



## Trends and topics in Early Intensive Behavioral Interventions for toddlers with autism

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### ABSTRACT

The use of applied behavior analysis (ABA) to treat persons with autism goes back several decades. Many specific target behaviors and intervention strategies have been developed. In the last two decades the most heavily studied of these methods has been Early Intensive Behavioral Interventions (EIBI). This package of ABA methods is unique in two ways. First, a broad range of target behaviors are trained for 20–40 h per week. This training is much more treatment per week than what is described in most ABA studies. Second, the children treated are typically 2–3 years of age, which is younger than for most ABA research. Reviews of EIBI have typically focused on the efficacy of the methods. These are important, but at present we argue that these methods are effective. This paper is different in that it looks at current trends such as generalization, parent training, factors that mitigate against effective treatment and the need for follow-up and booster treatment.

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### 1. Introduction

Autism is an area receiving intense attention from researchers worldwide. Genetics are the most frequently researched of all topics. However, other topics are also studied often (Matson & LoVullo, 2009a, 2009b). For example, applied behavior analysis (ABA) has become a well established treatment approach (Kodak, Fisher, Kelley, & Kisamore, 2009; Strachan et al., 2009; Sturmey, Lott, Laud, & Matson, 2005; Williams, 2010). This set of assessment and treatment techniques is based on operant conditioning, and has been especially popular for persons with developmental disabilities (Matson, Bielecki, et al., 1999; Matson, LeBlanc, & Weinheimer, 1999; Matson, Smalls, Hampff, Smiroldo, & Anderson, 1998). Perhaps the most visible and frequently studied of these disorders are autism, PDD-NOS, and Asperger's Syndrome (Brim, Townsend, DeQuinzio, & Poulson, 2009; Matson, Dempsey, & Rivet, 2008; Mayes & Calhoun, 2009; Reilly, 2009; Young, Ruble, & McGrew, 2009; Zalla, Sav, & Leboyer, 2009). These three conditions are often referred to as autism spectrum disorder and in DSM-V, will all be under the diagnosis of autism. These disorders are neurodevelopmental in origin and symptoms are evident early in life (Gillberg, 2010; Leung, Mak, Lau, Cheung, & Lam, 2010; Nyden et al., 2010; Peters-Scheffer, Didden, Mulders, & Korzilius, 2010).

The triad of communication, social skills, and rituals and stereotypies are part and parcel of this disorder (Matson, Dempsey, & LoVullo, 2009; Njardvik, Matson, & Cherry, 1999). These problem areas have been traditional topics of study in the field of applied behavior analysis (Adcock & Cuvo, 2009; Dixon, Bergstrom, Smith, & Tarbox, 2010; Matson, Mahan, & LoVullo, 2009). Also common in the autism spectrum are challenging behaviors (CB) (Coe et al., 1999; Duncan, Matson, Bamburg, Cherry, & Buckley, 1999; Kuhn & Matson, 2001; Matson et al., 1997; Matson & Rivet, 2008; Paclawskyj, Matson,

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Bamburg, & Baglio, 1997; Paclawskyj, Matson, Rush, Bamburg, & Baglio, 1997; Paclawskyj, Matson, Rush, Smalls, & Vollmer, 2001; Rojahn, Aman, Matson, & Mayville, 2003; Smith & Matson, 2010a, 2010b). As with the core features of autism, CB are frequently treated with ABA (Applegate, Matson, & Cherry, 1999; Matson, Bamburg, Cherry, & Paclawskyj, 1999; Matson, LoVullo, Boisjoli, & Gonzalez, 2008).

Psychopathology is also a comorbid disorder that occurs frequently with autism and often is confused with CB. This problem had led to over medication, and the application of medications for problems where they will not prove to be effective, and can compound existing problems, specifically with respect to serious side effects (Fodstad et al., 2010; Matson, Fodstad, Neal, Dempsey, & Rivet, 2010). This problem may largely be alleviated by the development of more effective ABA methods within both assessment and treatment. A review of these and related issues follows, with particular emphasis on current trends and future developments.

### 1.1. Early Intensive Behavioral Interventions (EIBI)

#### 1.1.1. Why empirical methods are important

Arguably the most effective treatment for autism is applied behavior analysis. Because of this, intervention at very young ages, generally by 2 or 3 years, is recommended. Some researchers have even gone on to conclude that ABA is the only treatment that produces comprehensive, lasting results for autism (Foxy, 2008). Developing evidence based methods is essential, and it is incumbent on professionals to educate the general public on these methods. Tremendous amounts of misinformation are available, and are exacerbated by ill informed and/or unscrupulous professionals who advocate for all manner of bogus treatments (Shute, 2010). And, the internet, while a wonderful development in many respects, makes it very easy to disseminate untested, nutty treatments. For example, Green et al. (2006) identified 111 different treatments for autism. They surveyed 552 parents of children with autism and found that on average seven different treatments had been tried for every child. Many of these treatments have limited research to support their use such as special diets (27%), vitamin supplements (43%) and sensory integration. Unfortunately, this is not all about selecting treatments based on good data. In a particularly telling study, Schreck and Mazur (2008) surveyed 469 Board Certified Behavior Analysts (BCBA). Not all BCBA supported the use of ABA methods to treat autism, although most were so inclined. Even more amazing, and at the same time disappointing, BCBA endorsed and used all types of untested treatments despite their belief that the treatments were difficult to implement, not cost effective and not supported by research. This study is important since it suggests that market forces that go above and beyond demonstrated treatment effectiveness are driving treatment decisions. BCBA would be among the groups with the greatest knowledge of EIBI. The fact that this group is not uniformly on board with EIBI as a first treatment option does not speak well for wide spread dissemination. Having said that, treatment effectiveness should be the primary rationale for choosing an intervention.

#### 1.1.2. Empirical support

Peters-Scheffer, Didden, Korzilius, and Sturmey (2011) conducted a meta-analysis of 11 studies with 344 children who had autism. They conclude, as have many others, that the results strongly support the effectiveness of EIBI (Hayward, Eikeseth, Gale, & Morgan, 2009). Also, Goin-Kochel, Myers, Hendricks, Carr, and Wiley (2007) found high rates of impairment but none of the children were able to enter school without additional staff support. Similarly, Shi, Yu, Guo, and Li (2007) did a follow-up for 48 children from an initial group of 85 who at ages 2–6 years received 30–40 h of EIBI for 3–12 months. They found that 43 of 48 children continued to improve, with 29 entering normal kindergarten. Granpeesheh, Tarbox and Dixon (2009), based on studies such as this, concluded that there is a significant amount of research evidence supporting EIBI. Remarkably, despite thousands of ABA-EIBI studies on specific core deficits, and related challenging behaviors and skills, and EIBI studies as well, some researchers still question the efficacy of these methods. Morris (2009) argues that this occurs because some researchers misunderstood and/or misrepresent ABA. One of the most recent of these papers is by Spreckley and Boyd (2009) who conclude that ABA did not produce better outcomes than standard care for children with autism. This conclusion and the errors in the paper are breathtaking. Equating one package method, EIBI, to the vast number of ABA methods that have been developed is one stark example.

Smith, Eikeseth, Sallows, and Graupner (2010) provide an excellent rebuttal of their study. Smith et al. (2010) however stress that they agree with Spreckley and Boyd (2009) that large multi-element randomized clinical trials are needed to narrow the confidence interval for effect sizes. We do not support this approach. Studies on ABA and EIBI, whatever the level of methodological sophistication, routinely demonstrate good or superior effectiveness. The effects of all studies are in the direction of positive effects. From our perspective this issue is no longer debatable, and has not been for some time.

#### 1.1.3. Cure or not

Lovaas (1987) went so far as to suggest that these interventions cure autism, at least for some children. Given that these markedly improved children have not been followed into adulthood, such a claim cannot be substantiated. Granpeesheh, Tarbox, Dixon, Carr, and Herbert provide a more measured assessment of EIBI effectiveness. They conclude that a subset of children achieve a level of functioning that is indistinguishable from typically developing peers. Cure implies that regression in these skills will not occur even without additional treatment. The more likely scenario is typical functioning can be achieved in some autistic children, but is likely to regress without additional, periodic intervention. Houlin (2010) also makes some excellent points. She states that EIBI have the best empirical support to date. Houlin (2010) also underscores the

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