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## Early Intensive Behavioral Interventions: Selecting behaviors for treatment and assessing treatment effectiveness



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### ABSTRACT

Early Intensive Behavioral Interventions (EIBI) is well established as the most effective treatment for young children with Autism Spectrum Disorders (ASD). A hallmark of this intervention model is the bundling of multiple behaviors simultaneously for intervention. With the addition of various comorbid problems such as challenging behaviors and psychopathology, it becomes incumbent on clinicians to prioritize behaviors for intervention. Based on the studies conducted to date, little has been done in this regard. Additionally, general measures of ASD, adaptive behavior and cognitive functioning are primarily used to assess outcomes, many of these measures were not designed to assess treatment effects, and little evidence is available to link intervention to specific items on these scales.

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### Introduction

The study of Autism Spectrum Disorders (ASD) has become very popular in the mental health field. This trend may be due to several factors. For example, once considered to be rare, ASD is now believed to be frequent and chronic (Li, Chenm, Song, Du, & Zheng, 2011; Matson & Kozlowski, 2011). Additionally, the problems these children exhibit are broad, including core symptoms such as communication, social skills, and stereotypies and rituals (Fodstad, Matson, Hess, & Neal, 2009; Machalicek, O'Reilly, Beretvas, Sigafos, & Lancioni, 2007; Matson & Wilkins, 2007; Matson, Matson, & Rivet, 2007; Matson, Dempsey, & Fodstad, 2009; Smith & Matson, 2010a). Further, a number of comorbid problems also accompany these core features. Challenging behaviors such as aggression, self-injury, and feeding problems are routinely reported (Farmer & Aman, 2011; Kuhn & Matson, 2004; LoVullo & Matson, 2009; Matson & Kuhn, 2001; Matson & Rivet, 2008; Matson, Mayville et al., 2005; Smith & Matson, 2010b; Smith & Matson, 2010c). These findings are critical in treatment planning. Knowing the scope and specific deficits are critical in selecting specific targets for treatment and selecting the interventions that are best

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suiting to treat them (Machalicek et al., 2007; Matson & LoVullo, 2008; Matson & Wilkins, 2008; Matson, Dixon, & Matson, 2005). Finally, this recognition of multiple comorbidities with ASD is in large part the reason why such a large number of skills are packaged together in Early Intensive Behavioral Interventions (EIBI).

As noted, a variety of problems occur simultaneously among persons with ASD (Matson, Hamilton, et al., 1997; Matson, Kiely, & Bamburg, 1997b; Paclawskyj, Matson, Bamburg, & Baglio, 1997). While not prescribed for core symptoms of ASD, pharmacology in the form of psychotropic drugs has become a common approach to the treatment of ASD and related developmental disorders (Holloway & Aman, 2011; Scheifes et al., 2013). However, for the treatment of very young children, such interventions are not advisable due to potential side effects (Matson et al., 1998). Rather, EIBI based or applied behavior analysis has become the intervention of choice (Gould, Dixon, Najdouski, Smith, & Tarbox, 2011; Kuppens & Onghena, 2012; Matson, Boisjoli, Hess, & Wilkins, 2010; Matson, Wilkins, & González, 2008).

It is becoming increasingly evident that a variety of problems tend to occur at high rates among young children with ASD. Intellectual disabilities are particularly common and complicate a positive prognosis for persons with ASD to a considerable degree (Matson, Smiroldo, Hamilton, & Baglio, 1997c). Thus, as this awareness of additional comorbid conditions grows, it is becoming more apparent that all the problems these children display cannot realistically be treated simultaneously. Thus, a critical aspect of EIBI programs is how do researchers select and prioritize the behaviors to be trained. The purpose of this paper was to look at existing trends in the selection of target behaviors and to recommend possible additional strategies to further systematize this process. The types of methods to determine treatment effectiveness are also discussed.

## Method

A literature search was conducted using SCOPUS. Search terms included autism and Early Intensive Behavioral Intervention. Once these articles were identified, the reference section of each article was then searched to identify additional papers. Using these procedures, 32 papers were identified. Thus, a representative number of EIBI studies were evaluated. The method section of each paper was then reviewed. Factors addressed included whether the authors described methods and procedures for prioritizing the skills that would be treated and in what order. Additionally, target behaviors were defined as specific observable behaviors not included in standardized tests. Finally, the specific standardized tests used at pretest and posttest were determined.

## Results and discussion

When treating young children with ASD, a large number of core behaviors and collateral problems need to be treated. Additionally, persons with ASD can range from profoundly intellectually disabled to intellectually gifted. Severe motor problems such as cerebral palsy and epilepsy may also be present. This extremely heterogeneous group of individuals therefore insures that a broad range of skills must be assessed. A good deal of overlap in target skills across individuals will occur. However, there will also be many skills that do not match across children. Thus, a good deal of tailoring of skills and interventions is required. In clinical practice it is therefore necessary to rank order what will be treated. It is impossible to deal with all the skills that are clinically indicated for a given individual. Additionally, many of these skills are sequential. For example, the clinician cannot work on complex verbal and nonverbal interaction skills until the child has been taught to attend and make eye contact. The outcome measure reported and often the descriptions of the treatment procedures do not reflect this reality.

It is certainly possible that informal or formal methods were used to prioritize target behaviors. In fact, it would not be possible to do otherwise. However, none of the studies reviewed described how this process was executed. Systematic methods and procedures should be developed and used. For example, precursor skills such as in seat attention, following directions, and elimination of challenging behaviors would be the first priority. A second tier of skills could be based on severity of core symptoms of ASD and adaptive skills. Obviously, some skills will be stronger and some weaker. Thus, strength of the skills should be considered, typically applying treatment to the most problematic behaviors first. Another factor to consider involves behaviors that are closely related to one another and which may generalize from one skill to the next. This factor is also worth considering when prioritizing skills for treatment. The child will be able to acquire some skills faster than others. Variables of this sort should also be taken into account. Past history and a few brief sessions can be used to better define this factor. The general point however, is that a number of issues can be used to systematically establish treatment priorities.

Target behaviors were found in 13 of the 32 papers (41%). The methods used however were highly variable. Methods employed included treatment plans, progress notes, in vivo observations, recording data from videotaped observations, frequency counts of tantrums and other challenging behaviors, toileting problems, a checklist of core ASD symptoms, communication objectives, and pre-established behavioral objectives. The most commonly recorded target behaviors were challenging behaviors followed by social and communication behaviors.

Unquestionably, the most common method used to evaluate treatment effectiveness has been standardized scales. These tools allow for the assessment of a broad range of behaviors. However, these methods are not tailored to the individual nor are they as treatment sensitive as target behaviors. A broad range of scales were used including the *Vineland Adaptive Behavior Scales* (21 of 32 studies; 66%), standardized IQ tests (13 of 32 studies; 41%), and the *Bayley Scales of Infant Development* (6 of 32; 19%). There were many other measures used as well. All of these methods were employed infrequently.

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