

Summer 7-31-2017

Critical Review of Applied Behavioral Analysis and Parental Involvement for Autism Spectrum Disorder

Kathryn Odonnell
kodonne@bgsu.edu

Follow this and additional works at: <https://scholarworks.bgsu.edu/honorsprojects>



Part of the [Social and Behavioral Sciences Commons](#)

Repository Citation

Odonnell, Kathryn, "Critical Review of Applied Behavioral Analysis and Parental Involvement for Autism Spectrum Disorder" (2017). *Honors Projects*. 231.
<https://scholarworks.bgsu.edu/honorsprojects/231>

This work is brought to you for free and open access by the Honors College at ScholarWorks@BGSU. It has been accepted for inclusion in Honors Projects by an authorized administrator of ScholarWorks@BGSU.

Critical Review of Applied Behavioral Analysis and Parental Involvement for Autism

Spectrum Disorder

Kathryn O'Donnell

Bowling Green State University

Abstract

This critical review examines current literature to answer the research question: Is parent implemented applied behavioral analysis therapy (ABA) effective at improving communication in children with autism spectrum disorder (ASD)? Nine studies were located that fit the criteria of a population of children with autism spectrum disorder, an intervention based on behavioral principles, and an outcome measurement of communication development in children with ASD. The desired control group was children with ASD who did not receive parent-implemented ABA, although four studies without a comparison group were included. Studies were found using two research databases: EBSCO host and Summon. Results indicated parent-implemented ABA might be successful at increasing communication in children with ASD compared to ABA that is not implemented by parents, although one study included found that this is not so. Future research is needed to explore this discrepancy. Implications of this review suggest parental involvement is desirable in ABA at home for children with ASD.

Introduction

Autism spectrum disorder (ASD) affects children early in their development. Children with ASD are characterized by repetitive behavioral traits, for example hand flapping, and struggle with communication and social interaction (American Psychological Association, 2013). The symptoms of autism spectrum disorder can be seen as early as infancy (Corsello, 2005). ASD is now viewed in the DSM 5 as having three levels of severity. Children with level one ASD require support, but are social and communicate, although their behaviors are atypical. On the other hand, children with level three ASD require very substantial support and may not even be able to express their needs in a way most people would understand. Children in the middle, at level two, require substantial support. They may have limited ways to communicate and are minimally social (APA, 2013). Parents provide much of the support needed for their children with ASD; therefore parents of children with ASD play a key role in the progress of their children.

Applied behavioral analysis (ABA) is commonly used as therapy for children with ASD. ABA is an intervention that focuses on increasing desired behaviors and reducing undesired behaviors using a variety of structured teaching techniques based on behavioral theories of learning. Positive reinforcement, for example, is one of these techniques used to increase desired behaviors (Autism Speaks, 2017). ABA is an evidence-based practice. According to Slocum et al. (2014), evidence-based practice “is a model of professional decision-making in which practitioners integrate the best available evidence with client values/context and clinical expertise in order to provide services for their clients”(p. 41). It is essentially a framework to combine results of validated studies with the experiences of individuals to determine if a practice is beneficial. ABA is viewed in the United States as a very effective intervention for children

with ASD (Fielding et al., 2013; Iadarola & Smith, 2015). Training to be able to implement ABA can be administered to parents, teachers, and family members to help create a lasting change in children with ASD.

ABA therapy has also been controversial (Kirkham, 2017). It can be very intensive; one form is commonly termed early intensive behavioral intervention (EIBI), based on Lovaas (1987). The average child in an EIBI-type ABA intervention is in therapy for 25-40 hours a week. Some may argue this is too much time for a young child to be in therapy instead of playing, as the average child not in therapy would be. When a child starts school this complicates the issue because their whole day may be spent at school, followed by therapy. Many argue this is not how young children should spend their days. In addition, EIBI-type ABA intervention can be very expensive. The combination of many hours devoted to intervention and the expense makes EIBI-type ABA very hard on family life. Siblings and parents of the child with ASD are affected by these strains.

Despite the criticisms, EIBI has many benefits as well. A systematic review by Howlin (2011) found EIBI can significantly raise a child's IQ and adaptive behavior skills. In some cases EIBI can even lead to recovery from autism. Not all studies showed such benefits from EIBI, indicating its effectiveness varies with the individual and/or the exact approach taken.

ASD affects many children, making especially their communication hindered or difficult. ABA therapies such as EIBI have been shown to be a successful intervention to see behavioral improvements in children with ASD. Parents can be trained in ABA and are likely the biggest advocates of change for their children. The current critical review will answer the following research question: Is parent implemented applied behavioral analysis therapy effective at improving communication in children with autism spectrum disorder?

Research is plentiful on the topic of ASD and ABA. Abedi, Behnamnejad and Ejiyeh (2015) examined the effectiveness of ABA in children with ASD and found it is effective. DiGennaro, Gillis and Roth (2014) also examined the effectiveness of ABA in adults with ASD and found it is effective. Research has generally concluded that ABA is an effective intervention for children with ASD. Children in ABA intervention usually show lasting changes in their behavior, although each child is different. Some children can even improve so much that they lose their ASD diagnosis; this is termed a full recovery (Howlin, 2011).

Intervening early is important to see these lasting behavior changes. Children usually begin exhibiting symptoms of ASD in infancy or as toddlers. Therefore, many children are diagnosed very young and are able to begin therapy early. Previous research has examined the effectiveness of ABA in young children and as a whole has determined the earlier a child starts the intervention the better their chances of full recovery or positive lasting behavior change (Corsello, 2005; Dawson et al., 2010). Many children begin intervention around the pre-school age.

Perry and Solish (2008) examined parental involvement in their child's therapy, finding that parental involvement is important to the parents. Considering many children diagnosed with ASD are infants, toddlers and pre-school age, their parents play the most important role in their lives. This would mean parents play a very important role in their therapy too. Benson, Karlof & Siperstein (2008) investigated parental involvement in the education of children with ASD and found that parental involvement was beneficial for the child's learning. Hastings et al. (2005) studied parental stress and depression for parents of children with ASD and found these factors negatively affect children with ASD. This establishes that parents are a very influential part of these children's lives.

Despite the established importance of parents' involvement for children with ASD, few studies have directly examined the effectiveness of parental implementation of therapy for children with ASD. A systemic review by Diggle and McConachie (2007) examined the effectiveness of parent-implemented intervention in general (not just ABA) for children with ASD and found that parent-implemented intervention can be effective. Their study broadly examined parent implemented therapy and child outcomes. The goal of the current critical review is to determine what research has shown regarding the effectiveness of parent-implemented ABA on the communication of children with ASD as compared to therapy that does not train parents.

Method

The population of interest for this critical review is children with a diagnosis of ASD. The focus is on children between the ages of two and 10, but one study examined in this review did include one person who was 20 at the time of participation. The interventions examined for this review are a mix of ABA interventions. Criteria for classifying a study as using ABA was broad, with a basic stipulation that the intervention used in the study was based on behavioral principles. Four of the nine studies included used the desired control group of children in therapy without parental involvement or training. Three studies used a pre-test post-test design, one used a survey, and one study was a meta-analysis. For purposes of this review, the outcome of interest was significant increase in communication or language skills.

All articles were found using two databases, Summon and EBSCO Host research database. Summon is the database for the Bowling Green State University library and resources. The key words for the search in the Summon database were "parental involvement", "autism", and "applied behavioral analysis". A second search was completed through Summon with the

key words “ABA”, “parents”, “children with ASD” and “improved communication skills”. All results were searched through by hand with the assistance of a Bowling Green State University librarian. References were also searched by hand to find additional relevant articles. One EBSCO Host search was completed with the key words “applied behavior analysis”, “autism”, “parents”, “communication”, and “intervention”. Only academic journals were shown in the results of this search. All results were searched by hand to find relevant articles.

12 articles were identified with the Summon database search. Five articles were located with the EBSCO Host search. Eight of the original 17 articles were excluded, four from the EBSCO Host search and four from the Summon searches. One was a duplicate. One could not be accessed. Six proved to not fit criteria for inclusion, or were not related to the research question.

Results

Of the three pre-post design studies, all studies showed significant improvement in either the parent’s implementation of ABA principles or significant improvement in the child’s communication progress. Heitzman-Powell, Buzhardt, Rusinko and Miller (2014) had parents complete a trial training program called OASIS, which aims to teach about ABA. The parents significantly increased their knowledge and their implementation of ABA. Reagon and Higbee (2009) trained parents for two hours on script fading. After training, parents successfully had their children acquire three scripted initiations for three toy sets. These children also increased their number of unscripted initiations. Finally, Vismara, Colombi and Rogers (2009), trained parents in the Early Start Denver Model. After training, parents improved their ability to implement techniques shown to foster communicative skills with their children, and children showed communicative improvements. The children also maintained these changes at the follow up four years after treatment had ended.

The survey type article showed positive evidence for parent-implemented ABA being successful at improving communication. McPhilemy and Dillenburger (2013) surveyed parents on their experiences using home-based ABA in Europe where ABA is less popular than in the United States. Parents reported home-based ABA therapy had a positive effect on children, especially for communication. Additionally the parents reported that statutory services were lacking for ABA. An apparent weakness for this study is that the parents self-reported the effects of ABA on their children. Parent reports are not strong evidence because bias cannot be ruled out.

Of the four studies that used a control group that did not receive parent-implemented ABA, all studies indicate that parent implemented ABA benefited the children more than ABA that was not parent implemented. Fava et al. (2011) requested parents choose between the intervention group, which received parental involvement in EIBI, or the control group, which either was not seeking behavioral treatment at all or was receiving behavioral therapy at home without parental involvement. Results showed that children in the intervention group significantly outperformed the comparison group at 6 months in early language skills. Remington et al. (2007) had an intervention group, which received EIBI at home by parents and trained tutors. The comparison group was receiving standard intervention from local authorities. There was a significant difference found between the groups for language. Stadnick, Stahmer and Brookman-Frazee (2015) had an intervention group enrolled in project ImPACT, which is a parent-implemented behavior-based intervention. The control group was a community comparison group receiving services elsewhere. Results indicated that children in the intervention group significantly improved in communication. Sallows and Graupner (2005) had children randomly assigned to a clinic-directed group or a parent-directed group designed to be

less intensive. All children received UCLA model based treatment, which is a behavior-based treatment. Results showed that the parent-directed group did about as well as the clinic directed group. This was not their expected result, which may indicate the effectiveness of parent-directed ABA. The authors did not expect the parent-directed group to do as well because their therapy was less intensive, but they speculate in their discussion that parents may have quickly learned how to adapt and were able to consistently implement the principles even without a designated therapy time.

Peters-Scheffer, Didden, Korzilius, and Sturmey (2011) completed a meta-analysis where they examined 11 studies that looked at EIBI. The studies included in their meta-analysis all had an intervention group that was receiving trained professional implemented EIBI. The control groups for the 11 studies included received a collection of less intensive ABA; among these studies several used parent-implemented ABA as this less intensive control group. The meta-analysis concluded that the intervention groups performed better than the control groups on all the dependent variables, which included expressive language, and communication. This is the only study found that does not support the claim that parent implemented ABA is effective at improving communication in children with ASD, although it does not necessarily dispute it. The authors were attempting to examine how intensity of ABA affects child outcomes instead of how parent-implemented ABA effects child outcomes. This could explain their results.

The results of the studies examined show that parents are able to successfully implement ABA therapy and improve the communication of their children with ASD. Only Peters-Scheffer, Didden, Korzilius, and Sturmey (2011) provided evidence that did not necessarily support this claim. This article is a meta-analysis and therefore does hold more power than the other studies that were only single studies. This study was also the only study that was not intending to look

directly at parent-implemented ABA. Instead, this study was examining the effectiveness of EIBI and included several studies that had parent-implemented ABA as control groups. This study did find more effects for EIBI than for the parent-implemented control groups. This result could be due to the intensity of the therapy, as the parent-implemented ABA control groups were designed to be less intensive. Overall, there is evidence that parent implemented applied behavioral analysis therapy is effective at improving communication in children with autism spectrum disorder.

Study	Objectives	Design/participants	Intervention and measures	Results
Fava et al. (2011)	To determine the effectiveness of staff-and parent-mediated early intensive behavioral intervention for children with ASD.	Not randomized. Parents chose between groups. Children with ASD or PDD-NOS Intervention: N=12 aged 26-81 months Comparison: N=10 aged 28-66 months	Intervention group: 3 weeks of center based child assessment and parent training. 3 weeks of at-home implementation. One week of follow up. Control group: 12 hours a week of in-home developmental intervention and cognitive behavioral treatment. Measures: Taken at T0 and T1. Severity of ASD, and mental development by questionnaires. Challenging behaviors by video observation. Parents' perception of their child's personal and social functioning, and stress.	Children in the intervention group significantly outperformed the comparison group at 6 months in autism severity, mental developmental state, and early language skills.
Heitzman-Powell, Buzhardt, Rusinko, & Miller, (2014)	To evaluate effectiveness of an ABA outreach training program for parents of children with ASD in remote areas.	Pre-post test design. Seven parent from four families with children with ASD.	OASIS Training Program. Parents completed: eight modules (online activities and distance coaching sessions). Skill assessment before and after training in which they interacted with their child and were observed. Online knowledge assessment of OASIS content.	Parents increased knowledge of ABA by an average of 39% and improved their implementation of ABA by an average of 41%.
Peters-Scheffer, Didden, Korzilius, & Sturmey, (2011)	To evaluate the effectiveness of comprehensive ABA-based early intervention programs for children with ASD.	Meta-analysis consisting of 11 studies. Looked at children aged 33.56-65.68 months	Experimental groups: Those who completed 12.5-38.6 hours of Early Intensive Behavioral Intervention (EIBI) for between 10 month and 2 years. Control groups: those who completed less intensive EIBI; among this group is parent- directed ABA. Measures: full scale and non-verbal IQ, receptive and expressive language, composite adaptive behavior, communication, daily living skills and socialization subscales.	The EIBI group performed better than the control group on all the dependent variables.
McPhilem& Dillenburger, (2013)	To evaluate parents' experiences of ABA interventions for children with ASD.	Survey type 12 families Children diagnosed with ASD; N=17 Child age: 38 months to 20 years	Questionnaire: 20 open-ended questions. The questions asked about demographics, reasons for using ABA, how they found out about ABA, expectations of ABA, impact of ABA, and procedures used for the home-based ABA. A last section was a 1-5 Likert scale that focused on implications of home-based ABA.	Results showed that ABA therapy had a positive effect on children, especially for communication, challenging behaviors and independence. Parents were highly satisfied with ABA. Parents reported wanting more public support, and being dissatisfied with professionals.
Reagon & Higbee, (2009)	To examine effectiveness of parent-implemented script fading on verbal initiations in children with ASD.	Pre-post test design. Children with ASD, verbal; N=3 Ages: 6 years and 10 months, 3 years and 11 months, and 2 years and 11 months.	Mothers completed three play sessions per day, each with a different toy, with a 2-3 minute break in between each session. For the baseline, mothers played with their child but did not initiate conversation. Parents were trained for two hours on script development, pre-teaching procedure, script-fading modeling prompts, and feedback. Parents collected data at three times by recording frequency of scripted and unscripted verbal initiation.	All children acquired three scripted initiations for their toy sets. The number of unscripted initiations increased for each child.
Remington et al. (2007)	To assess outcomes for children with ASD and their parents two years after EIBI.	Controlled not randomized study. Children with ASD; N=44 Age: 30-42 months	The intervention group: intensive behavioral intervention at home implemented by parents and trained tutors for 24.6 hours per week. Comparison group: standard intervention from local education authorities. Measures: baseline, one year and two years on cognitive functioning, adaptive behaviors, autistic behavior, and social and communication skills. Parent well-being was also measured.	Positive advantage for the intervention group. Robust main effects for language, IQ, mental age, and living skills. Significant difference between groups for motor skills, joint attention, and positive social behavior. No significant difference for problem behaviors.
Sallows, & Graupner, (2005)	To assess outcomes of intensive behavioral treatment for children with ASD after 4 years.	Random assignment. Children with ASD; N=23 Age: 24-42 months	UCLA model based treatment Clinic directed group: 40 hours per week of treatment. 6-10 hours per week of in-home supervision and weekly consultations Parent directed group: 31-32 hours per week of treatment. 6-10 hours per month of in-home supervision and a consultation every two months.	Parent directed group did about as well as the clinic directed group.

<p>Stadnick, Stahmer & Brookman-Fraze, (2015)</p>	<p>To evaluate effectiveness of project impact: A parent-mediated intervention for children with ASD.</p>	<p>Controlled, not randomized. Children with ASD or at risk and a parent; N=30 Age: 18 months-8 years old</p>	<p>Scales were used to assess intelligence, language, behavioral and social skills. Testing was done every year for four years.</p> <p>Community comparison group: receiving services elsewhere. Intervention group: enrolled in project ImPACT. 12 one-hour sessions. Measures: Children were assessed at baseline and 12 weeks. Parents completed questionnaires to assess severity of ASD, verify ASD diagnosis, assess adaptive functioning in communication and socialization. Parents filled out questionnaires to assess their own depression and stress. Parents were observed by video for 10 minutes playing with their child.</p>	<p>Children in the intervention group significantly improved in communication. Parents in the intervention group adhered to training more. High parent stress at baseline was associated with less child improvement in social skills.</p>
<p>Vismara, Colombi, & Rogers, (2009)</p>	<p>To investigate if one hour per week of therapy can lead to lasting changes in children with ASD.</p>	<p>Pre-post design. Children with ASD aged less than 36 months. Eight families participated.</p>	<p>Early Start Denver Model Parents received a detailed manuscript. 10 therapy strategies, each the focus of one session. Sessions occurred once a week for one hour. For the first two sessions, data were collected in two 10-minute videos each week of the child playing with a parent, and the child playing with a therapist. For the 10 intervention sessions: progress was reviewed, then 10-minute parent-child play activity that provided data on progress. After 12 weeks the participants had 4 additional sessions to assess their maintenance and generalization.</p>	<p>Parents did improve their ability to implement interactive, communicative, and teaching skills onto their children to help them with attention, positive affect, imitation, and communication. The children maintained behavior change 4 years after treatment ended.</p>

Discussion

This critical review has looked at 10 studies that meet criteria to answer the research question: is parent implemented applied behavioral analysis therapy effective at improving communication in children with autism spectrum disorder? There is some evidence for parent-implemented ABA being effective at improving communication in children with ASD. Only one study did not find that parent-implemented ABA is as effective as a therapy that did not involve parents, and this was likely because the study actually intended to examine intensity not parent-involvement of ABA. Besides this study all others with a control group suggested that children in a group with parent-implemented ABA improved their communication compared to a group that did not receive parent implemented ABA. The remaining studies without a control group also indicated that parents are effective at implementing ABA.

Future research is needed to further examine the possible benefit of parent-implemented ABA on children's communication skills. Randomized controlled studies are very scarce on this subject. Included in this review were only two studies that had randomized groups. It is an ethics issue to randomly assign children in need of therapy to groups, especially if one group is hypothesized not to help the child's condition or makes no attempt to help the child's condition. This could be what makes this randomized controlled literature rare. Venker, McDuffie, Weismer and Abbeduto (2012) had a unique solution to this issue. They offered the same treatment they hypothesized to be effective to both groups, but one group had the treatment delayed until after the study. This allowed the researchers to compare their treatment group to a group not getting treatment at the time of the study. More research is also needed to look at parental involvement for other types of therapy for ASD that are not ABA. As discussed in the introduction ABA is controversial and may have limitations. More research done on parental

involvement in alternate therapies may be helpful for families that do not chose ABA as an intervention because of its negative aspects. Future research should also examine other indicators of improvement in the children with ASD, to see if parent-implemented ABA is beneficial for the children in more areas than language. For example, future studies could examine parent-implemented ABA and the effect on fine motor skills, social skills, etc. in children with ASD

This review does have several implications. As this review suggests, parent implemented ABA is effective at improving children with ASD's communication. Based on this finding, parents may want to become involved in their child's therapy to help with their progress. Beyond implications for the family, this review has implications for clinical practice. Programs may want to include parents in their ABA interventions or train parents in their ABA interventions to ensure children have the best outcomes. Lastly, schools with special needs programs or schools specifically for children with ASD and developmental disorders should be sure to involve parents and share with parents what they are teaching the children in class so that parents can implement the practices at home.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. Washington, D.C: American Psychiatric Association.
- Autism Speaks. (2017). *Applied behavioral analysis (ABA): What is autism*. Retrieved from <https://www.autismspeaks.org>
- Benson, P., Karlof, K. L., & Siperstein, G. N. (2008). Maternal involvement in the education of young children with autism spectrum disorders. *Autism, 12*(1), 47-63.
- Corsello, C. M. (2005). Early intervention in autism. *Infants & Young Children, 18*(2), 74-85.
- Dawson, G., Rogers, S., Munson, J., Smith, M., Winter, J., Greenson, J., & Varley, J. (2010). Randomized, controlled trial of an intervention for toddlers with autism: the Early Start Denver Model. *Pediatrics, 125*(1), e17-e23.
- Ejiyeh, A. M., Abedi, A., & Behnamnejad, N. (2015). Effectiveness of applied behavior analysis (ABA) for children with autism spectrum disorders in Iran, 2005-2013: A meta-analysis. *Iranian Journal Of Psychiatry And Clinical Psychology, 21*(1), 17-25.
- Fava, L., Strauss, K., Valeri, G., D'Elia, L., Arima, S., & Vicari, S. (2011). The effectiveness of a cross-setting complementary staff-and parent-mediated early intensive behavioral intervention for young children with ASD. *Research in Autism Spectrum Disorders, 5*(4), 1479-1492.
- Fielding, C., Lowdermilk, J., Lanier, L. L., Fannin, A. G., Schkade, J. L., Rose, C. A., & Simpson, C. G. (2013). Applied behavior analysis: current myths in public education. *Journal Of The American Academy Of Special Education Professionals, 83-97*.
- Hastings, R. P., Kovshoff, H., Ward, N. J., Degli Espinosa, F., Brown, T., &

- Remington, B. (2005). Systems analysis of stress and positive perceptions in mothers and fathers of pre-school children with autism. *Journal of Autism and Developmental Disorders, 35*(5), 635.
- Heitzman-Powell, L. S., Buzhardt, J., Rusinko, L. C., & Miller, T. M. (2014). Formative evaluation of an ABA outreach training program for parents of children with autism in remote areas. *Focus on Autism and Other Developmental Disabilities, 29*(1), 23-38.
- Howlin, P. (2011). Possible benefits from early intensive behavioural and developmental interventions in children with autism spectrum disorders, but more research needed. *Evidence Based Mental Health, 14*(4).
- Kirkham, P. (2017). 'The line between intervention and abuse' – autism and applied behaviour analysis. *History of The Human Sciences, 30*(2), 107-126.
- McConachie, H., & Diggle, T. (2007). Parent implemented early intervention for young children with autism spectrum disorder: A systematic review. *Journal of Evaluation in Clinical Practice, 13*(1), 120-129
- 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.
- 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.
- Reagon, K. A., & Higbee, T. S. (2009). Parent- implemented script fading to promote

- play- based verbal initiations in children with autism. *Journal of Applied Behavior Analysis*, 42(3), 659-664.
- Remington, B., Hastings, R. P., Kovshoff, H., Degli Espinosa, F., Jahr, E., Brown, T., & Ward, N. (2007). Early intensive behavioral intervention: outcomes for children with autism and their parents after two years. *American Journal on Mental Retardation*, 112(6), 418-438.
- Roth, M. m., Gillis, J., & DiGennaro Reed, F. (2014). A meta-analysis of behavioral interventions for adolescents and adults with autism spectrum disorders. *Journal of Behavioral Education*, 23(2), 258-286.
- Sallows, G. O., & Graupner, T. D. (2005). Intensive behavioral treatment for children with autism: Four-year outcome and predictors. *American Journal on Mental Retardation*, 110(6), 417-438.
- Slocum, T. A., Detrich, R., Wilczynski, S. M., Spencer, T. D., Lewis, T., & Wolfe, K. (2014). The evidence-based practice of applied behavior analysis. *The Behavior Analyst*, 37(1), 41-56.
- Smith, T., & Iadarola, S. (2015). Evidence base update for autism spectrum disorder. *Journal Of Clinical Child And Adolescent Psychology*, 44(6), 897-922.
- Solish, A., & Perry, A. (2008). Parents' involvement in their children's behavioral intervention programs: Parent and therapist perspectives. *Research in Autism Spectrum Disorders*, 2(4), 728-738.
- Stadnick, N. A., Stahmer, A., & Brookman-Fraze, L. (2015). Preliminary effectiveness

of project impact: A parent-mediated intervention for children with autism spectrum disorder delivered in a community program. *Journal of autism and developmental disorders*, 45(7), 2092.

Venker, C. E., McDuffie, A., Ellis Weismer, S., & Abbeduto, L. (2012). Increasing verbal responsiveness in parents of children with autism: A pilot study. *Autism*, 16(6), 568-585.

Vismara, L. A., Colombi, C., & Rogers, S. J. (2009). Can one hour per week of therapy lead to lasting changes in young children with autism?. *Autism: The International Journal Of Research And Practice*, 13(1), 93-115.