

## VIEWPOINT

# Intervention Recommendations for Children With Autism in Light of a Changing Evidence Base

**Micheal Sandbank, PhD**

Department of Special Education, University of Texas at Austin, Austin.

**Kristen**

**Bottema-Beutel, PhD**  
Lynch School of Education and Human Development, Boston College, Newton, Massachusetts.

**Tiffany Woynaroski, PhD, CCC-SLP**

Vanderbilt Brain Institute, Vanderbilt Kennedy Center, Frist Center for Autism and Innovation, Department of Hearing and Speech Sciences, Vanderbilt University Medical Center, Nashville, Tennessee.

**Corresponding**

**Author:** Micheal Sandbank, PhD, Department of Special Education, University of Texas at Austin, 1912 Speedway, STOP D5300, Austin, TX 78712 ([msandbank@Austin.utexas.edu](mailto:msandbank@Austin.utexas.edu)).

[jamapediatrics.com](http://jamapediatrics.com)

**In the wake** of a rapid transformation of the evidence base regarding autism interventions, the American Academy of Pediatrics (AAP) recently updated guidance on the identification, evaluation, and support of children with autism.<sup>1</sup> This guidance is undoubtedly a useful resource for pediatricians serving this population. It does not, however, highlight some notable new evidence on the choice of intervention approach or provide specific recommendations regarding intervention intensity, although it does imply that more intensive services can generally be expected to yield greater improvements. At approximately the same time that AAP guidelines were updated, our team completed a systematic review and meta-analysis<sup>2</sup> of all quasi-experimental and randomized studies (known to us) that evaluate any outcome of any intervention for young children (up to age 8 years) with autism. In this Viewpoint, we seek to augment the recent AAP statement by offering medical professionals a brief background on common intervention recommendations, a summary of recent findings, and corresponding additional guidance on intervention intensity and variety. While our recommendations align with several points made by the AAP working group, they diverge to some degree in their emphasis and description of the present evidence base on intervention approach and intensity for young children with autism.

## Common Intervention Recommendations and Prior Evidence

At present, pediatricians may default to recommending the most commonly available interventions, provided at high intensities, for children on the autism spectrum. For example, it has been reported that Early Intensive Behavioral Intervention, provided for 25 to 40 hours per week, is the most frequently recommended intervention for young children with autism.<sup>3</sup> These types of recommendations emanated first from an influential study<sup>4</sup> suggesting children with autism who received 40 hours per week of behavioral intervention before age 4 years made greater gains on cognitive measures than those who received only 10 hours per week. However, participants in this study<sup>4</sup> were not randomly assigned to groups, and the quality and findings of subsequent studies examining this treatment approach are mixed. Although studies of Early Intensive Behavioral Intervention published since 1987 have reported gains in cognition, adaptive behavior, communication, and mainstream school placements, nearly all of these studies were similarly quasi-experimental and relied primarily on outcomes measured by caregiver reports or those otherwise threatened by detection bias.<sup>2</sup> Some primary studies and meta-analyses examining the association between intervention gains and intensity

suggested that greater treatment intensities were associated with significantly greater gains, but other studies have not supported this conclusion.<sup>3</sup> In addition, some methodologically rigorous studies have shown that developmental interventions provided at lower intensities (eg, 1-5 hours per week) can facilitate strong improvements in social communication and other core challenges of autism.<sup>5</sup> Other studies comparing low-intensity and high-intensity behavioral interventions have reported nonsignificantly different gains across groups.<sup>6</sup>

## Changing Evidence Base

There has been a recent precipitous increase in both the quantity and quality of research examining interventions for young children with autism. From 2011 to 2018, the reported number of randomized clinical trials (RCTs) of interventions for young children with autism increased from 2 to 48.<sup>7</sup> To summarize this transforming evidence base, we systematically reviewed and meta-analyzed 150 reports of 130 studies, 87 of which were RCTs, which collectively reported effect sizes for 1615 outcomes, representing 6240 young children with autism.<sup>2</sup> Several findings emerged from this research, but 2 are of direct relevance to pediatricians directing families to services and supports following diagnosis. First, 3 intervention approaches that, at present, are not commonly recommended have garnered more substantial empirical support from RCTs relative to behavioral interventions. These are naturalistic developmental behavioral interventions (NDBIs) and developmental interventions. Although distinct from one another, these interventions are alike in that they are provided in children's natural contexts (eg, everyday interactions with caregivers) and their learning targets are guided by early developmental sequences. These attributes may make them preferable to families, since they are less likely to disrupt and separate children from family routines than more structured clinician-led interventions.

Second, in subsequent analyses,<sup>8</sup> we found limited evidence across studies supporting the notion that greater intervention intensities were associated with greater intervention gains. We conducted multiple meta-regression analyses to examine the influence of intensity for behavioral interventions, developmental interventions, and NDBIs; in all cases, cumulative intervention intensity did not significantly moderate gains.<sup>9</sup> We should note that, although our findings align with those reported in other reviews, our failure to find evidence supporting this association is not definitive proof of its absence. In fact, the association between intervention intensity and gains in children with autism is likely complicated by other factors, such as autism symptom

profiles. For example, the only randomized comparison<sup>10</sup> of intervention intensities conducted thus far (to our knowledge) reported that participants differentially benefited from 15 hours vs 25 hours per week, depending on their level of autism symptom severity.

### Recommendations

The evidence base regarding intervention for young children with autism has radically changed. Accordingly, we have developed a set of recommendations aligned with up-to-date findings.

#### Inform Families About a Range of Intervention Approaches

Medical professionals caring for children with autism should inform families about the range of empirically supported intervention approaches, particularly those that are backed by RCTs. Behavioral interventions, developmental interventions, and NDBIs differ on several continuums in terms of structure, child-centeredness, and learning goals. Although some families may prefer more structured, adult-directed interventions, other families may prefer more home-based, child-led treatments integrated within the context of daily routines. Health care professionals should familiarize themselves with the evidence base for each approach, ascertain the types of interventions available in their community, and avoid making blanket recommendations for one intervention approach for all children with autism.

#### Tailor Intensity Recommendations to the Needs of the Child and the Family

A variety of factors may influence the extent to which children benefit from interventions of increasing intensity. Given the current lack

of conclusive evidence to support recommendations for very intense interventions for young children with autism, clinicians should eschew standard intensity recommendations and instead individualize recommendations based on perceived child needs and family priorities. First, it is important to consider that heavily structured, high-intensity interventions may not be developmentally appropriate for very young children and may contribute to family stress, which could negatively affect children's development. Second, highly intensive interventions that separate children from their siblings, peers, and family members for extended periods may have unintended adverse developmental and social consequences. Service professionals should help families consider these issues while selecting early interventions of appropriate intensity and stay abreast of research that systematically explores the outcomes of treatment intensity.

#### Encourage Integrated Multidisciplinary Supports

Given our recommendation that pediatricians consider and refer families for a greater variety of intervention services, it is likely that a more diverse range of professionals will ultimately support families of young children with autism. This multidisciplinary, family-centered team could include behavior analysts, early intervention specialists, occupational therapists, social workers, speech/language pathologists, and teachers. However, families often report that fragmented service delivery is a greater source of stress than the needs of their child. Thus, it is vital that health systems develop integrated models of care with collaboration across a range of disciplines, streamlining the transition from diagnosis to support, as well as the selection of learning goals and intervention approaches.

### ARTICLE INFORMATION

**Published Online:** November 9, 2020.  
doi:10.1001/jamapediatrics.2020.4730

**Conflict of Interest Disclosures:** Dr Sandbank directs a university program that provides coursework approved by the Behavior Analysis Certification Board, and teaches courses on traditional behavioral intervention approaches and naturalistic developmental behavioral interventions (NDBIs). Dr Bottema-Beutel has received fees for consulting with school districts on intervention practices and teaches coursework on a range of intervention practices, including traditional behavioral interventions, NDBIs, and Treatment and Education of Autistic and Related Communication Handicapped Children. Dr Woynaroski has previously received payment to provide both traditional behavioral interventions and NDBIs. She is employed in a department that received a training grant to fund students seeking Master of Science in Speech-Language Pathology and Behavior Analysis Certification Board licensing. She has also been funded via the National Institutes of Health and other internal and external funding agencies on projects testing the efficacy of several types of treatment, including NDBIs (eg, ImPACT),

as well as sensory-based and technology based interventions.

### REFERENCES

- Hyman SL, Levy SE, Myers SM. Identification, evaluation, and management of children with autism spectrum disorder. *Pediatrics*. 2020;145(1):e20193447. doi:10.1542/peds.2019-3447
- Sandbank M, Bottema-Beutel K, Crowley S, et al. Project AIM: autism intervention meta-analysis for studies of young children. *Psychol Bull*. 2020;146(1):1-29. doi:10.1037/bul0000215
- Reichow B. Overview of meta-analyses on early intensive behavioral intervention for young children with autism spectrum disorders. *J Autism Dev Disord*. 2012;42(4):512-520. doi:10.1007/s10803-011-1218-9
- Lovaas OI. Behavioral treatment and normal educational and intellectual functioning in young autistic children. *J Consult Clin Psychol*. 1987;55(1):3-9. doi:10.1037/0022-006X.55.1.3
- Pickles A, Le Couteur A, Leadbitter K, et al. Parent-mediated social communication therapy for young children with autism (PACT): long-term follow-up of a randomised controlled trial. *Lancet*. 2016;388(10059):2501-2509. doi:10.1016/S0140-6736(16)31229-6
- Fernell E, Hedvall Å, Westerlund J, et al. Early intervention in 208 Swedish preschoolers with autism spectrum disorder: a prospective naturalistic study. *Res Dev Disabil*. 2011;32(6):2092-2101. doi:10.1016/j.ridd.2011.08.002
- French L, Kennedy EMM. Annual research review: early intervention for infants and young children with, or at-risk of, autism spectrum disorder: a systematic review. *J Child Psychol Psychiatry*. 2018;59(4):444-456. doi:10.1111/jcpp.12828
- Sandbank M, Bottema-Beutel K, Crowley S, et al. Intervention effects on language in children with autism: a project AIM meta-analysis. *J Speech Lang Hear Res*. 2020;63(5):1537-1560. doi:10.1044/2020\_JSLHR-19-00167
- Bottema-Beutel K. Project AIM- intervention intensity. Published May 22, 2020. Accessed October 6, 2020. <https://osf.io/8xfre>
- Rogers SJ, Yoder P, Estes A, et al. A multisite randomized controlled trial comparing the effects of intervention intensity and intervention style on outcomes for young children with autism. *J Am Acad Child Adolesc Psychiatry*. 2020;59(8):8567-8574. doi:10.1016/j.jaac.2020.06.013