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Early Intensive Behavioral Intervention (EIBI) for Children with Autism Spectrum Disorder (ASD): A meta-analysis

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RESEARCH QUESTION
To what extent is EIBI effective in increasing the overall functioning for young children with ASD?

INTRODUCTION
According to data from the U.S. Centers for Disease Control and Prevention, one in 59 are now diagnosed with ASD.

Types of participants
- The studies included participants with ASD between 12 months and seven years old.
- All studies were published in English.
- The inclusion criteria limited the children with ASD who showed little or no change at all.

METHODOLOGY
The primary database used to search for relevant research studies is ERIC. This poster included studies met the following criteria:
- No Control Group, Quasi-Experimental Design (CCT)
- Early intervention programs were only included if the early intervention program met the criteria of the study.
- Early Intervention Programs (EIP) included those that were supported by evidence-based practices.
- The designs: RCT, QCT, CCT.

RESULT OF THE INTERVENTIONS OF PRIMARY OUTCOMES

<table>
<thead>
<tr>
<th>Primary Outcome</th>
<th>Number of studies</th>
<th>Effect Size</th>
<th>Random Effect Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptive Behavior</td>
<td>Four studies (Cohen et al., 2002; Choen et al., 2006)</td>
<td>g = 0.623 (95% CI 0.313 to 0.936; p &lt; 0.001)</td>
<td></td>
</tr>
<tr>
<td>Intelligence (IQ)</td>
<td>Four studies (Cohen et al., 2002; Choen et al., 2006)</td>
<td>g = 0.572 (95% CI 0.010 to 0.936; p &lt; 0.001)</td>
<td></td>
</tr>
<tr>
<td>Communication skills</td>
<td>Four studies (Cohen et al., 2002; Choen et al., 2006)</td>
<td>g = 0.300 (95% CI 0.040 to 0.560; p = 0.005)</td>
<td></td>
</tr>
<tr>
<td>Symptom severity</td>
<td>Three studies</td>
<td>g = 0.150 (95% CI 0.000 to 0.156; p &lt; 0.001)</td>
<td></td>
</tr>
</tbody>
</table>

RESULT OF THE INTERVENTIONS OF SECONDARY OUTCOMES

<table>
<thead>
<tr>
<th>Secondary Outcome</th>
<th>Number of studies</th>
<th>Effect size</th>
<th>Random Effect Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Skills</td>
<td>Four studies (Cohen et al., 2002; Choen et al., 2006; Remington et al., 2007)</td>
<td>g = 0.260 (95% CI 0.107 to 0.413; p = 0.001)</td>
<td></td>
</tr>
<tr>
<td>Daily Living Skills</td>
<td>Three studies (Choen et al., 2002; Choen et al., 2006; Remington et al., 2007)</td>
<td>g = 0.572 (95% CI 0.010 to 0.936; p &lt; 0.001)</td>
<td></td>
</tr>
<tr>
<td>Parent Stress</td>
<td>No comparison</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Achievement</td>
<td>No comparison</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION
- The researchers identified eight studies used EIBI, so the number of studies meeting the criteria was few. Therefore, that was led to the difficulty to make a definitive conclusion of the EIBI effect.
- Several factors affect the applicability of the result and findings from the studies.
- The most significant issues that six studies have used QCT design and presenting group imbalances and limits the validity of those internal studies and result in a difficulty to ensure the strength of EIBI.
- Due to the use of different measures and measurement, researchers used narrative synthesis data to report the outcomes of IQ, symptom severity, parent stress and Academic achievement.
- Only one study using Fara et al. (2016) used a randomized control trial to investigate the use of EIBI with children with ASD.
- Most studies included a small sample size of participants. Therefore, the gains cannot be generalized for all children with ASD.

GAPS AND RECOMMENDATIONS
- Only eight studies were identified used EIBI so, the number of studies meeting the criteria was few. Therefore, that was led to the difficulty to make a definitive conclusion of the EIBI effect.
- The inclusion criteria have limited the age of all participants to more than seven years old, so because of that, the generalization of the findings was not appropriate for all ASD.
- Besides, the inclusion criteria in most studies have limited the children without significant medical impairment. Additionally, there was some evidence that the younger participants showed more significant improvement than the older participants over time.
- The findings of the studies presented that there was some evidence that EIBI is an effective treatment for children with ASD.

INCLUDED STUDIES
Eight studies were included in the review to examine EIBI for young children with ASD as follows:
- Cohen et al., 2002
- Choen et al., 2006
- Remington et al., 2007
- Smith et al., 2015
- Enos et al., 2015
- Vivanti et al., 2016
- Weires et al., 2015
- Controlled Clinical Design (CCT) (Cohen et al., 2002; Remington et al., 2007; Eckhardt et al., 2012; Vivanti et al., 2016; Weires, 2014)

REFERENCES
References available upon request.
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