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P U B L I S H I N G

Effectiveness of the ABA Method and Individual Education Programs for the Treatment of Autistic Children: A Case Study

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Abstract

Applied Behavior Analysis (ABA) is a therapy based in the scientific study of learning and behavior. ABA applies the principles of learning and motivation from the analysis of behavior, for solving problems of everyday life. The goal of ABA program is the implementation and evaluation of systematic modifications of the environment to produce socially significant improvements for human beings. The main purpose of this study was to examine and to highlight the effectiveness of the ABA program in children with autism. For the realization of this study a single case designed is used. The subject of the study was a 3 years old male, diagnosed with Autism at 2 years old. Implementation of the intervention lasted 3 years. The ABA program and an Individual Education Plan is developed each year according to the child needs for the period 2018 - 2021. The progress in achieving therapy goals was assessed using a Likert scale. At the end of each year the collected data are analyzed. After receiving for three years ABA therapy the subject made improvements in all goal areas. At the end of the program the subject of the study showed improvement of cognitive, language and social skills.

Keywords: Applied Behavior Analysis, treatment, methods, autistic children

1. Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by deficits in social communication and the presence of restricted interests or activities and repetitive behaviors (American Psychological Association, 2013).

Statistics for autistic children continue to change as epidemiological reports show that the numbers of children with autism are increasing worldwide (Kopetz & Endowed, 2012).

The prevalence of children with autism spectrum disorder according to Centers for Disease Control and Prevention, is one in 54 children based on 2016 data (Knopf, 2020).

Although ASD is a lifelong disorder, studies have shown that early intervention may result in improvements in communication, social skills, and even increased intelligence (American Academy of Pediatrics, 2001).

Different studies show that without effective intervention most people with ASD require lifelong specialized educational, family and adult services and effective early intervention is crucial to the success of children who are diagnosed with Autism Spectrum Disorder (Jacobson et al, 1998).

Actually, there is no evidence published about the number of children with ASD in Albania but is noticeable that numbers are increasing (Sulaj, 2015). Although the numbers are increasing the services for ASD children are limited. Studies show that interventions for children with ASD in Albania are lacking and there is a need for increased professional training (Wallace et al, 2012; Sulaj, 2015).

The ABA method was implemented in Albania after the 2000s. There are many children who receive the ABA therapy each year. Many of them progress in minimizing stereotypical behaviors, reducing the level of aggressive behaviors, and improving cognitive development and social behaviors.

1.1   Purpose of the study

The main purpose of this study is to examine and to highlight the effectiveness of the ABA program in children with autism.

1.2   Research questions.

Two main research questions of the study are:
1.   Can autistic children progress through the ABA therapy?
2.   How does the duration of therapy impact the progress during ABA therapy?

2.   Literature Review

2.1   What is Applied Behavior Analysis?

Applied Behavior Analysis (ABA) is an approach that utilizes behavioral principles to therapy. It focuses on using reinforcement   to improve behavioral, social, communication, and learning skills, and utilizes behavioral principles to set goals, reinforce behaviors, and measure outcomes.

ABA therapy uses different strategies and techniques to teach autistic people new skills and improve their behavior. Learning can take place in different contexts. Direct learning is an intensive method structured and used directly, including specific intervention and learning authentic situations. For example, learning to prepare a meal or learn how to play musical instrument (McPhilemy & Dillenburger, 2013).

When ABA techniques are used with young autistic children, it is often called Intensive Early Behavioral Intervention (IEBI) (Rosenwasser & Axelrod, 2002). According to Granpeesheh et al (2009), EIBI consists of the application of ABA principles and procedures for the rehabilitation of young children with ASD.

Discrete Trial Teaching (DTT) is a common technique integrated into many early and intensive behavioral intervention (EIBI) programs for children diagnosed with autism spectrum disorders (Granpeesheh et al, 2009). DTT is a teaching strategy that enables students to acquire complex skills and behaviors by first mastering the components of the target skills (Vismara & Rogers,2010).

Another approach that use strategies based on behavioral analysis principles is Natural

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Environment Training (NET). This approach developed by Sundberg and Partington in 1998, is an educational program based on the principles of verbal behavior. It emphasized teaching in natural contexts and focusing in child interest to guide learning (Weiss, 2001).

ABA programs for individuals with autism initially used mainly DTT. Now days ABA programs, continue to evolve, with a greater emphasis on the generalization and spontaneity of skills learned.

2.2   How to distinguish an ABA procedure or program?

There are certain characteristics of ABA that distinguish it. Applied behavior analysis is a field of psychology focused on analyzing and modifying human behavior to solve important social problems. ABA focuses more on changing behavior than on changing cognition or personality. For example, ABA can be used to reduce the hyperactive and deficient behaviors that are characteristic of autism. For some children with autism, self-stimulation is a behavior that conflicts with the learning process and social interaction. Behavior analysts can use behavioral techniques to replace these types of behaviors (Smith, 2010).

ABA is based on the principles of behavior which have been built after more than 40 years of study in different populations. ABA emphasizes modifying events in the environment to change behavior. The data obtained from the observation of events are analyzed. Once the variables that control the behavior are identified, they are modified in such a way that the behavior increases or decreases.

The intensity and duration of the lesson is an important consideration when planning an ABA program. Extensive research consistently shows that in order for students with autism to achieve the maximum effects of the intervention, ABA must be provided every week, with instruction, for a minimum duration of 2 years (Prizant & Fields-Meyer, 2015).

There are four ABAs techniques that have been identified to be effective including video modeling, visual strategies, social script fading, and task analysis (Hayward et al., 2009).

2.3   Does Applied Behavior Analysis (ABA) work for autistic children?

Different studies show that Applied Behavior Analysis is an effective approach to help individuals with ASD and to improve language, social and cognitive skills (Peters-Scheffer et al., 2011; Reichow, 2012; Ithriyah, 2018; Makrygianni et al., 2018).

In the meta - analytic study of Peters-Scheffer et al., (2011) regarding the effectiveness of ABA therapy in early interventions for children with autism, authors concluded that behavioural intervention was effective in children with autism spectrum disorders compared with other treatments (Peters-Scheffer et al, 2011).

Another meta - analytic study of Makrygianni et al., (2018) indicated that ABA programs are moderately to highly effective for children with ASD in different areas. ABA therapy was effective in improving intellectual abilities, communication skills, adaptive behavior, socialization and had low effectiveness in improving daily living skills (Makrygianni et al,2018).

Reichow (2012) came to the conclusion that ABA is an extensive treatment model for individuals with ASD and should be given strong consideration when deciding treatment options for children with ASD. However, is important to take in consideration intensity of the treatment, duration, and therapist experience in future research.

3.   Methodology

This study examined the effectiveness of applied behavioral analysis on a child with autism. For the realization of this study a single case designed is used. According to Kazin (1982), single case designs are well suited to evaluate change over time and to investigate the individual case.

The subject of this study was 3 years old (at the beginning of the treatment) male, diagnosed with Autism at 2 years old.

The procedure for this research was based upon the Applied Behavior Analysis technique and the application of Individual Education Plan (IEP). The subject of research was examined both prior, during and after intervention and examined the individual's ability to perform certain goals during the treatment period.

The duration of the subject involvement in the study was three years. The ABA program and an Individual Education Plan is developed each year according to the child needs for the period 2018 - 2021 (IEP-1, 2018-2019; IEP-2, 2019-2020; IEP-3, 2020-2021). The case study subject was provided with treatment at a rate of 4.5 hours per week.

The progress in achieving therapy goals was assessed using a Likert scale. At the end of each year the collected data are analyzed. Upon completion of data collection, the information was entered into SPSS for analysis.

4. Results

The following results represent the child's progress in relation to the goals set for each year of intervention using ABA method and Individual Education Programs.

4.1 Therapy goals achievement

Graphic presentations show the child's achievements of the specific goals of the ABA method and Individual Education Programs: IEP-1 (2018-2019); IEP-2 (2019-2020); IEP-3 (2020-2021).
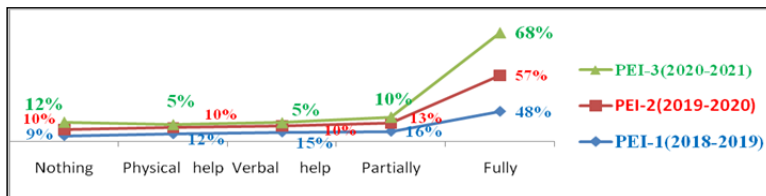

Figure 1: Interaction

Graphic presentation No.1, shows that the autistic child after being treated with the ABA therapy and IEP (1+2+3), managed to interact with peers as follows: IEP- 1- 48% of goal completed; IEP-2-57% of goal completed; IEP-3- 68% of goal completed.
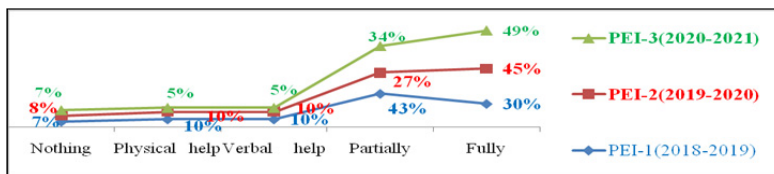

Figure 2: Engagement

As shown in Figure 2, after the child practiced with the ABA Program and Individual Education Plans (IEP-1+2+3), achieved the following results: avoided negative behaviors and engaged in the training process with peers and therapist. The achievements expressed in percentage are: IEP-1- 30%   of goal fully achieved; IEP-2- 45% of goal fully achieved; IEP-3- 49% of goal completed.
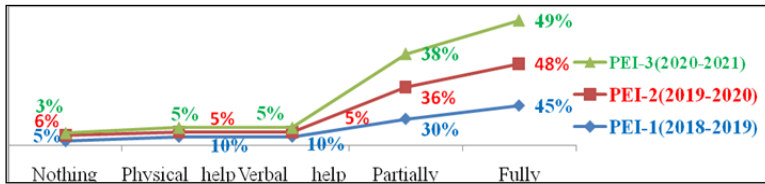
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Vol 12 No 3
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Figure 3: Imitation of figure

The graphic representation of the figure imitation shows that the child increased his ability for imitation and achieved the results of the rubrics, in fine and global motoring. Expressed in percentage, the results achieved were: IEP-1- 45% of goal completed; IEP-2 -48% of goal completed; IEP-3- 49% of goal completed.
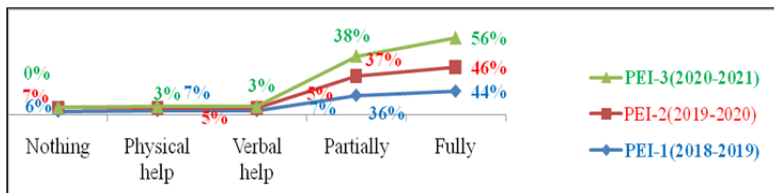

Figure 4: Imitation of sound

The Figure 4 shows the Imitation of the sound the subject achieved results and the results of the rubrics in giving and receiving messages, as follows: IEP-1-44% of goal completed; IEP-2- 46% of goal completed. IEP-3- 56% of goal fully achieved.
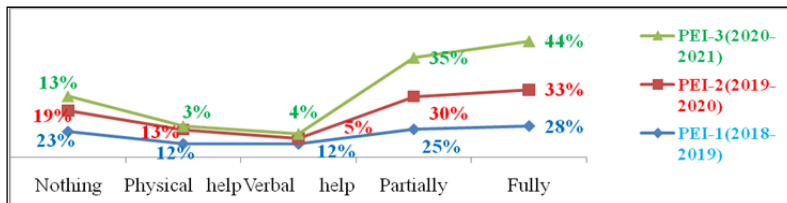

Figure 5: Match the example

The graphic presentation shows that related to goal of matching the example the subject managed to put a figure in its place and distinguish the object based on the model. IEP-1- 28% of goal fully achieved; IEP-2- 33% of goal fully completed; IEP-3- 44% of goal completed.
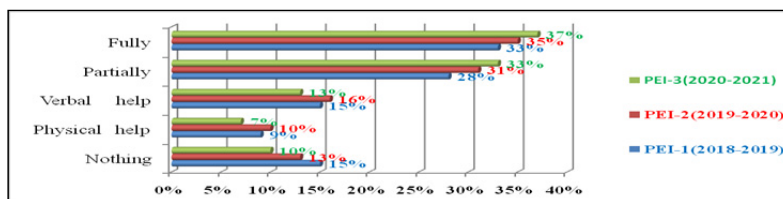

Figure 6: Perception

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Graphical presentation of the perception shows the subject managed to group and place objects at the request of the therapist. After the application of IEP-1-33% of goal completely achieved; IEP-2-35% of goal completely achieved; IEP-3- 37% of goal completely achieved.
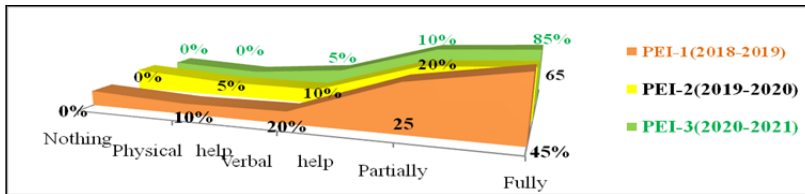

Figure 7: Labeling of items

Graphic presentation of the labeling of items goal shows that the subject managed to label the objects based on the color, shape, the rubrics of the ABA program.

After applying IEP-1 + 2 + 3 the following results were achieved: IEP-1-45% of goal completed; IEP-2- 65% of goal completed; IEP- 85% of goal completed.
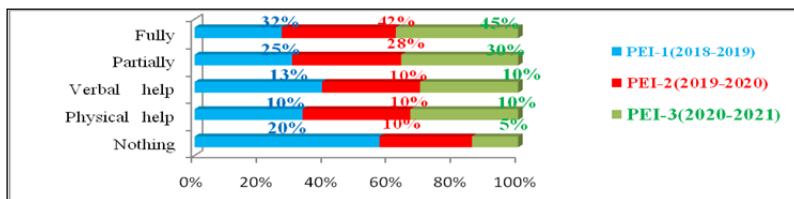

Figure 8: Perception by function

The graphical representation of the perception through the function shows the subject exercised with ABA programs, and IEP (1 + 2 + 3) results. The child managed to identify the objects with the same function. The results achieved were: IEP-1-32% of the goal fully achived; IEP-2-42% of the goal fully achived; IEP-3-45% of the goal fully achived.
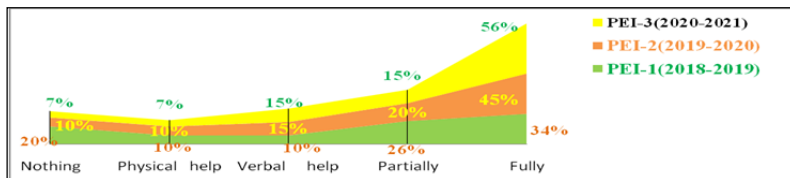

Figure 9: Conversational skills

Figure 9 shows the graphical presentation of the conversational skills of the child improvement during the study. The subject managed to realize many of the rubrics of the ABA program, as it imitates the sounds of all animals. Achievements expressed in percentage are: IEP-1-34% of the goal achieved; IEP-2-45% of the goal achieved; IEP-3- 56% of the goal achieved.
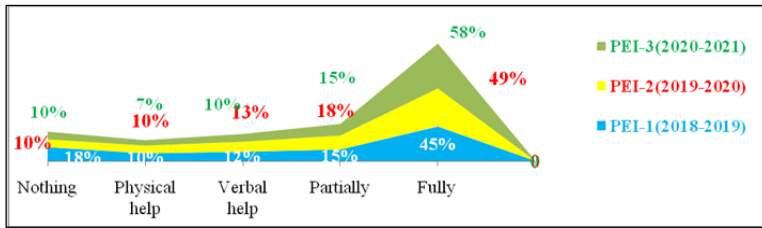
Figure 10: Social interaction

This graphic   shows the progress of goal related to the social interaction. As it is presented the child managed to interact socially with others. IEP-1 49% of the goal completed; IEP-2-54% completed; IEP -3- 58% of the goal completed.

4.2   Cognitive, linguistic and social skills

The subject of the study, after being treated with the main rubrics of the ABA program, was tested for the development of cognitive, linguistic and social skills. Below is graphically presented the cognitive, linguistic and social progress.
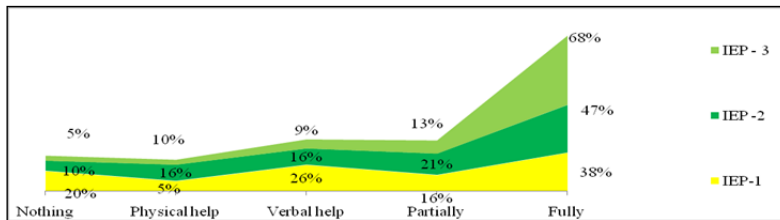

Figure 11: Cognitive skills of child treated with ABA and Individual Education Programs

Figure 11, shows the graphic presentation of the subject cognitive skills progress. As can be seen there is improvement in cognitive skills. IEP-1-38% of the goal completed; IEP -2- 47% of the goal completed, IEP-3- 68% of the goal completed.
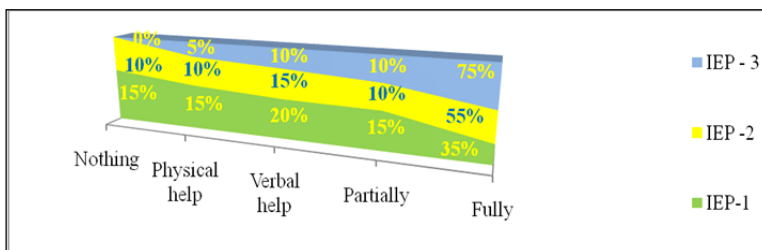

Figure 12: Language skills of child treated with ABA and Individual Education Programs.

Figure 12 shows the graphic presentation of the language skills progress. IEP-1-35% of the goal completed; IEP -2- 55% of the goal completed, 75% of the goal completed.
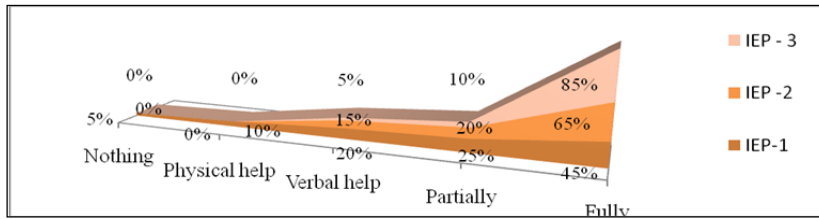
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Figure 13: Social skills of the child treated with ABA and Individual Education Programs

Graphic presentation of the social skills (figure 13) of the subject shows the progress of the treatment. IEP-1-45% of the goal achieved; IEP -2- 65% of the goal achieved, and IEP-3 85% of the goal achieved.

5. Discussion

The main purpose of this study was to examine the effectiveness of the ABA program in a case study with a child with autism. The effectiveness of ABA program was measured by the completion of specific goals set in the beginning and during the treatment. As the results show, the subject made improvements in all goal areas. At the end of the program the subject of the study showed improvement of cognitive, language and social skills. The child managed to establish eye contact, form several sentences, managed to avoid negative behaviors, engage in the training process and interact with peers and therapist. He also could group and label the objects based on color and shape, and imitates the sound of all animals.

Overall, the results of this single case study are in accord with findings reported in previous research. In a meta analytic study of Peters – Scheffer et al., (2011), authors concluded that early behavioural intervention was effective in children with autism spectrum disorders compared with other treatments.

The age of the subject of study and duration of treatment are important variables for the success of the treatment. Different findings suggest that earlier and more intensive treatment may result in more favorable outcomes (Pasco, 2018; Matson & Konst 2014).

6. Conclusion

Applied behavior analysis is an effective intervention in assisting children with Autism to improve their language, social and cognitive skills. This case study is an evidence of the importance of early and longitudinal interventions with ABA techniques. The percentage of individuals diagnosed with autism is continuing to increase and is important to provide them with the best treatment.

7. Recommendations

This case study shows that ABA strategies and techniques are effective for improving the functioning of individuals with Autism. While this case study has shown the effectiveness of ABA strategies used, there are still many factors that must be examined more closely to allow for even greater improvement of children with Autism. Age of diagnosis, time of first intervention, parental involvement in therapy, online platforms for training parents and teachers are factors that can determine the success of treatment and should be included in further studies.

References

American Academy of Pediatrics. (2001). *Health supervision for children with autism. Pediatrics*, 107(2), 442-449
American Psychiatric Association. (2013). DSM 5 diagnostic and statistical manual of mental disorders. In *DSM 5 Diagnostic and statistical manual of mental disorders* (pp. 947-p).

Prizant, B. M., & Fields-Meyer, T. (2015). *Uniquely human: A different way of seeing autism*. Simon and Schuster.

Dillenburger, K., & Keenan, M. (2009). None of the As in ABA stand for autism: Dispelling the myths. *Journal of Intellectual and Developmental Disability*, 34(2), 193-195.

Granpeesheh, D., Tarbox, J., & Dixon, D. R. (2009). Applied behavior analytic interventions for children with autism: A description and review of treatment research. *Annals of clinical psychiatry*, 21(3), 162-173.

Güleç-Aslan, Y. (2011). The Case Report: ABA-Based Education for a Toddler at High Risk for Autism. *International Journal of Early Childhood Special Education*, 3(2).

Hayward, D., Eikeseth, S., Gale, C., & Morgan, S. (2009). Assessing progress during treatment for young children with autism receiving intensive behavioural interventions. *Autism*, 13(6), 613-633.

Hilton, J. C., & Seal, B. C. (2007). Brief report: comparative ABA and DIR trials in twin brothers with autism. *Journal of autism and developmental disorders*, 37(6), 1197-1201.

Ithriyah, S. (2018). Effectiveness of ABA Therapy for Children with Special Needs of Autism: A Study of Psycholinguistics View. *Ethical Lingua: Journal of Language Teaching and Literature*, 5(2), 149-158.

Jacobson, J. W., Mulick, J. A., & Green, G. (1998). Cost–benefit estimates for early intensive behavioral intervention for young children with autism—general model and single state case. *Behavioral Interventions: Theory & Practice in Residential & Community-Based Clinical Programs*, 13(4), 201-226.

Kazdin, A. E. (1982). Single-case experimental designs in clinical research and practice. *New Directions for Methodology of Social & Behavioral Science, 13,* 33–47.

Kopetz, P. B., & Endowed, E. D. L. (2012). *Autism worldwide: Prevalence, perceptions, acceptance, action*. Journal of Social Sciences, 8(2), 196-201.

Knopf, A. (2020). Autism prevalence increases from 1 in 60 to 1 in 54: CDC. *The Brown University Child and Adolescent Behavior Letter*, 36(6), 4-4.

Makrygianni, M. K., Gena, A., Katoudi, S., & Galanis, P. (2018). The effectiveness of applied behavior analytic interventions for children with Autism Spectrum Disorder: A meta-analytic study. *Research in Autism Spectrum Disorders*, 51, 18-31.

Matson, J. L., & Konst, M. J. (2014). Early intervention for autism: Who provides treatment and in what settings. *Research in Autism Spectrum Disorders*, 8(11), 1585-1590.

McPhilemy, C., & Dillenburger, K. (2013). Parents' experiences of applied behaviour analysis (ABA)-based interventions for children diagnosed with autistic spectrum disorder. *British Journal of Special Education*, 40(4), 154-161.

Pasco, G. (2018). The value of early intervention for children with autism. *Paediatrics and Child Health, 28*(8), 364-367.

Peters-Scheffer, N., Didden, R., Korzilius, H., & Sturmey, P. (2011). A meta-analytic study on the effectiveness of comprehensive ABA-based early intervention programs for children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 5(1), 60-69.

Reichow, B. (2012). Overview of meta-analyses on early intensive behavioral intervention for young children with autism spectrum disorders. *Journal of autism and developmental disorders*, 42(4), 512-520.

Rosenwasser, B., & Axelrod, S. (2002). More contributions of applied behavior analysis to the education of people with autism. *Behavior modification*, 26(1), 3-8.

Schmeisser, M. J., & Boeckers, T. M. (Eds.). (2017). *Translational anatomy and cell biology of autism spectrum disorder.* Springer International Publishing.

Smith, D. (2010). From the Classroom to the Family Room: Using ABA for Best Behavior. *Exceptional Parent*, 40(9), 21-22.

Steege, M., Mace, F., Perry, L., & Longenecker, H. (2007). *Applied Behavior Analysis: Beyond Discrete Trial Teaching*. Psychology in the Schools, 89-93.

Sulaj, M. (2015). ABA Based Intervention Implemented by a Mother of a Child with ASD. *European Journal of Social Science Education and Research*, 2(3), 180-185.

Vismara, L. A., & Rogers, S. J. (2010). Behavioral treatments in autism spectrum disorder: what do we know?. *Annual review of clinical psychology*, 6, 447-468.

Wallace, S., Fein, D., Rosanoff, M., Dawson, G., Hossain, S., Brennan, L., ... & Shih, A. (2012). A global public health strategy for autism spectrum disorders. *Autism Research*, 5(3), 211-217.

Weiss, M. J. (2001). Expanding aba intervention in intensive programs for children with autism: The inclusion of natural environment training and fluency based instruction. *The Behavior Analyst Today*, 2(3), 182.