The Effectiveness of Parent Education Training for Children with Autism Receiving Group Applied Behaviour Analysis Services

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A thesis submitted to the School of Community Services in partial fulfilment of the requirement for the degree of Bachelor of Applied Arts in Behavioural Psychology

St. Lawrence College
Kingston, Ontario
Canada
April, 2015
Abstract

The current estimates of autism prevalence are approximately 6.5 to 6.6 per 1000 people. Helping children with autism to overcome their difficulties can be challenging. However, research has shown that Applied Behaviour Analysis techniques are the most effective. Parent education has also been shown to increase the success with which children with ASD acquire different life skills and generalization and maintenance of these skills. Studies show that ABA-based parent-intervention programs increase parents’ use of the ABA techniques taught which in turn increase the quality of life of children with ASD. This thesis includes a file review of 23 children with autism and their parents in a group comparison study on the effectiveness of parent education. The groups within this study were defined by whether parents completed the parent education training component or not. There were 15 children and their parents within the “complete group” and 8 children and their parents within the “incomplete group”. It was hypothesized that the “complete group” children would be more successful in reaching the goals that were set for them at the beginning of therapy. However, there were no statistical differences between the two groups on any of the outcome measures. Several limitations of the study are discussed including the lack of therapist fidelity during the parent education training component.
Acknowledgments

My thesis could not have been completed without the encouragement and support of my mom and BPSYC friends, so thank you. Especially Faith Benoit, for being my soul twin these past 4 years and sharing her brain when mine was lost and unable to be found. I would also like to acknowledge my supervisors Lisa Lynch and Janet Stapley, along with their teams and Program Manager, Trish McKinnon for giving me the opportunity to complete my thesis at their agency. Also, I would like to say thank you to all my BPSYC professors who have guided me through these 4 years, especially Dr. Sheelagh Jamieson, my thesis supervisor.
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Chapter I: Introduction

Summary

Autism spectrum disorder (ASD) is a relatively common neurological disorder. Current estimates of autism prevalence are around 6.5 to 6.6 per 1000 people according to Myers and Johnson (2007). The National Institute of Health has estimated that 1 in 250 children have autism in the United States, and thus, autism is now considered an epidemic due to the increase in cases (Fombonne, 2003). Children with ASD have difficulties in numerous areas, including language, social, and emotional development. Each child has his/her own range of abilities in each area and often needs help in these areas of difficulty. Having a child with ASD can be difficult and affect the whole household in numerous ways.

The most significant transition in life for many people is parenthood. Becoming a parent involves more responsibilities, role changes, and a host of emotions (Turnbull & Turnbull, 1986). Parents face a lot of stress within the household on a day-to-day basis. When parents find out their children have disabilities it can be a great shock and parents may experience this as a traumatic event (Turnbull & Turnbull, 1986). Families that have a child with disabilities have increased levels of stress. Many do not have or know about the resources available to them. Researching, applying, and obtaining these resources adds stress to parents (Symon, 2001). This stress can reduce the quality of life for the family. Also, parents whose children have disabilities, ASD in particular, who are trying to manage disruptive and challenging behaviour can also lead to more stress within the family. Some disruptive behaviour can change family routines which may lead to more stress. Other challenging behaviours may embarrass or frustrate parents and families.

Applied Behaviour Analysis (ABA) is defined as using knowledge achieved from the science of behaviour analysis to address socially important behaviours (Baer, Wolf & Risley, 1969). Using ABA with children with ASD can include multiple interventions, including Picture Exchange Communication System (PECS), precision teaching, shaping and chaining of new behaviours, as well as generalisation and maintenance training (Dillenburger, Keenan, Gallagher, & Mcelhinney, 2004). Parent involvement is considered an essential part of the treatment of children with ASD (National Research Council, 2001). Parent education in ABA to increase the quality of intervention for children with ASD has been found to be effective and increases the potential for maintenance and generalization of skills (Coolican, Smith & Bryson, 2012). Symon (2001) stated that parents who are included in assessment, development, and direct intervention processes for their children can help reduce problem behaviours in children with disabilities. These parent education programs usually teach specific ABA techniques so the parents may use them with their child on their own (Symon, 2005).

Early behavioural intervention can significantly improve parents’ effectiveness with self-help skills, social skills, problem behaviour, obsessive behaviour, gross motor skills, fine motor skills, communication, and concentration (Dillenburger et al., 2004). Dillenburger et al., (2004) also found that these skills can be maintained and generalized more effectively. Parent education
increases skills in these areas and can enhance children with ASD outcomes (Tonge et al, 2012). Furthermore, Tonge and colleagues argue that young children develop within their family and that learning intervention techniques within the setting of the family makes sense. In addition, parent education can increase parents’ sense of competence and decrease parents stress’ (Tonge et al, 2012). Dillenburger et al., state that parent education can increase parents’ confidence, coping skills, self-esteem, self-empowerment, and quality of life. They also say it can reduce worry and stress.

The purpose of the study is to examine through a file review whether children with ASD whose parents have received parent education will reach their individual goals within an Applied Behavioural Analysis (ABA) group better than children whose parents have not completed the parent education group. It was hypothesized that the children whose parents completed the education would have an increased likelihood of reaching their goals in comparison to the children whose parents did not complete the parent education. The study begins with an overview of the research on ABA and parent intervention in Chapter II. Chapter III describe the methodology of the study. In Chapter IV, the results are shown and interpreted within the context of the present study. In Chapter V, the discussion describes the strengths, limitations, multilevel challenges, contributions of the study, and recommended future research.
Chapter II: Literature Review

Children with autism spectrum disorder (ASD) face many challenges. Each child has individual strengths and weaknesses. They may have difficulties in language, social skills, skills of daily living, and emotional development. Many parents seek help in the Applied Behaviour Analysis (ABA) field. Using ABA techniques as intervention for children with ASD is implemented in a variety of ways. Interventions may include Picture Exchange Communication System (PECS), precision teaching, shaping and chaining of new behaviours, generalisation and maintenance training (Dillenburger et al., 2004). Some interventions are delivered in only 1 or 2 hours a week, while others are 6 hours a week or more. Early Intensive Behaviour Interventions are 30-40 hours a week. Intervention programs may focus on increasing one skill or several different skills. ABA techniques have been shown to increase the quality of life in children with ASD, as demonstrated in the studies below.

In a review of the literature, Symon (2001) found that due to the increasing amount of children being diagnosed with autism, there is a need for more services that are not available at this point and that parent education can help. Myers and Johnson (2007) found that current estimates of autism prevalence are around 6.5 to 6.6 per 1000 people. Also, Fombonne (2003) reports that the National Institute of Health has estimated that 1 in 250 children have autism in the United Stated, which has caused autism to be considered an epidemic due to the increase in cases. Parent education, Symon stated, can provide support on a broader level than just programs taught systematically to increase target behaviours in children with ASD. Parent education can be conducted in various ways. It can be conducted in one-on-one or in group sessions, it may have varying amount of hours, and parents can learn many skills. The topics may range from what ABA is to specific skills like pivotal response training. The following studies show that no matter how parent education is conducted, there is benefit to the children of the parents.

Wainer and Ingersoll (2013) conducted a study to determine intervention fidelity of ASD parent training. They determined that there are many promising interventions available for those diagnosed with ASD. Parent education models can be one session every six weeks for 2 hours, others have six one day workshops, and some only have 6 hours’ worth of education. Wainer and Ingersoll explained that the different variations are promising given that positive outcomes still occur no matter the amount, duration, and intensity of the parent education. They further argue that due to the variations it is difficult to compare models and see and comprehend what different degrees of parent education can produce. Treatment delivery is critical and studies seem to evaluate this correctly, as well as, treatment adherence which is usually the number of times a technique is implemented with accuracy. However, Wainer and Ingersoll stated that there is a lack of therapist fidelity data in most studies of parent education, which is noted as a limitation in these studies. Evaluating intervention fidelity among the different stages of program development may support intervention in practice or home settings. According to Wainer and Ingersoll intervention fidelity is important in parent education studies due to the fact that multiple levels of development and therapist fidelity can influence parent outcomes, which can affect child outcomes.
Single–subject studies

Patterson, Smith, and Mirenda (2012) conducted a review of 11 single-subject studies that showed that parents of children with ASD, after one-on-one parent education, can obtain and apply intervention strategies with their children. Within the 11 studies, there were 47 children who were mostly male and preschool age. All children were included within the study with their primary caretaker. Many of the parent target behaviours of the studies were to apply multiple strategies from manualized intervention programs (Kaiser, Hancock, & Nietfeld, 2000; Koegel, Symon, & Koegel, 2002; Vismara, Colombi, & Rogers, 2009); others were to utilized specific strategies. Four studies used manualized intervention programs, i.e. Pivotal Response Treatment (PTT) (Koegel et al., 2002; Symon, 2005), Natural Language Paradigm (NLP) (Laski et al., 1988), and Early Start Denver Model (ESDM) (Vismara et al., 2009). Other interventions used discrete trial teaching (DTT) (Crockett et al., 2007; Lafaskis and Sturmey, 2007), Reciprocal Imitation Training (RIT) (Ingersoll and Gergans, 2007), milieu teaching (Kaiser et al., 2000), joint attention training (Rocha et al., 2007), parent-implemented augmentative and alternative communication (AAC) (Nunes and Hanline, 2007), and general case teaching (Kashinath et al., 2006). Two studies’ parent target behaviours implement parents’ verbalizations and joint attention with their children (Laski et al., 1988). Lastly, another two studies examined parent affect and satisfaction with parent-child interactions (Kaiser et al., 2000; Koegel et al., 2002). The target behaviour for children was social skills and communication (Crockett et al., 2007; Koegel et al., 2002; Symon, 2005; Vismara et al., 2009). Three studies examined only communication skills and three studies studied only social skills (Laski et al., 1998; Kashnath et al., 2006; Koegel et al., 2002). The studies examined how parent education training affected the childrens’ progress on both social and communication target behaviours (Ingersoll and Gergans, 2007; Lafaskis and Sturmey, 2007; Rocha et al., 2007). Examples of these target behaviours were verbal imitations, communication turns, and appropriate social behaviour. All of these studies used single subject, multiple baseline design. Three studies used non-concurrent multiple baselines (Koegel et al., 2002; Symon, 2005; Vismara et al., 2009) and two studies used randomized multiple baseline design (Ingersoll and Gergans, 2007), Kaiser et al, 2000). All studies measured the frequency or percentage of correct implementation of strategy over a set time interval. Children’s desirable behaviour was also measured by frequency or percentage over a set time interval. The results of the studies showed that five studies (Koegel et al., 2002; Lafaskis and Sturmey 2007; Laski et al., 1988; Symon, 2005) demonstrated improvement rate difference (IRD) scores of 0.71 or above, meaning large effects. Kaiser et al., (2000) obtained IRD scores of 0.51 to 0.69, meaning small effects. Three studies obtained IRD scores of 0.50 or less (Crockett et al., 2007; Ingersoll and Gergans, 2007; & Rocha et al., 2007). Furthermore, two studies (Kashinath et al., 2006), Vismara et al., 2009) had large effects on parent outcomes but small to moderate child outcomes. Lastly, Nunes and Hanline (2007) had small parent improvement but moderate effects for child improvement. A limitation of the study was the exclusion of grey literature because previous research had indicated bias of published studies.
Buckley, Ente, and Ruef (2014) conducted a single-subject study where the parent was taught pivotal response treatment within the home. The purpose of the training was to increase the child’s compliance. Baseline was conducted for three weeks and parent-training intervention was conducted for four weeks. During those four weeks the children’s rate of compliance increased 70%. A limitation of this study was the participation size. Also, long-term assessment tools would help gather data on whether parents learnt all the skills taught and overall whether intervention effective across families.

Steiner (2011) conducted a study to see if a strength-based approach would increase skills in three children. Three preschool aged children and their primary caregivers were the participants of this study. Parents’ were taught pivotal response treatment to increase childrens’ verbal communication. The children’s behaviour was compared with two approaches; strength-based and deficit-based. The strength-based approach was when the clinician made strength-based statements and the deficit-based approach was when the clinician made deficit-based statements in regards to the child. Baseline data were collected three weeks before intervention. Intervention data were conducted for 10 minute intervals during weekly parent education sessions and that intervention was conducted for three weeks. The two approaches were interchanged within the sessions, as well as, general positive teaching approach where the clinician commented on the parents pivotal response treatment use, modeled, gave opportunities to use those, and gave feedback. Sessions always concluded with the strength-based approach to avoid negative effects. A week following the three sessions, another 2 hour parent education session was conducted, however, only the strength-based approach was used. This was conducted to assess generalization. The results of this study indicated that the strength-based approach was more effective with parents to improve parent affect and parent-child interactions. The increase of positive parent-child interactions had a direct impact by parents helping to engage their child in a playful manner and physical affections which was maintained and generalized. This study shows that parent education can not only have a direct effect on children’s skills in many areas but also affects parents’ affection and stress levels with their child. The limitation of this study was that it was the first study to determine the efficiency of a strength-based approach with parent education and children with ASD. Due to this, there were many suggestions on how to expand on this research in the future.

Ingersoll and Wainer (2011) conducted a study where 13 teachers of three different school districts implemented an intervention called Project ImPACT to increase children’s rate of language within the home. Ingersoll and Wainer explained that teachers were to teach parents the techniques of Project ImPACT, as well as, use the techniques themselves within the classroom. The study included 27 students and their parents and 89% of the students completed this program. After intervention was completed, it was reported that parents increased their use of treatment strategies and children’s rate of language increased. Both parents and teachers reported children’s mastery of social-communications skills. Also, teachers said there was a decrease in social impairment. Ingersoll and Wainer also included parent fidelity across categories of baseline and follow-up but did not include teacher fidelity data. Both teachers and
parents said that it was feasible for teachers to implement this training program. The limitations of this study was that the children had educational diagnosis of ASD or under other eligibility, the children were categorized without a standardized measure of child functioning, not all families chose to participate, teacher fidelity was not collected, and the pre-post and parent-and teacher-report measures which could have been biased also limited the conclusions drawn from causal effect.

Brookeman-Frazee (2004) conducted a study which used two models interchangeably. He stated that the models used were parent/clinician partnership and a Clinician-Directed model to compare observed parent stress. They also observed parent confidence, observed child affect, and child responsiveness and engagement. There were three participants in the study; three boys with ASD and their mothers. Parents were taught pivotal response training. Parent education sessions focused on increasing children’s motivation to use verbal communication, appropriate social interactions, and learning interactions from the natural environment. The strategy used to teach the mothers was the approach of practice with feedback. The results of this study were that observed stress was lessened during the partnership conditions in comparison to the clinician-directed condition. Also, parents’ confidence was also increased during the partnership condition which could potentially increase the parents’ self-efficacy. The quality of parent-child interactions was also found to be increased more frequently during the partnership condition in comparison to the clinician directed condition. Some limitations of the study were the participant characters because the participants were all highly educated and motivated to change therefore the model may not work for those who have lesser education, this study did not have any self-report measures so the parent cognitions were not recognized, and this study did not evaluate parent-professional interactions which could affect the results of the study.

Coolican, Smith, and Bryson (2010) implemented a study to see if 6 hours of parent education in pivotal response training could help increase children’s skills. This study included eight participants who were preschoolers. Parents received individual parent training for three, two hour sessions. Baseline, intervention, and two to four months follow up data were taken using standardized tests, questionnaires, and behaviour coded directly from video recordings. This study showed that functional verbal utterances increased 25.8% from pre- to post intervention and at the follow up of 2 to 4 months the skills was maintained. Also, parents’ fidelity in using proper techniques increased and was maintained at follow-up. Lastly, there was a moderate to strong relation between parent’s fidelity to implement the pivotal response techniques and an increase of children communication skills was shown. The limitations of this study was that there could have been developmental changes between post-training and follow-up changes, as well as, a comparison to evaluate brief parent training in PRT to another intervention did not occur within this study.

While the studies above show the value of single-subject interventions, agencies often find them difficult to deliver and implement. Waiting lists for children with ASD are long and can be expensive and time consuming. Also, children with ASD often need to work on their social skills which is difficult to practice on without other children. As a result, more and more
agencies are looking at group interventions in order to target more clients and to reduce costs. As group interventions are also costly, we need to know about the effectiveness of such programs.

**Group Comparison studies**

Dillenger, Keenan, Gallagher, and McElhinney (2004) used group parent training that taught the general principles of ABA and then parents were encouraged to help create individual treatment plans for their child. Dillenger et al., explained that this study had 50 families who received ABA programs and 22 out of the 50 families decided to participate in the study. Dillenger and colleagues noted that the two groups of this study were the long-term group (LTG) and short-term group (STG). The LTG received ABA programs for an average of 35.5 months while the STG were using ABA programs for an average of 6.1 months. There were 12 participants in the LTG and 10 in the STG and the age range of children was 3 to 13 years old. However, older children were in the LTG. Also, the parents’ age in the LTG had an average of 41 years while the average in the STG was 36.6 years. Dillenger et al., clarified that the socio-economic status was determined to be equivalent between the two groups. All families had two parents except for one and all families had more children than the child with ASD. The parents from this study found that ABA had high effectiveness in helping the development of their children, which increased the parents’ confidence. According to parents, children had increased independence, quality of life, skills development, skills maintenance, and interaction. There were no significant differences in parents’ perceptions between the two groups. A second questionnaire was given that rated the effectiveness of intervention strategies. Parents found that their children had increased their self-help skills, social skills, gross motor skills, fine motor skills, communication, and concentration. Also, the parents found that ABA intervention strategies decreased their problem behaviour and obsessive behaviour. A limitation of the study is that it did not include continuous data on each child’s behaviour.

Tonge et al. (2014) conducted a randomised group comparison controlled trial with two parent education programs. The two groups were parent education and behavior management versus parent education and counselling. Both groups had 35 participants. The parent education and behaviour management intervention was based on the “Preschoolers with Autism” manual-based education and behaviour management skills training package (Brereton and Tonge, 2005). The parent education uses both group and individual sessions that focus on parents’ reactions and understanding autism and how the diagnosis of autism affects their children. The parent education and counselling group also had a manual-based education program. This manual covered the same topics as the other group but did not also give homework. This group also had group and individual sessions. The difference between the individual sessions was that the parent education and behavioural management group allowed the children to attend while the parent education and counselling did not. Both groups had alternating sessions; ten 90 minute sessions in a group of four to five families and ten 60 minute sessions individually within a 20 week period. The study shows that the group that had parent education skills training, coaching and behaviour management was more effective than the parent education and non-directive
counselling. The parent education and behaviour management group was more effective with adaptive behaviour and symptoms of autism at 6-month follow-up. While, both groups increased socialisation, the coaching group had a higher efficiency of child communication, daily living skills and motor skills. A limitation of this study was that there was no fidelity measure or data taken on parent compliance of intervention which could have effect the quality of intervention.

Drew et al., (2002) conducted a randomized control study including 24 children with the average age of 23 months. The pre-schooler children were randomised into a parent training group or to local services group. The parent training group was taught behaviour management, prompting compliance, principles of reinforcement, interrupting unwanted behaviours, positively teaching alternative behaviours, development of social and communicative competence, joint attention, and imitation. The local services group received speech and language, portage home worker input, and other paramedical therapy services. Follow-up data were completed a year later and showed that the parent training group increased language development more effectively than the local services group. Some limitations were noted; a reliance on parental report to measure language, non-matching of the groups on initial IQ, and during implementation of intervention there was no systematic checking. Another confounding factor was found in the local services group when three families received intensive, home-based behavioural intervention during the study Drew.

Elder et al., (2011) conducted a study which compared fathers’ and mothers’ implementation of skills taught during parent education. Elder et al, explained that fathers and mothers received in-home interventions; following the child’s lead, imitation with animation, commenting on the child, and expectant waiting. Intervention was 12 weeks. Data were collected twice a week during the intervention phase, also, during videotaped in-home play sessions. Fathers were trained first by a private instructor and then taught the mothers the strategies learned. Both mother and fathers used some strategies with increased frequency. Parents learned expectant waiting, but found it difficult to wait the three seconds. Fathers showed significant improvement in commenting on the child during baseline; however, this could be due to the mothers having already shown the skills during baseline. Mothers did increase their use of following the children’s lead while the fathers did not. Children responded to both parents similarly and increased both imitating and non-speech vocalizations. This study showed that not only can parents learn from effective parent education but they can also teach spouses or other caregivers’ different strategies to increase their children’s skills. This was the first study to approach parent education with mothers learning skills taught from fathers and thus, more studies are needed to evaluate whether this approach is effective.

Mandelberg, Frankel, Cunningam, Gorospe, and Laugeson (2014) conducted a study that evaluates the long-term outcome of Children Friendship Training, which is another type of parent training. The participants completed the training 1 to 5 years previous. Mandelberg et al., explained that the participants had an average of 35 month follow-up, the children had the mean age of 12.6 years. Mandelberg et al., stated that the results of the follow-up data collected showed that participants were invited to more play dates, increased their positive parent-reported
social skills and problem behaviours, showed less play date conflict, and decreased loneliness. A major limitation of this study is that it was not a randomized control group because a comparison group could show ethical and logistical problems.

Summary

In summary, both single-case and group research has indicated that many different methods of parent education of ABA intervention can increase children with ASD’s success in many different areas. Also, parent education seems to increase parents’ confidence and reduce their stress. This literature review documents empirical research indicating that parent education does increase success with different life skills, generalization, and maintenance of these skills in children with ASD. These studies show that these intervention programs increase quality of life in children with ASD and the use of ABA techniques taught to their parents. A limitation of this research was that it was mostly American. There was little published Canadian research, so one purpose of the present study was to replicate these findings in a Canadian sample.

The purpose of the present study is to examine whether children with ASD whose parents have completed parent education can master their individual goals within an ABA group in comparison to children whose parents did not complete the parent education group training provided. The study compared the two different groups. Then the data were interpreted to see if the parent education is having an effect within the family. What set this study apart from others is that the agency is within a small city and the parent education training program has not been evaluated before. The agency has, within the last 10 years, created their ABA program with children with autism. Therefore, it is necessary to see whether the children’s parents understood the ABA material, such as foundations and individual techniques to behaviours and understood their role as mediators for their children.
Chapter III: Method

Parent Education Program

The purpose of this research was to evaluate whether parent participation in Expanding Minds: An introduction to how ABA can help you and your family (ErinoaksKids: a Learning Journey Into Autism, revised December 2011) increased children’s likelihood of mastering their individual goals within an ABA group. The program included four modules that cover the basics of ABA; the Fundamentals, Challenging Behaviour, Play and Social Skills, and Activities of Daily Living. The first module, the Fundamentals, taught what the diagnoses of autism, what reinforcement is and how to use it to increase desirable behaviours. Also parents learned what pairing was and strategies to increase instructional control and teaching techniques used in autism services. The second module, Challenging Behaviour, taught parents what the definition of behaviour is, common challenging behaviours and associated risks, appropriate vs. challenging behaviours, define challenging behaviours, the role of the environment in relation to challenging behaviour, why challenging behaviours occur, and describe common strategies used to help decrease challenging behaviours. The third module, Play and Social Skills, covered the mediator model, social and play skills, and strategies to teach to increase social interactions. The fourth module, Activities of Daily Living, reviews the mediator model. It also describes how to select skills to teach, data collection, task analysis, chaining procedures, toileting, and feeding. The parent education sessions were 3 hours per module in a classroom setting and taught through didactic learning. There are four sessions; one per module. The two facilitators were an ABA therapist and the wait list coordinator for Intensive Behavioural Intervention (IBI). The agency is within Eastern Ontario in a city that holds 50 thousand people. The rationale for completing this case review was to determine whether or not the parent education component was successful and if not whether the program should be modified.

Participants

As this study was a file review, there were no direct participants. Twenty-three closed files of children with one or both parents were reviewed. All children had diagnoses of ASD determined by external psychologists and were between the ages 2 and 5; 19 were boys and 4 were girls. The median age of boys was 53 months (4 years) and the median age of girls was 51 months (4 years). Only the children’s first entry into the preschool group during 2013 and 2014 conducted by the ABA team at the agency was considered, in calculating the above statistics.

The case files were split into two groups; completed and incomplete. If the parent had finished all four modules they would be considered completed, if the parent had finished none, one, two, or three out of four modules they would be considered incomplete. The parents must finish these modules before their children entered group to be considered completed.
Consent

Consent (Appendix A) was gained from the ABA team Program Manager to access and analyze the files. Also, the Research and Ethics Board at St. Lawrence College reviewed and approved the current study.

Data Collection

The data sheet (Appendix B) used to gather data on each case file included many components. It had each child’s age, sex, year the child attended the ABA group program, whether the child completed the group program, whether they attended group in following years, number of goals set for each child, number of goals completed, percentage of goals completed, parent education, program profession, whether the parents completed the education program, number of modules completed, and number of participants within the parent training program.

Design

The format for this thesis is a non-experimental file review. The independent variable for this was the parents’ completion of the parent education program provided by the ABA team and the dependent variable was the children’s mastery of individual goals.
Chapter IV: Results

The parents were assigned to two groups based on their completion of the parent education training program. Those in the completed group had finished all four modules, while those in the incomplete group finished an average of .13 modules with a standard deviation of .35. An independent samples t-test was performed on the number of modules completed for each group. The results shown in Appendix D confirmed that the group did differ significantly using the criterion, \( t(21) = 43.36, p < .001 \). Therefore, the “completed” group and “non-completed” group were distinct.

On all other variables, the groups did not differ significantly. Table 1 summarizes the results, for the completed and incomplete groups. The mean ages in months was 4 years, 5 months with an a standard deviation of 11 months for the completed group and 4 years, two months with an standard deviation of 10 months for the incomplete group, \( t(21) = .74, p > .05 \). The mean number of participants in parent education training for the completed group was 13 with a standard deviation of 5 and for the incomplete group the mean number of participants was 10 with a standard deviation of 7. Similarly, the groups did not differ significantly on number of participants, \( t(21) = 1.09, p > .05 \). Therefore, the characteristics of the groups were similar.

This study aimed to see whether children whose parents had completed the training would be more successful in achieving their goals. In order to evaluate this, three measures were used: the number of goals set for the children, the number of goals achieved, and the percentage of goals that were successfully obtained. The groups did not differ significantly in terms of numbers of goals set. The mean number of goals set for children in the completed group was 4 with an standard deviation of .7 and the mean for the incomplete group was 3 with an standard deviation of .5, \( t(21) = .98, p > .05 \). In terms of goals that were successfully completed, the mean number of goals achieved in both groups was low. In the completed group, the mean was .8 with a standard deviation of 1 and in the incomplete group it was .6, with a standard deviation of 9. The groups did not differ significantly. Likewise the percentage of goals that were completed for both groups was low. The mean percentage of goals completed was 22 with an standard deviation of 35 in the completed group and the mean for the non-completers was 19 with a standard deviation of 27, \( \chi^2 (21) = .21, p > 0.05 \).

In summary, no statistically significant differences were found in: ages in months, number of participants in parent training, number of goals set, number of goals completed, or percentage of goals achieved between groups. Figure 1 showed the complete and incomplete groups and the percentage of goals completed for each group. On the primary outcome measure; the graph shows that there are not any statistically significant differences, meaning that it does not matter if parents complete the parent training program, as the results of the children would be similar to those who completed it. The data suggests that the children in either group are not meeting their goals which is concerning.
### Table 1

**Means of Completed Group and Incomplete Group**

<table>
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<th></th>
<th>Completed Group Mean</th>
<th>Incomplete Group Mean</th>
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<tbody>
<tr>
<td>Age</td>
<td>54 months ($sd = 11$ months)</td>
<td>50 months ($sd = 10$ months)</td>
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<tr>
<td>Number of modules completed</td>
<td>4 ($sd = .0$)</td>
<td>.13 ($sd = .35$)</td>
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<td>Number of participants in parent training</td>
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<td>10 ($sd = 7$)</td>
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<tr>
<td>Number of goals set</td>
<td>.8 ($sd = 5$)</td>
<td>.6 ($sd = .9$)</td>
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<tr>
<td>Number of goals completed</td>
<td>4 ($sd = .7$)</td>
<td>3 ($sd = .5$)</td>
</tr>
<tr>
<td>Percentage of goals completed</td>
<td>21 ($sd = 35$)</td>
<td>18 ($sd = 27$)</td>
</tr>
</tbody>
</table>

Table 1: Means of Completed Group and Uncompleted Group

![Figure 1: Comparison of Completed Goals](image-url)
Chapter V: Discussion

Previous studies have shown that parent education training increases children’s adaptive skills using ABA techniques (Patterson et al, 2012). Parents learning how to use ABA skills and techniques have a higher chance of success of teaching their children learning new skills according to literature. Parents are able to adapt ABA techniques to match their and their children’s needs. By doing this, children who have learnt new adaptive skills increase their generalization and maintenance of these skills. The purpose of this study was to evaluate if a parent education training program offered by an agency in Eastern Ontario would be effective in helping children with ASD achieve their individualized goals. Participants were divided into two groups based on whether or not their parents completed parent training. The results of the study did not support the hypothesis. The majority of the children (78%) attending an ABA group, did not achieve their goals and children completed goals at about the same rate whether or not their parents attended the parent education training group.

Strengths and Limitations

The strengths of this study were that it evaluated children’s outcome in a relatively easy, inexpensive manner using a file review. The file review helped the agency to identify the effectiveness of parent education based on the data that was collected by those who ran the individual group sessions and parent education training group. This study used the same criteria that the agency uses to define whether parents and children completed programs and goals. The study showed that the groups did differ by the criteria set by the agency (i.e., the “completer” and “non-completers” were different.) It also showed that the completed and incomplete parent education training group were similar in characteristics thus making it valid to compare one group to the other. The study was relevant and timely by using the last 2 previous year’s participants.

While the current study showed that the parent education program was ineffective in helping children reach their individual goals, it did not review if the children succeeded in completing the curriculum goals. Each session per week had a new curriculum goal introduced that the children were to work on in order to master as well as their individual goals that the children’s parents asked to be goals.

A limitation of this study was that it did not include any intervention therapist fidelity data of the parent education program which can affect parent outcomes and thus affect children’s success. Wainer and Ingersoll (2013) reported how important intervention therapist fidelity is because of the levels of development in different stages of the programs. Since this data were not included, the results of this study could be based on how the parent education training program was presented. Also, another limitation was the disorganization with the parent education files. When completing data collection of the parent education training program, it was unclear how many participants were in each session. They did not show if parents attended every parent education group session, or if the parent’s went from group to individual parent education
sessions, and some files were missing. Lastly, the facilitators of the parent education training did not collect any data on parents’ education levels or professions.

Another limitation was that one parent did not remain in contact to complete follow-up data and thus their children had a 0 for number of goals completed. Another case showed that one parent who completed the parent education training was not the primary caregiver and did not attend group sessions to learn techniques; however, the primary caregiver who did attend group sessions did not attend the parent education training and this which would impact results.

### Multilevel Challenges to Service Implementation

The multilevel challenges of service implementation were various; challenges at the client level were that it was difficult for some parents to see extinction bursts happening to their child and not interfere. This may add pressure to parents who are already stressed and may impact how well they are able to implement. Parents whom are stressed may inconsistently implement strategies at home. Also, children with ASD are a difficult population to serve in general since all children’s needs are individualized and you have to modify programs to work for each individual. The challenges at the program level included that it was difficult to put children who were at the same functioning level in the same group as well as in the same age range. Also, ABA group programs are time-intensive and costly. Agencies can only work with a small group of children at a time. Adding the parent education training aspect increases the time spent and cost. Some parents do not show up for the group parent education and have to have individualized lessons. Given the time and cost spent to teach manualized programs it may not be the best choice for the parents who are busy and stressed with their children. The organizational level of this thesis was the lack of organization for files that the agency had. They have difficulties with documentation and need to gather more detailed information in the future. Another difficulty the agency may have is with difficulties in funding and resources. The agency in recent years introduced this program and there is no other like it within the community. The agency has need for outcome measures and for the children to succeed to continue helping their clients to the best of its abilities. Finally, challenges at the societal level the challenges were how the public’s attitude is to parents and children with ASD. Also, many people do not know what an ABA program is and probably do not understand what an ABA program using a parent as a mediator is and find it a waste of time and government funding. Many people who do not understand ASD do not agree with the funding of treatment programs. To increase public support, agencies need to show that treatment programs are effective for funding to continue.

### Contributions

The contributions of this study are various. One is that the agency could apply this data to see if they need to modify the parent education training program. It also adds literature to those who are in the Behavioural Psychology field and wishing to expand their knowledge on ABA effectiveness when working with children with ASD using a parent mediator model.
Recommendations for Practice of the Agency

Recommendations for future research in the agency and the parent education training program is to have consistent records of who attends each sessions and if they change from group to individual sessions. Also, it is important for staff to record more information about parents and their circumstances, to allow for future comparisons. Another recommendation is to have a system developed for the files and have the files audited.

Future Research

Future research may find that children are more likely to complete the curriculum goals in comparison to their individualized ones. Also, the children may improve if they enter the ABA program in future years due to being older and more experienced with this program.
References


Appendix A: Informed Consent

St. Lawrence College

Addressed to [Position]: [Name]

Project title: The Effectiveness of Parent Education Training for Children with Autism Receiving Group Applied Behaviour Analysis Services
Student: Meredith Dunham, contact at 613-541-8097
Name of agency supervisor, school supervisor: Lisa Lynch, Dr. Sheelagh Jamieson, C. Psych.
Name of Institution: St. Lawrence College
Name of part partnering institution/agency:

Invitation
I am a student in my 4th year of the Behavioural Psychology program at St. Lawrence College. I am currently on placement at the agency. As a part of this placement, I am completing a research project called an applied thesis. I would like to ask you for your help to complete this project. The information in this form will help you understand my project. Please read the information carefully and ask all the questions you might have before you decide if you want to take part.

Why is this study being done?
The purpose of this study is to evaluate whether parent education increases the success of children with autism in meeting individualized goals within ABA services at the agency.

What will you need to do if you take part?
As this study is a file review, this study does not need any direct participation from you or clients of The agency. The agency would need to give me permission to complete the file review. Furthermore, the student will need access to an agency computer at the agency and have the hard copy files to look up the data collected by the ABA teams.

What are the potential benefits of taking part?
Due to this study being a file review, no individual participants will benefit from this.

What are the potential benefits of this research study to others? (if applicable)
The agency will benefit by understanding and being shown data on whether the parent education program is being effective for families in helping their children be more successful. The potential benefits for future clients is that parents could be told that parent education does help children with ASD reach goals more efficiently. If the data shows that the parent education is not increasing children’s success then the parent education program may be modified. At your discretion, any information gained by this file review can be shared with other service partners. The agency may discuss with their partners different ways to improve the parent education program.

What are the potential disadvantages or risks of taking part?
Due to this being a file review, there will be no direct or potential disadvantages or risks to
participants.

**What happens if something goes wrong?**
There are no risks for taking part in this file review.

**Will my information you collect from me in this project be kept private?**
Any information that could identify parents or their children will be kept confidential. The files will be coded with a number and will be kept in a locked office within Belleville and District Counselling Services. The data within the study will be presented as aggregated data, not individually, to prevent any individuals from being identified. The files will be reviewed one at a time and will remain in a locked cabinet when they are not being used. Any data collected will be on an encrypted file within a password protected computer within the agency or on a password protected USB. Also, the hard copy files used will not leave The agency. As the files will be retained at your agency, it is your decision how long you keep the data for. However, the Research Ethics Board at St. Lawrence College recommends that the data be kept for 7 years before it is destroyed.

**Do you have to take part?**
Taking part is voluntary. It is up to you to decide whether or not to take part in this research project. If you do decide to take part, you will be asked to sign this consent form. If you do decide to take part in this research project, you are still free to withdraw at any time, without giving any reason.

**Contact for further information**
This project has been approved by the Research Ethics Board at St. Lawrence College. The project will be developed under the supervision of Dr. Sheelagh Jamieson, C. Psych., my supervisor from St. Lawrence College. I really appreciate your cooperation and if you have any additional questions or concerns, feel free to ask me, Meredith Dunham (mdunham21@sl.on.ca). You can also contact my College Supervisor at sjamieson@sl.on.ca or you may also contact the Research Ethics Board at appliedresearch@sl.on.ca.
Consent
If you agree to take part in this research project, please complete the following form and return it to me as soon as possible. A copy of this signed document will be given to you for your own records. An additional copy of your consent will be retained at the agency [and in a secure location at St. Lawrence College, if applicable].

By signing this form, I agree that:

- The study has been explained to me.
- All my questions were answered.
- Possible harm and discomforts and possible benefits (if any) of this study have been explained to me.
- I understand that I have the right not to participate and the right to stop at any time.
- I am free now, and in the future, to ask any questions I have about the study.
- I have been told that my clients personal information will be kept confidential.
- I understand that no information that would identify clients will be released or printed without asking me first.
- I understand that I will receive a signed copy of this consent form.

I hereby consent to take part.

<table>
<thead>
<tr>
<th>Participant Name</th>
<th>Signature of Participant</th>
<th>Date</th>
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<th>Student Printed Name</th>
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Appendix B: Data Collection

Data of Participant Code 1

Age of child when they began ABA group program: 3 years, 1 months

Sex: Male

Year child attended ABA group program: 2014

Child completion of ABA group program: Completed

Attended group in following years: No.

Parent education background: N/A

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Parent profession: Mother is a homemaker and father is a financial adviser.

Did either parent or both parent complete parent education program: Mother completed parent education program.

Number of modules completed: 4

Number of participants in Parent Training Program: 15

Number of goals set for Child with ASD: 3 individual goals set.

Type of goals:

- Social: The three individual goals were social; initiate greetings, engage in game with at least one peer, and appropriately wait his turn while playing a game.

- Emotional:

- Daily Living:

- Behavioural:

Number of goals completed: 0

Percentage of goals completed: 0%
**Data of Participant 2**

Age of child when they began ABA group program: 4 years, 0 months

Sex: Male

Year child attended ABA group program: 2013

Child completion of ABA group program: Completed

Attended group in following years: Yes

Parent education background: Mother a few credits short for her BA and father has his GED.

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Parent profession: Father is an Air Force Technician and works in the armament shop.

Did either parent or both parent complete parent education program: Yes; mother completed parent education program.

Number of modules completed: 4

Number of participants in Parent Training Program: 17

Number of goals set for Child with ASD: 4

Type of goals:

- Social: 2: Initiate greetings, join into play with peers
- Emotional:
- Daily Living:
- Behavioural: 2: Wait appropriate, request assistance

Number of goals completed: 1

Percentage of goals completed: 25%
**Data of Participant 3**

Age of child when they began ABA group program: 4 years, 6 months

Sex: Female

Year child attended ABA group program: 2014

Child completion of ABA group program: Completed

Attended group in following years: No

Parent education background: Mother and father both completed college

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Parent profession: Mother is a RN and father is a salesperson.

Did either parent or both parent complete parent education program: Yes; mother and father completed parent education program.

Number of modules completed: 4

Number of participants in Parent Training Program: N/A

Number of goals set for Child with ASD: 3

Type of goals:

- Social: 3: Verbally ask for items, say her name and ask “what is your name” and engage in play with peers

- Emotional:

- Daily Living:

- Behavioural:

Number of goals completed: 2

Percentage of goals completed: 67%
Data of Participant 4

Age of child when they began ABA group program: 4 years, 0 months

Sex: Female

Year child attended ABA group program: 2014

Child completion of ABA group program: Completed

Attended group in following years: No.

Parent education background: N/A

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Parent profession: Mother has no job and receives Ontario works. Father N/A.

Did either parent or both parent complete parent education program: Incomplete

Number of modules completed: 0

Number of participants in Parent Training Program: 19

Number of goals set for Child with ASD: 3 individual goals set.

Type of goals;

Social: The three individual goals were social; respond to her name, imitate actions of others, engage in parallel play with a peer

Emotional:

Daily Living:

Behavioural:

Number of goals completed: 0

Percentage of goals completed: 0%
Data of Participant 5

Age of child when they began ABA group program: 4 years, 11 months
Sex: Male
Year child attended ABA group program: 2014
Child completion of ABA group program: Completed
Attended group in following years: No.
Parent education background: N/A

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Parent profession: Mother is a stay at home mom and father is in the military.

Did either parent or both parent complete parent education program: Incomplete

Number of modules completed: 0

Number of participants in Parent Training Program: 11

Number of goals set for Child with ASD: 4 individual goals set.

Type of goals:

Social: engage in interactive play and/or game with at least one peer, use full sentences when expressing ideas, initiate interactions with peers by greeting them or asking them to play

Emotional:

Daily Living:

Behavioural: Appropriately transition between preferred and non-preferred activities

Number of goals completed: 2

Percentage of goals completed: 50%
**Data of Participant 6**

Age of child when they began ABA group program: 4 years, 5 months

Sex: Male

Year child attended ABA group program: 2014

Child completion of ABA group program: Completed

Attended group in following years: No.

Parent education background: N/A

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Parent profession: Mother is unemployed and father is a roofer.

Did either parent or both parent complete parent education program: Incomplete

Number of modules completed: 0

Number of participants in Parent Training Program: 11

Number of goals set for Child with ASD: 3 individual goals set.

Type of goals:

- **Social**: engage in parallel play, imitate actions of others, wait his turn.
- **Emotional**:
- **Daily Living**:
- **Behavioural**:

Number of goals completed: 2

Percentage of goals completed: 67%
Data of Participant 7

Age of child when they began ABA group program: 4 years, 1 months

Sex: Male

Year child attended ABA group program: 2014

Child completion of ABA group program: Completed

Attended group in following years: No.

Parent education background: N/A

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Parent profession: Caregiver unemployed.

Did either parent or both parent complete parent education program: Incomplete

Number of modules completed: 0

Number of participants in Parent Training Program: 1

Number of goals set for Child with ASD: 3 individual goals set.

Type of goals:

Social: respond to name, imitate the action of others, sit with peers

Emotional:

Daily Living:

Behavioural:

Number of goals completed: 1

Percentage of goals completed: 33%
Data of Participant 8

Age of child when they began ABA group program: 4 years, 6 months

Sex: Male

Year child attended ABA group program: 2013

Child completion of ABA group program: Completed

Attended group in following years: Yes.

Parent education background: N/A

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Parent profession: Mother is a stay at home mom and father is an undertaker.

Did either parent or both parent complete parent education program: Mother completed parent training.

Number of modules completed: 4

Number of participants in Parent Training Program: 16

Number of goals set for Child with ASD: 3 individual goals set.

Type of goals:

Social:

Emotional:

Daily Living:

Behavioural: Transition between activities appropriately and calmly, appropriately accept when he cannot have access to preferred item, and will wait appropriately.

Number of goals completed: 3

Percentage of goals completed: 100%
Data of Participant 9

Age of child when they began ABA group program: 3 years, 7 months

Sex: Female

Year child attended ABA group program: 2014

Child completion of ABA group program: Completed

Attended group in following years: No

Parent education background: N/A

Grade School | High school | College | University
-------------|------------|--------|----------
Other        |

Parent profession: Mother is unemployed

Did either parent or both parent complete parent education program: Incomplete

Number of modules completed: 0

Number of participants in Parent Training Program: 13

Number of goals set for Child with ASD: 3

Type of goals:

Social: Engage in parallel play and follow 1-step instructions

Emotional:

Daily Living:

Behavioural: Appropriately transition

Number of goals completed: 0

Percentage of goals completed: 0%
Data of Participant 10

Age of child when they began ABA group program: 5 years, 6 months

Sex: Male

Year child attended ABA group program: 2014

Child completion of ABA group program: Completed

Attended group in following years: No

Parent education background: N/A

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Parent profession: Mother is a stay at home mom and father N/A

Did either parent or both parent complete parent education program: Incomplete

Number of modules completed: 1

Number of participants in Parent Training Program: 1

Number of goals set for Child with ASD: 3

Type of goals;

   Social: Appropriately play with a peer and follow 1-step instructions

   Emotional:

   Daily Living:

   Behavioural: Appropriately transition

Number of goals completed: 0

Percentage of goals completed: 0%
Data of Participant 11

Age of child when they began ABA group program: 4 years, 7 months

Sex: Male

Year child attended ABA group program: 2013

Child completion of ABA group program: Completed

Attended group in following years: No

Parent education background: N/A

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Parent profession: Mother is a stay at home mom, and father is a businessman and part-time farmer

Did either parent or both parent complete parent education program: Mother completed

Number of modules completed: 4

Number of participants in Parent Training Program: 16

Number of goals set for Child with ASD: 4

Type of goals:

Social: appropriately take turns, engage in parallel play with at least one peer, respond appropriately when told to ‘stop’, and respond appropriately when denied access to an item or activity.

Emotional:

Daily Living:

Behavioural:

Number of goals completed: 0

Percentage of goals completed: 0%
**Data of Participant 12**

Age of child when they began ABA group program: 4 years, 5 months

Sex: Male

Year child attended ABA group program: 2014

Child completion of ABA group program: Completed

Attended group in following years: No

Parent education background: N/A

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Parent profession: N/A

Did either parent or both parent complete parent education program: Incomplete

Number of modules completed: 0

Number of participants in Parent Training Program: N/A

Number of goals set for Child with ASD: 3

**Type of goals:**

- **Social:** Appropriately take turns with peers and share toys and other items with peers

- **Emotional:**

- **Daily Living:**

- **Behavioural:** appropriately transition between activities.

Number of goals completed: 0

Percentage of goals completed: 0%
**Data of Participant 13**

Age of child when they began ABA group program: 5 years, 10 months

Sex: Male

Year child attended ABA group program: 2013

Child completion of ABA group program: Completed

Attended group in following years: Yes

Parent education background: N/A

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Parent profession: Mother works at a restaurant and father works at a construction company

Did either parent or both parent complete parent education program: Incomplete

Number of modules completed: 0

Number of participants in Parent Training Program: 17

Number of goals set for Child with ASD: 3

Type of goals:

Social:

   Emotional: Wait appropriately, ask for help, tolerate sharing preferred items and activities.

   Daily Living:

   Behavioural:

Number of goals completed: 0

Percentage of goals completed: 0%
Data of Participant 14

Age of child when they began ABA group program: 5 years, 5 months

Sex: Female

Year child attended ABA group program: 2013

Child completion of ABA group program: Completed

Attended group in following years: No

Parent education background: N/A

- Grade School
- High school
- College
- University
- Other

Parent profession: Mother is a personal support worker. Father is N/A.

Did either parent or both parent complete parent education program: Mother completed parent education program.

Number of modules completed: 4

Number of participants in Parent Training Program: 9

Number of goals set for Child with ASD: 4

Type of goals:

- Social: Ask for items using sign language, respond to greetings, sit appropriately in a group.
- Emotional:
- Daily Living: Will eat using a spoon.
- Behavioural:

Number of goals completed: 0

Percentage of goals completed: 0%
Data of Participant 15

Age of child when they began ABA group program: 5 years, 11 months

Sex: Male

Year child attended ABA group program: 2013

Child completion of ABA group program: Completed

Attended group in following years: No

Parent education background: N/A

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Parent profession: Mother is a businesswoman and father is a truck driver.

Did either parent or both parent complete parent education program: Mother completed parent education program

Number of modules completed: 4

Number of participants in Parent Training Program: 12

Number of goals set for Child with ASD: 2

Type of goals:

Social:

Emotional: Respond appropriately when told “no” and engage in parallel play

Daily Living:

Behavioural:

Number of goals completed: 0

Percentage of goals completed: 0%
Data of Participant 16

Age of child when they began ABA group program: 4 years, 4 months
Sex: Male
Year child attended ABA group program: 2013
Child completion of ABA group program: Completed
Attended group in following years: No
Parent education background: N/A

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Parent profession: Mother works at a fast-food restaurant and father is an electronic technician.

Did either parent or both parent complete parent education program: Incomplete
Number of modules completed: 0
Number of participants in Parent Training Program: 17
Number of goals set for Child with ASD: 4
Type of goals:

Social: Take turns and share with peers, play interactively with at least one peer, and use carrier phrases to request items.

Emotional: respond appropriately when a preferred activity is removed.

Daily Living:

Behavioural:

Number of goals completed: 0
Percentage of goals completed: 0%
Data of Participant 17

Age of child when they began ABA group program: 4 years, 4 months

Sex: Male

Year child attended ABA group program: 2013

Child completion of ABA group program: Completed

Attended group in following years: Yes

Parent education background: Mother went to University and father has gone to college.

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Parent profession: Mother is a manager and father is in training for a trade.

Did either parent or both parent complete parent education program: Mother and father complete parent education program.

Number of modules completed: 4

Number of participants in Parent Training Program: 9

Number of goals set for Child with ASD: 4

Type of goals:

- **Social:** play independently, play interactive game with peer, share toys and activities with peers, and use the phrase “I want ____”

- **Emotional:**

- **Daily Living:**

- **Behavioural:**

Number of goals completed: 0

Percentage of goals completed: 0%
Data of Participant 18

Age of child when they began ABA group program: 4 years, 10 months

Sex: Male

Year child attended ABA group program: 2014

Child completion of ABA group program: Incomplete

Attended group in following years: No

Parent education background: N/A

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<th>College</th>
<th>University</th>
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</thead>
<tbody>
<tr>
<td>Other</td>
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Parent profession: Mom is a waitress and father is a professor

Did either parent or both parent complete parent education program: Mother completed parent education

Number of modules completed: 4

Number of participants in Parent Training Program:

Number of goals set for Child with ASD: 4

Type of goals:

- Social: follow one-step instructions, use verbal language in order to communicate, take turns with peers and wait appropriately for his turn, and engage in play with peers.

- Emotional:

- Daily Living:

- Behavioural:

Number of goals completed: 0

Percentage of goals completed: 0%
Data of Participant 19

Age of child when they began ABA group program: 2 years, 7 months

Sex: Male

Year child attended ABA group program: 2014

Child completion of ABA group program: Incomplete

Attended group in following years: No

Parent education background: N/A

Grade School     High school     College     University
Other

Parent profession: Both parents are unemployed

Did either parent or both parent complete parent education program: Incomplete

Number of modules completed: 0

Number of participants in Parent Training Program: N/A

Number of goals set for Child with ASD: 3

Type of goals:

   Social: Appropriately take turns while playing a game with her peer(s) and use verbal language (2-3 words) to request for items or activities.

   Emotional: Appropriately transition from preferred activities to less preferred activities

   Daily Living:

   Behavioural:

Number of goals completed: 0

Percentage of goals completed: 0%
Data of Participant 20

Age of child when they began ABA group program: 2 years, 6 months
Sex: Male
Year child attended ABA group program: 2014
Child completion of ABA group program: Incomplete
Attended group in following years: No
Parent education background: N/A

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<th>University</th>
<th>Other</th>
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</thead>
</table>

Parent profession: Mom is a personal support worker and father is a truck driver
Did either parent or both parent complete parent education program: Mother completed parent education program
Number of modules completed: 4
Number of participants in Parent Training Program: 20
Number of goals set for Child with ASD: 3
Type of goals;
   Social: use verbal language (1-2 words) to request items or activities and appropriately play a game with a peer
   Emotional: transfer from a preferred activity to a less preferred activity
   Daily Living:
   Behavioural:
Number of goals completed: 0
Percentage of goals completed: 0%
Data of Participant 21

Age of child when they began ABA group program: 4 years, 10 months

Sex: Male

Year child attended ABA group program: 2013

Child completion of ABA group program: Completed

Attended group in following years: No

Parent education background: Both parents completed college

| Grade School | High school | College | University | Other |

Parent profession: N/A

Did either parent or both parent complete parent education program: Dad parents completed

Number of modules completed: 4

Number of participants in Parent Training Program: 13

Number of goals set for Child with ASD: 4

Type of goals:

   Social: engage in turn-taking and wait for his turn, and will share toys and items with peers.

   Emotional:

   Daily Living: use a functional mode of communication (pecs or sign language) and will stop when given the verbal instruction of “stop”

   Behavioural:

Number of goals completed: 0

Percentage of goals completed: 0%
Data of Participant 22

Age of child when they began ABA group program: 4 years, 10 months

Sex: Male

Year child attended ABA group program: 2013

Child completion of ABA group program: Completed

Attended group in following years: N/A

Parent education background: N/A

Parent profession: Mom is stay at home mom and father drives heavy machinery.

Did either parent or both parent complete parent education program: Both parents completed

Number of modules completed: 4

Number of participants in Parent Training Program: 17

Number of goals set for Child with ASD: 5

Type of goals:

Social: share toys, appropriately engage in turn-taking activities, and initiate interactions with peers by approaching them to play

Emotional:

Daily Living: use full sentences when asking for items and expressing ideas, and ask for help before becoming frustrated and/or upset

Behavioural:

Number of goals completed: 3

Percentage of goals completed: 60%
Data of Participant 23

Age of child when they began ABA group program: 3 years, 6 months

Sex: Male

Year child attended ABA group program: 2013

Child completion of ABA group program: Completed

Attended group in following years: Yes

Parent education background: N/A

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</thead>
<tbody>
<tr>
<td>Other</td>
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</table>

Parent profession: Mother is self employed and father is businessman

Did either parent or both parent complete parent education program: Both parents completed

Number of modules completed: 4

Number of participants in Parent Training Program: 17

Number of goals set for Child with ASD: 4

Type of goals:

Social: wait his turn, imitate actions performed by others, respond to greeting from peers, and make decisions as to what items he wants when presented with items

Emotional:

Daily Living:

Behavioural:

Number of goals completed: 3

Percentage of goals completed: 75%
## Appendix C: Group Statistics

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<th>Std. Deviation</th>
<th>Std. Error Mean</th>
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Table 2: Group Statistics
Appendix D: Independent Samples Test

Levene's Test for Equality of Variances

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Table 3: Independent Samples Test