

## Supporting Children with Autism Using an Evidence-Based Approach

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### Abstract

In the state of Missouri, autism is a growing phenomenon affecting a significant minority of young children. For example, according to the latest research, it is estimated that 1 in every 70 children (1 in 43 boys and 1 in 200 girls) are affected by autism. These figures are similar to the average estimate of children identified with autism (1 in 68) in all areas of the United States. Consequently, there is a growing need to support this heterogeneous population of children through early intervention underpinned by empirical evidence. The Early Start Denver Model (ESDM) is one of several evidence-based interventions for children with autism, ages 12 to 48 months. The purpose of this commentary article is twofold. First, the paper provides a brief but informative overview of ESDM research. Second, the paper discusses the ESDM program in the context of St. Louis Arc, a non-profit agency supporting individuals with intellectual and developmental disabilities and their families to lead better lives. The intended audience for this paper includes parents of children with or at risk for autism, Board Certified Behavior Analysts (BCBAs), occupational and speech therapists, general and special education teachers, and non-profit organizations providing clinical and community outreach programs for children with or at risk of autism.

**Keywords:** Autism; Children; ESDM; Empirical evidence; Clinical and home component

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### Introduction

According to the American Psychiatric Association [1], autism is a neurodevelopmental disorder characterized by persistent deficits in social communication, social interaction and restricted, repetitive patterns of behavior. As already stated, autism is estimated to affect 1 in every 70 children (1 in 43 boys and 1 in 200 girls) in the state of Missouri [2]. The etiology of autism is multidimensional and complex. However, reports suggest that the disorder has a strong genetic basis [3]. Autism is diagnosed four times more often in males than females [1]. According to the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [1], autism is diagnosed based upon persisting deficits of social communication and interaction; restricted and repetitive behaviors, interests, activities. The core characteristics of autism are frequently associated with other neurodevelopmental disorders including intellectual disability [4], attention deficit hyperactivity disorder (ADHD), specific motor and language disorders [1]. As a result, the nature of autism and

its coexisting disorders can compromise a child's functioning and development across different contexts and settings (at school and/or at home and throughout the wider community). However, there are several evidence-based interventions designed to reduce symptom severity and subsequently improve developmental functioning across various domains. As previously stated, ESDM is one of many evidence-based interventions for children with autism, ages 12 to 48 months [5]. There is a growing body of empirical evidence supporting the efficacy of ESDM for this population of children and their families. For example, Rogers et al. [6] adopted a randomized controlled trial and compared the efficacy of parent-implemented ESDM (P-ESDM) trials to community treatment. Results showed that both groups demonstrated significant gains on measures of language ( $p < 0.05$ ) and displayed significant decrease in autism symptoms ( $p < 0.05$ ). These results are significant given that children assigned to the control group received almost twice as many hours as children in the P-ESDM group. Warren [7] conducted a systematic review of early intensive behavioral and developmental interventions

for children with autism. Results showed that children who participated in ESDM demonstrated significant gains in language and cognitive skills. Other research [8] involving a randomized controlled trial found that the children who participated in ESDM showed significant improvements in IQ, adaptive behavior, and autism diagnosis compared with children who received community-intervention. Using ESDM, Vismara et al. [9] compared distance learning and live instruction for community-based therapists. Results indicated that children made significant gains over time and across teaching modalities. In another study, researchers [10] reported that children at risk for autism who participated in ESDM demonstrated significant improvements in language and cognitive domains post-intervention. Other research [11] documented that children with autism who participated in ESDM demonstrated improvement in language and social skills. The previous studies referenced have been conducted in many countries including Australia, Canada, Italy and the United States. However, more studies are warranted in determining the efficacy of ESDM across the wider socioeconomic landscape.

## What is the Early Start Denver Model (ESDM)?

In order for therapy to be more effective in treating children with autism, it became apparent over time, interventions had to start early [12]. ESDM was designed as a comprehensive, naturalistic developmental behavioral early intervention approach for children (ages 12 to 48 months) with or at risk for autism [5]. The objectives of ESDM are to alleviate the severity of autism symptoms in children and to enhance children's developmental functioning across many domains, including cognitive, social-emotional, adaptive, and language skills. The program reflects a developmental curriculum that defines the skills to be taught at any given time and a set of teaching procedures used to deliver this content. It is important to highlight that ESDM is not tied to a specific delivery setting but can be delivered by therapy teams and/or parents in group programs or individual therapy sessions in either a clinic setting or the child's home. ESDM is characterized by aspects of applied behavioral analysis (ABA) therapy with relationship-based and developmental approaches. The core features of the program include the following:

1. naturalistic applied behavioral analytic strategies,
2. sensitive to normal developmental sequence,
3. deep parental involvement,
4. focus on interpersonal exchange and positive affect,
5. shared engagement with joint activities,
6. language and communication taught inside a positive, affect-based relationship.

## ESDM in the Context of St. Louis Arc

Before exploring ESDM in the context of St. Louis Arc, it is important to reiterate that this article is a commentary paper. It is not a research and/or review article. St. Louis Arc is dedicated to providing early evidence-based intervention programs for

children with or at risk of autism and related developmental disabilities and/or delays. In the state of Missouri, our agency is only one of four ESDM providers. We currently have three ESDM certified clinicians who use a variety of teaching environments to deliver the program. Prior to the implementation of ESDM, our clinicians administer and complete baseline assessments on individual children using the ESDM checklist with input from parents and/or caregivers. The process of collecting baseline data is important as it allows our interdisciplinary team to compare data before and after ESDM has been implemented. At St. Louis Arc we work closely with children in our inclusive pre-school setting. Using a ratio of 1:1, this process involves developing individualized, developmentally-appropriate teaching objectives and teaching steps. ESDM is also delivered to children in the comfort and familiarity of their home. While this approach ensures consistency of practice, it also allows our clinicians to ascertain whether individual outcomes can be generalized across people and settings. This is something that other ESDM providers in Missouri fail to offer children and their families. According to our latest enrollment data (April 2018), we currently serve 9 children on a full-time basis at our center location. We also have one child receiving therapy on a part-time basis. There are also 7 additional children using the ESDM model primarily at home. The weekly hours of ESDM provision can vary. For instance, children who attend out center location receive between 6-14 hours per week. Other children receive 2-9 hours of therapy provision in our inclusive pre-school classrooms or in other centers we support. The home component of the program may reflect an additional 1-10 hours per child each week. One of ESDM's more distinguishing traits is the importance that it places on parental involvement. For example, parents attend a seven-week training course (1.5 hours each week) that teaches strategies on how to better understand, engage, and communicate with their child. In addition to implementing the ESDM teaching practices, our clinicians engage in regular evaluation practices. This process involves assessing the efficacy of ESDM by collecting and disseminating data to key stakeholders, particularly parents and/or caregivers.

## Discussion

This paper presented a brief but informative overview of ESDM research. However, its primary objective as a commentary paper was to discuss ESDM in the context of St. Louis Arc, a non-profit agency supporting individuals with intellectual and developmental disabilities and their families to lead better lives. The evidence regarding the positive effects of ESDM on children with autism across several domains is promising [6-11]. Consequently, St. Louis Arc is dedicated to expanding ESDM provisions for children with autism and their families. While we currently have one ESDM classroom at our center location, it is our intention to increase the number of ESDM classrooms to two in the fall. We currently have three ESDM certified staff within our department. However, there are currently five additional staff in the process of becoming ESDM certified. As a result, by having additional staff certified in ESDM will mean that St. Louis Arc can create the necessary landscape to respond to the needs of

children with autism and their families on a larger scale. Another objective of our agency is to pursue potential partnerships with other child development centers in the St. Louis metropolitan area. Finally, our interdisciplinary team are in the planning phase

of conducting research in 2019 on the effects of using ESDM in a clinical and home-based setting. It is hoped that our research findings will be in line with previous ESDM research studies.

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