



Assessment of The Difference in The Developmental Trajectories Among Young Children with Autism After Early Intervention Using a Simplified Skills Tracking as an Assessment Tool

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Abstract

The neuroplasticity of the human brain has also been demonstrated in research to result in significant improvements in cognitive, social, emotional, and motor functioning as a result of early intervention programs. The brain's receptivity to the social world is influenced by early intervention for kids who have been newly detect with autism spectrum disorder (ASD). This, in turn, prevents or reduces the symptoms and severity associated with ASD. Nowadays, even though ASD is not perceived as a disease that needs to be fixed, it is referred to as a condition. The life of a family affected by a child with developmental difficulties is profoundly and permanently altered. The stress on parents could be a barrier to care and effective intervention. As progress in children with autism undergoing implementation is slow, parents need reassurance to motivate them. In this study, a simplified version of the lengthy ABLLS (Assessment of Basic Language and Learning Skills) was used. The progress of the child was graphically shown with different colors. In a simplified version of ABLLS, the ABLLSS provided parents with visual reassurance that their child was improving, which is a great motivator for parent-implemented interpose for youngsters with autism.

Keywords: - ABLLSS, autism, developmental trajectories, IEP, Parental stress

Introduction

Autism spectrum disorder (ASD) is a lifelong condition. Autism is an overarching diagnosis that covers a variety of behavioural and cognitive differences affecting all aspects of the educational process. For children who have just received an autism spectrum disorder (ASD) diagnosis, early intervention may help to avoid or lessen the severity of symptoms by rewiring the brain to be more socially adept. (Wallace and Rogers, 2010). According to recent studies, early intervention may enhance an individual's long-term outcomes (Estes et al., 2015), lessen the severity of core and related characteristics of autism (Warren et al., 2011), and even partially reverse certain symptoms of autism (Rogers et al., 2014). Studies have shown that when parents are involved in the intervention program for young, school-going children with autism, they make better progress in school (Black & Therrien, 2018). Studies have been undertaken to assess the effectiveness of parent training for parents of autistic children (Deb et al., 2020).

Autism spectrum disorder (ASD) is a complex neurodevelopmental disorder characterized by persistent deficits in social communication and interaction and stereotyped behaviours, interests, and activities, as mentioned in the DSM-5 (American Psychiatric Association, 2013). In 2013, the American Psychiatric Association revised the detection criteria for ASD, which greatly broadened the spectrum. Because of neuroplasticity, studies have also shown that early intervention programs may result in significant improvements in physical, social, emotional, and cognitive functioning

(Dillenburger et al., 2002). But studies have shown that a fair amount of pressure is present for parents of kids with autism. Parents who have been told about their child's condition fairly recently show very high stress levels (Prata et al., 2019). The effectiveness of the intervention may be affected by the stress level of the intervention implementation parent. Program efficacy is largely dependent on the parent-professional team working with the kid in the program (Ozonoff & Cathcart, 1998; Ho & Lin, 2020; Jhuo & Chu, 2022; Kuravackel et al., 2018). Educating the parents about the necessity for intensive intervention during the tender formative years of the child with autism is very important and can often reduce stress (Dawson-Squibb, 2020).

Neuroplasticity

Neuroplasticity is the process that leads to learning. Put another way, neuroplasticity is experience-dependent, and the promotion of brain reorganisation requires behavioural training. A child's brain is incomplete at birth. It grows as a result of their perceptions of the world via their senses of taste, smell, hearing, touching, and sight. A baby's brain has around 85 billion neurones at birth. The nerve cells in the brain called neurones use synapses to exchange chemical and electrical impulses with one another. This allows the neurones to create neural networks, which are collections of linked neurones. In a way, our brains are malleable like plastic, in the sense that new neural pathways can be created through the act of consistently practicing new habits and behaviours—hence the term *neuroplasticity*. Functional reorganisation within brain tissue, mediated by alterations in neural circuitry, is a contemporary definition of neuroplasticity (Kleim and Jones, 2008). According to Knudsen (2004), plasticity also refers to the capacity to create new functionalities via synapse consolidation, axonal outgrowths, and elimination. Neuroplasticity, or the ability of brain neurones and neural circuits to physically and functionally alter in response to external stimuli and environmental changes, is thought to be enhanced by intervention for people with ASD (Dawson, 2008). To fully realise its potential for optimum functional reorganisation, the brain requires training.

An extensive literature of neuroimaging findings supports the idea that autism spectrum disorder (ASD) is associated with disrupted brain communication. This is evident in the disruption of white matter microstructure and in functional connectivity analyses (the synchronisation of activation across brain regions) of functional magnetic resonance imaging (fMRI) data. Magnetic resonance imaging (MRI) has provided insights into the brain's foundations, including an early altered developmental trajectory of both global and localised brain structures. (Chen et al., 2011; Bellani et al., 2013).

Assessment Tool

Professionals creating individualised education plans (IEPs) for autistic students often use the Assessment of Basic Language and Learning Skills (ABLLS). For kids with language difficulties, it serves as a monitoring tool, curriculum guide, and evaluation tool. It's very often utilised with kids who have cognitive impairments and autism. When a kid is diagnosed with Autism Spectrum Disorder (ASD), intensive early treatments may result in a better prognosis. According to recent studies, children who get intense autism-specific therapies before the age of three years old do better.

For children with autism, language delays, or other developmental disorders, the Assessment of Basic Language and Learning Skills (ABLLS) is a skills assessment, tracking system, and curriculum guide that helps direct language and crucial learner skills education. The ABLLS-R® was devised by Dr. James Partington and M. L. Sundberg in 1998. The ABLLS-R® provides a comprehensive review of 544 skills from 25 skill areas, including language, social interaction, self-help, academics, and motor skills, that most typically developing children acquire prior to entering kindergarten. It is a tool experts use to measure the communication and learning skills of children with special needs. It checks how well a child can talk, interact with others, care for themselves, learn new things, and use their body.

As you write goals for children with autism, it is crucial to be as specific as possible. ABLLS may be used to develop specific goals and track progress over time. ABLLS is a tool that serves three purposes. It is primarily an assessment, but it also provides a curriculum for teaching children with autism and acts as a monitoring device. The main area of focus is the basic learner skills assessment, which consists of 15 subcomponent skill areas: play and leisure, imitation, visual learning ability, language and communication, social skill interaction, group behaviour, responding, and classroom functioning.

One limitation of using the ABLLS-R® is that it is a very lengthy process. The number of specific resources needed is also high. Intensive early intervention could lead to a more positive outcome for children with ASD, as shown by research worldwide. For children newly diagnosed with ASD, a simplified version of ABLLS, the ABLLSS, was administered as a test in this investigation. This test

was based on the Behavioural Language Assessment Form (BLAF) by Sundberg & Partington (1998). The ABLSS data was relatively easier to score than the ABLLS which had a total of 12 questions.

Objectives of the assessment:

The main objective of this investigation was to explore the degree to which two predictors, viz., age at entry and autism severity (measured from intake to early intervention), are related to children's outcomes.

The secondary objective was to note any difference in the developmental trajectories vis-à-vis the two predictors using ABLSS as an assessment tool.

The third objective was to see if the simplified skills tracking based on ABLSS as an assessment tool was enough to provide parents with a visual representation of the skill development of their child following early intervention.

Material and Methods

Analyses were conducted on ABLSS data from 15 (13 male) participants who had undergone intense early intervention at the Autism Society West Bengal (ASWB) in Kolkata, India. Children ranged in age from 21-72 months. The severity of autism also varied among these 15 participants. Prior to enrolling in the program, each kid got a clinical diagnosis of ASD based on a thorough psychological examination. 7 (seven) were really severe. Five were severe, while three were moderate.

A simplified skills tracking system based on the BLAF protocol, which includes a set of grids (ABLLS graph), comprises a skills tracking system for documentation of the progress of each participant. There are 12 areas for assessment, as shown in Table I. There are five options per area, which can be used to colour the respective score under the respective skill area.

Example of a question with the options is given below.

I. REQUEST (MANDS) _____

How does the student communicate his needs and desires?

1. Is unable to request reinforcement or exhibits negative behaviour
2. uses objects to pull people, points, or stands.
3. Asks for reinforcers using one to five words, signs, or images
4. Requests reinforcers using five to ten words, signs, or images
5. Making repeated requests with ten or more words, symbols, or images

Table. 1 The skills tracking sheet

	Cooper ation	Req uest	Motor Imita tion	Vocal Play	Vocal Imita tion	Match to Sample	Recep tive	Labell ing	RFFC	Conver sation	Letters and Numbers	Social Interaction
5												
4												
3												
2												
1												

Results

The study's findings are consistent with using the ABLLS to monitor children's skill development after early intervention. The use of ABLSS highlighted the rapid skill development in different areas among most young children. However, skill development increased at different rates for different children. Thus, it emphasized differential degrees of progress in various skill areas along different developmental trajectories.

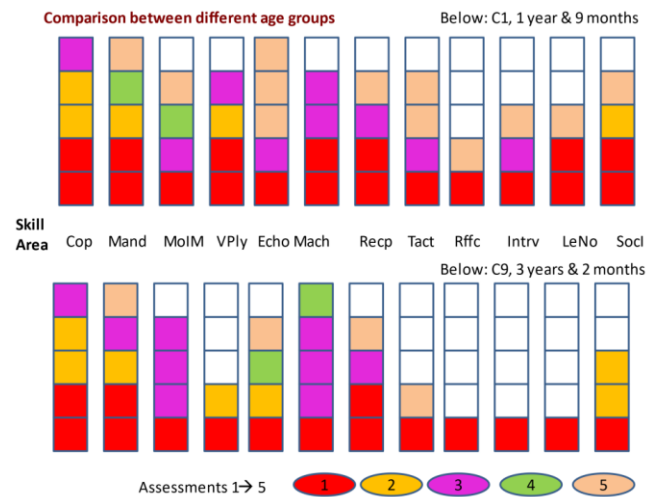


Fig. 1. Comparison of the progress among children of different age groups viz. 1 year and 9 months & 3 years and 2 months.

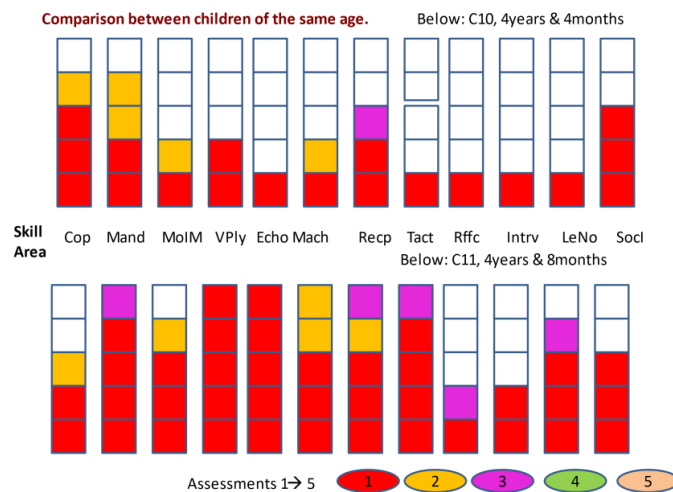


Fig. 2. Comparison of the progress among children of nearly same age groups viz. 4 years and 4 months & 4 years and 8 months

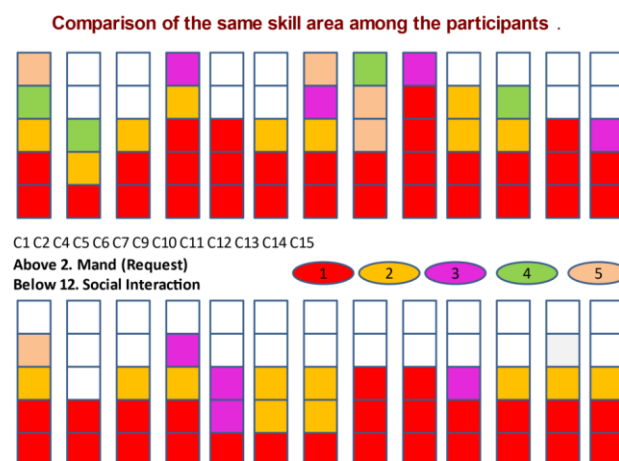


Fig. 3. Comparison of same skill area among the participants. Skill areas are viz. Mand (Request) & Social Interaction.

Relation between Age and Severity and outcome following intervention

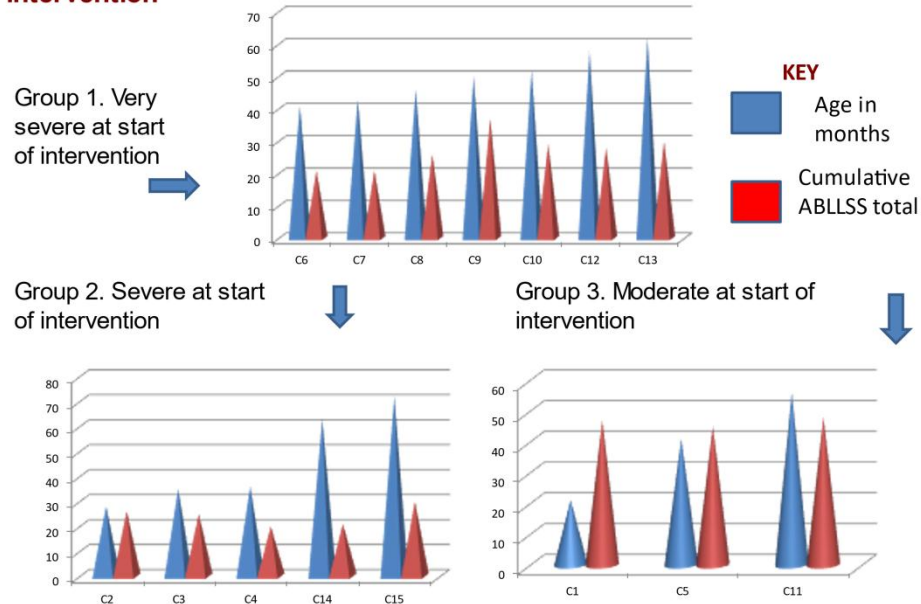


Fig. 4 Graphical representation of progress in an autistic child following early intervention.

Discussion

Several studies have shown that whenever parents are involved in providing intensive intervention for their child, the outcome is usually good (Taylor, 2018). But most often, it has been found that the parents of these young autistic children have a high level of stress. There have been studies on how certain interventions can reduce the level of stress in parents of children with ASD (Curley *et al.*, 2023). Researchers felt that interventions for autistic children may be far more effective when the test level is low for the parents who are implementing the intervention for their child.

Nowadays, even though autism spectrum disorder is not perceived as a disease that needs to be fixed, it is referred to as a condition (Baron-Cohen, 2017). The life of a family affected by a child with developmental difficulties is profoundly and permanently altered. These days, raising a child has become quite difficult, particularly when compared to typical experiences that all parents go through. This is largely because parents lead such hectic lives. Studies have been undertaken to determine the level of stress among parents involved in the intervention. Similar studies have been undertaken to determine both the level of stress and resilience among the parents (Ilias *et al.*, 2018). Unless the parents are motivated to put in their full effort in the intervention, the outcome will stagger.

The outcomes of early intervention differ among the children based on a number of factors. The progress is different, and sometimes it may be difficult to quantify. Michelle Petrongolo mentions in her 2014 dissertation that stress among parents could be a barrier to care (Petrongolo, 2014). So, if parents are introduced to a graphical representation of their child's progress by the special educator responsible for early intervention, then their motivation and positive vibes regarding the early intervention will be high. This is expected to lead to parent empowerment, which will have a positive effect on the autistic child's skill development in various domains (De *et al.*, 2015). It has been seen that when parents and professionals collaborate to satisfy the needs and goals of people with autism, it often has a very good effect on those people's lives. In particular on the level of their emotional, social, and cognitive growth. (Whitbread *et al.*, 2007).

This study provided an insight into the individualized development trajectories of the children with ASD following intensive therapy/intervention. The findings of this study are in sync with the heterogeneity observed in children with autism in different case studies. The different trajectories that are revealed among the participants allow the assessor to identify critical skills that may be missing from a child's repertoire (Figs. 1–3). This information would help in developing an IEP for each child with ASD. When using this instrument, professionals should be aware of the child's developmental stage and the ABLSS's capacity to capture skill development that is suitable for the child's stage of development. It is seen that all autistic children show varying progress following intervention (Fig. 4).

Conclusion

For parents, receiving a developmental disorder diagnosis for their kid may be one of the most upsetting and transformative experiences of their lives. A great deal of mental strain may result from parents learning that their kid has a developmental issue. Parents had formed an idea of their child's life before the diagnosis. When this significantly changes after diagnosis, parents often want proof that their kid is getting better, even if it's progressing slowly. The experience of disability is influenced by many social variables. Interviews with parents revealed that motivation plays a great role in intervention. In a simplified version of ABLLS, the ABLLSS provided parents with visual reassurance that their child was improving, which is a great motivator. This indicator that the child is making progress often decreases the mental strain on the parents, especially the primary caregiver, who in most cases is the mother. The impact of the visual reassurance that the simplified version of ABLLS gives parents is profound. The parents get the energy and motivation to provide intensive intervention and support their child with autism.

Limitation of the study

This research work has been done with a small sample size. So the findings cannot be generalized in totality. The result could be different if a large sample is chosen from various backgrounds. Environmental factors prior to the intervention period could have an effect on the final outcome.

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Conflict of Interest:

The authors declare that there are no conflicts of interest regarding the publication of this work.

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