gender				
Male	60.60%	77.80%	70.00%	64.40%
Female	39.40%	22.20%	30.00%	35.60%
Ethnicity				
Caucasian	54.50%	46.70%	50.00%	53.30%
African-American	33.30%	42.20%	40.00%	42.20%
Hispanic	6.10%	6.70%	0.00%	0.00%
Missing or other	6.10%	4.40%	10.00%	4.40%
M-chat total score, mean (SD)	8.61 (5.47)	5.49 (4.36)	2.97 (3.89)	1.24 (1.61)
Seizure disorder				
Yes	57.60%	2.20%	30.00%	0.00%
No	42.40%	97.80%	70.00%	100.00%