

Effectiveness of Self-Instructional Mediator Training in Applied Behaviour Analysis

Courtney Phillips

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Faculty of Social Sciences, Brock University
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Abstract

Interventions using applied behaviour analysis (ABA) are widely used with children with autism spectrum disorders (ASD). Individuals who work with this population are important to target for ABA education. This study evaluated the efficacy of a self-directed program in increasing parent and student ABA knowledge and skills, self-efficacy, and new skill development in children with ASD. Study 1 was a pilot study of the newly developed evaluation materials. Study 2 tested the self-instructional package with three parents of children with ASD, three university students, and eight children diagnosed with ASD. Parents and students were given the *Simple Steps ABA* training package to use independently and were measured using a multiple baseline across participants and/or skills design. After training, ABA knowledge scores and self-efficacy showed variable improvement as did children's appropriate behaviours. These results suggest that more research is needed to determine the efficacy of a self-instructional ABA package.

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Effectiveness of Self-Instructional Mediator Training in Applied Behaviour Analysis

Purpose of Study

The purpose of this thesis was to evaluate *Simple Steps*, a self-instructional training manual designed to teach applied behaviour analysis (ABA) to parents of children with autism spectrum disorders (ASD). Two studies were conducted. The purpose of Study 1 was twofold. First, it was important to evaluate the ABA knowledge tests created by the first author (Appendices A-F). Study 1 determined whether any of the questions were too difficult or too easy, indicating that they should be omitted or adapted on the final version of the knowledge tests. Similarly, it also determined whether each version of the knowledge tests were of similar levels of difficulty. Second, it was important to test the feasibility of an evaluation the self-instructional program, *Simple Steps*. Study 1 provided information regarding the length of time it took to complete the knowledge tests and review the training materials to ensure that future participants knew the time commitment that would be required. It was also a preliminary evaluation of *Simple Steps* indicating whether or not participants with no prior ABA knowledge could increase their knowledge scores after reviewing portions of the self-instructional manual. The purpose of Study 2 was to evaluate the effectiveness of a self-directed program in teaching the principles of ABA to parents of children with ASD and students who work with children with ASD as evidenced by ABA knowledge scores, ABA skills displayed, and reports of self-efficacy.

ABA Interventions for Children with ASD

Children with ASD display impairments in communication, social interactions, and demonstrate restricted or stereotyped behaviours (American Psychiatric Association, 2000). To change the developmental trajectory of children with ASD to more closely resemble that of typically developing children, children with ASD are placed in early intensive intervention

programs that use the principles of ABA. “Early” intervention usually means that the child begins the intervention before five years of age. “Intensive” intervention commonly refers to 20 or more hours per week of intervention, but is definitely no less than 10 hours per week. Early intensive ABA interventions improve cognitive ability, language development, and adaptive behaviours (Eikeseth, 2009; Rogers & Vismara, 2008; Virués-Ortega, 2010) and reduce problem behaviours of children with ASD (Rogers & Vismara, 2008).

Rogers and Vismara (2008) summarized the methodologies and findings of a wide variety of early interventions including those using ABA, speech and language therapy, and social skills programs for children with ASD. They found statistically significant improvements in communication and cognitive ability scores in most of the early interventions for children with ASD that they reviewed. In another review of the early interventions available for children with ASD, Eikeseth (2009) found that ABA-based interventions were the only interventions to be categorized in the highest two levels (out of four) for providing scientific value in their research (e.g. randomized study design with standardized assessment measures and treatment fidelity). ABA interventions were also the only interventions to receive the top two level ratings (out of four) for displaying statistically and clinically significant results for behaviour change in children with ASD (e.g. significant differences found between intervention and control groups for cognitive and adaptive skills). From his assessment, Eikeseth (2009) concludes that ABA-based interventions can be considered “well established” interventions for children with ASD (p. 174).

Virués-Ortega (2010) conducted a meta-analysis of 22 peer-reviewed articles from 1987 to 2008 that used intensive ABA interventions with children with ASD. He found medium to large effect sizes for cognitive (IQ), language, and daily living skills in children with ASD due to the long term application of comprehensive ABA interventions with these children. Language

skills, in particular, were where children made the largest gains. Another meta-analytic review of early intensive ABA interventions for children with ASD was conducted by Peters-Scheffer, Didden, Korziliou, and Sturmey (2011). These authors also found cognitive and daily living skills to improve for children with ASD after early intensive ABA intervention. Furthermore, these increased scores were greater than gains seen by children receiving other interventions. Moderate effect sizes were found for daily living skills, and large effect sizes were found for IQ and language skills. Thus, the literature clearly supports the use of intensive ABA-based interventions for young children with ASD.

ABA can also be applied in less intensive interventions such as differential reinforcement, extinction, functional communication training (FCT), and social skills interventions. Differential reinforcement interventions (providing reinforcement for a desired behaviour while removing reinforcement for an undesired behaviour), both alone and in conjunction with punishment procedures, reduce difficult behaviours in individuals with intellectual disabilities (Chowdhury & Benson, 2011). Differential reinforcement interventions can also be effective in reducing problem behaviours ranging from minor to life-threatening in individuals with developmental disabilities both with and without the use of extinction (Petscher, Rey, & Bailey, 2009). Extinction procedures withhold reinforcement from an individual contingent upon the behaviour. Escape extinction has been implemented by parents to reduce and eliminate food refusal in typical children and children with ASD (McCartney, Anderson, & English, 2005). Parents have also reduced night waking in their children with autism after being trained to use extinction by withholding attention for the night waking (Weiskop, Matthews, & Richdale, 2001).

FCT is another strategy which uses the ABA principles of reinforcement and extinction to teach children with ASD to appropriately communicate their wants and needs instead of using problem behaviours. Teachers and staff have been trained in its use in the classroom (Davis, Frederick, Alberto, & Gama, 2012), FCT has been implemented in the home (Mancil, Conroy, Nakao, & Alter, 2006), and it has been generalized from the home to the classroom setting (Mancil, Conroy, & Haydon, 2009) while effectively reducing inappropriate behaviours and increasing appropriate communication with children with behaviour disorders and ASD. Social skills programs also use ABA strategies such as modelling, prompting, and reinforcement to teach children with autism appropriate behaviours for interacting with peers, and typically developing peers are often trained to teach children with autism these social skills (Matson, Matson, & Rivet, 2007). Support for the use of ABA with children with ASD is so strong that, in 2007, the Ministry of Education in Ontario implemented the policy that ABA methods were to be used with all children with ASD across all school boards.

Mediator Training

Training mediators, that is, parents, staff, and other individuals who implement interventions with children with ASD, is an important step in ensuring that these children are being taught by adults who have the necessary knowledge and skills to deliver these programs. A wide variety of training methods have been used to effectively teach an assortment of curricula to individuals who work with children with disabilities. Of the few articles that evaluate behavioural training for mediators, some of the more recent and relevant studies are outlined briefly below.

Schepis, Ownbey, Parsons, and Ried (2000) evaluated a training program aimed at increasing teaching skills with six staff working in a preschool with children with disabilities

(such as Down's syndrome and developmental delays). ABA concepts such as prompting, reinforcement, and error correction were taught using verbal and written instructions, role-playing, and in-classroom observation by the instructor with feedback on staff performance. Staff were able to meet the 80% correct teaching criterion with training, and children with disabilities in the preschool displayed an increase in independent completion of the self-help skills they were being taught. One child's score improved from a score of 4.0 to 5.0 where 5.0 indicates all steps were completed independently. A second child's score improved from 2.3 to 2.7.

Ryan and Hemmes (2005) evaluated a training program for three special education instructors who had no previous training in ABA working with children with autism. Topics included ASD, ABA, and discrete trial teaching (DTT). In DTT, a teaching trial begins when the teacher delivers an instruction to the child. Next, the teacher provides a correction or reinforcer (depending on the child's behaviour). Finally, the teacher pauses to allow time to signal the end of one teaching trial before beginning the next. Using a training manual, lectures, video instruction, and receiving in vivo observations and feedback by a certified behaviour analyst, participants were taught the above concepts across 25 to 35 sessions (1 to 2 hours each). Each participant had to achieve 100% correct on 20 oral and written quizzes to move onto final testing. There were no baseline data taken, but after training, the special education instructors displayed correct teaching scores between 89.6% to 94.8%.

Behavioural parent training. Early intensive ABA interventions are typically delivered by trained professionals, but parents are often included and coached during the intervention (National Research Council, 2001). It is important to ensure that the skills taught to children during the structured ABA interventions generalise to the natural environment (Schreibman, 2000). One way to do this is to educate parents on effective teaching strategies for children with

ASD, so that parents can implement these strategies themselves outside of the intervention session. Parents also are trained to implement ABA interventions in the home when their children are not in intensive ABA interventions. Parents may choose to implement ABA strategies in their home in a flexible way, such as using differential reinforcement to increase appropriate behaviours and decrease inappropriate behaviours, or they may want to implement an entire intensive ABA intervention themselves.

In a review of the case studies and group studies published from the late 70s and early 80s evaluating behavioural training for parents of children with problem behaviours (not necessarily with developmental disabilities), Moreland, Schwebel, Beck, and Wells (1982) found many reports of successful child behaviour change. Parents were trained using a variety of methods such as verbal instruction, manuals, modelling, and practice with feedback. Parents were able to apply behavioural procedures to change a large number of child behaviours, such as decreasing hair pulling or increasing appropriate interactions with siblings. However, data collection for change in parent behaviours was lacking, making it hard to decipher which component or combination of training resulted in the most knowledge and skill gains amongst parents. Simply relying on child behaviour change data gives an incomplete view of the effectiveness of parent training. Moreland and colleagues (1982) also concluded that research addressing the ability of parents to generalise learned skills (across time, environments, and child behaviours) is lacking. Studies have attempted to fill these gaps in the literature, but even after three decades have passed, many questions regarding the effectiveness of parent training remain.

Wyatt Kiminski, Valle, Filene, and Boyle (2008) used meta-analysis to review 77 evaluations of parent training programs. The studies reviewed did not necessarily train parents in ABA, but they were focused on changing child behaviour. However, these were not necessarily

parents of children with ASD. The goal of the meta-analysis was to determine which components of parent training programs are essential for changing both parent and child behaviours. Larger effect sizes were seen for parent than for child measures. Effect sizes were larger for parent knowledge (0.88) than for parent behaviour and skills (0.39). For children, internalizing behaviours such as anxiety and depression had the largest effect sizes (0.40), followed by cognitive outcomes such as school grades (0.26), then externalizing behaviours such as aggression (0.25), and finally social skills measures (0.13). Isolating only parent behaviour/skills and child externalizing behaviours, larger effect sizes were seen for programs that promoted positive parent-child interactions (0.39) and parents practicing skills with their child (0.91). This suggests that, in an effort to be more effective, parent training programs should focus more on teaching parents to promote positive interactions with their child, such as by delivering praise, and on ensuring that parents practice implementing the strategies with their children.

Griffin, Guerin, Sharry, and Drumm (2010) evaluated a 12 week parenting program for parents of children with behaviour problems and/or developmental disabilities. The training focused on positive and preventative parenting strategies across seven group and five individual instruction sessions using DVDs, discussion, practice, homework, and handouts. The authors found that, compared to the treatment-as-usual group (which was three to five meetings across 12 weeks including assessments and therapy sessions), the parent training group evidenced greater reductions in parent-reported child behavioural difficulties. Parental stress as measured through a self-report scale (Parental Stress Scale) was also significantly lower after training. There were no significant differences between the children with behavioural difficulties-only group and the children with an additional diagnosis of a developmental disability group

suggesting that this parent training program can be used with parents of children with a wide range of behavioural and developmental deficits.

Training for parents of children with ASD. Literature on parent training for parents of children with ASD shows that parents can be taught to correctly use strategies based on ABA with their children, such as DTT (Crockett, Fleming, Doepke, & Stevens, 2007; Lafasakis & Sturmey, 2007). When parents learn to implement ABA procedures, their children's problem behaviours decrease (Crone, 2010; Feldman, Condillac, Tough, Hunt, & Griffiths, 2002), and adaptive behaviours can increase (Feldman et al., 2002; Lafasakis & Sturmey, 2007). An up-to-date review of all parent training literature for parents of children with ASD does not exist, so a few recent and/or relevant articles are briefly described below to highlight current training for parents of children with ASD.

In 1978, Koegel, Glahn, and Nieminen examined the ability of four mothers of children with autism to maintain their gain in DTT skills across time and to generalise their teaching skills from one child behaviour to others after two separate ABA training programs. First, parents were trained on how to teach specific child behaviours (e.g. stand up or draw a triangle) using demonstration, observation, and feedback. Next, concepts used in DTT were taught to parents such as instruction delivery and prompting using lectures and videos without training the actual behaviours parents would be teaching. From a visual analysis of the graph of parents' results, parents showed an increase from baseline in ability to apply DTT procedures to teach their child a new skill after receiving the first training approach. Children were also able to learn these new skills after their mothers received training. Parent generalisation to teach untrained target behaviours to their children was not observed until after parents received the second training approach. This suggests that while both behaviour-specific and general training methods are

effective in teaching ABA principles to parents of children with autism, only general skills training allows parents to generalise their knowledge to apply it with other untrained child behaviours.

Crockett and colleagues (2007) also evaluated a DTT training program for parents of children with ASD. Two mothers of 4-year-old boys with autism were trained on how to teach their children various skills (e.g. attending, writing, counting, etc.). The mothers received weekly, 2-hour individual training in a research room for 6 to 9 weeks. The trainer described the DTT components, used videotapes and role play, and provided direct feedback to the parent on her DTT skills during training. After training, both parents were able to correctly implement DTT to teach their children a variety of new skills. The mothers were also able to generalise their use of DTT to other untrained child skills to varying degrees. The children only made small gains in the correct use of their newly taught skills; however, data were collected over less than 10 weeks, which may not have been enough time to notice significant behavioural changes in the children. The authors suggest that a long-term follow-up may have shown more significant skill gains for the children.

Lafasakis and Sturmey (2007) evaluated DTT training for three mothers of children with a developmental disability (one of the children was diagnosed with autism). Parents were trained to teach various gross motor and vocal imitation skills in a classroom using definitions of 10 components of DTT that were provided during baseline, trainer descriptions of the components, feedback on previous sessions' scores, question and answer periods, modelling, practice, and feedback. After training, mothers' correct DTT use increased by an average of 38%. Children increased their correct responses for new behaviours being taught by their parents through DTT by an average of 58%. Similar to the results found in Koegel et al. (1978) and Crockett et al.

(2007), Lafasakis and Sturmey (2007) noted generalisation of parent DTT skills to untrained child behaviours (vocal imitation).

In an evaluation of behavioural skills training (the modelling, rehearsal, and feedback procedure used above in Lafasakis & Sturmey, 2007) combined with general-case training (training using a wide range of examples) of DTT for parents of children with ASD, parents' correct use of DTT improved with training (Ward-Horner & Sturmey, 2008). However, there was not a clear improvement in the children's correct responses. The authors suggest that the lack of progress seen in child skills may have been due to target behaviours having been selected which were too far above the skill level of the child. Additionally, the parent and trainer simulated the child (the real child was not used). This modification might also account for the lack of child progress because the trainer was not modelling using the child, and the parent was not rehearsing using the child. Parents may not have learned the DTT skills as accurately as if they had practiced and received feedback with their child, thereby influencing the child's skill development.

An alternative intervention to DTT for children with ASD which incorporates ABA principles is Parent-Child Interaction Therapy (PCIT; Eyberg, 1988). PCIT starts by training parents how to enhance their relationship with their child, including ABA strategies such as delivering praise for correct behaviours and withholding attention for inappropriate behaviours. Parents are also taught how to increase appropriate and decrease inappropriate behaviours through effective instruction and consequence delivery. Trainers instruct, model, and rehearse PCIT strategies with parents as well as provide coaching during parent-child interactions in one-hour weekly sessions. In an evaluation of PCIT with three parents of children with high functioning autism, Masse (2009) found that after 16 to 23 weeks of parent training in PCIT in

the home, children's compliance scores increased, problem behaviours decreased, and positive parenting practices increased such as praising the child and delivering clear instructions.

Perry and Condillac (2010) evaluated a parent training program for parents of children with ASD on a waitlist to receive intensive behavioural intervention services. The program lasted three months and used both one-to-one and group instruction in weekly three-hour sessions to train parents in ABA strategies such as prompting and reinforcement. Parents were also asked to apply what they were learning to their child while feedback was provided from the trainers. A portion of the program also focused on stress management. Twenty-seven families completed the training, and a comparison group of 10 families were not given training; however, five of the 10 comparison group families were receiving services elsewhere. Results from this parent training program evaluation showed that parents learned new skills and felt that the majority of those skills were at least somewhat helpful when working with their child. Parents reported that the group format provided support from other families, and parents did not report the increase in stress levels that parents whose children were receiving intensive intervention elsewhere reported. Also, parents in the parent training program displayed less stress than the parents who were not receiving any services. Overall, parents rated the training program positively, but they still did not feel confident after the 3 months that they could continue to use the ABA strategies with their children without the support of trained professionals.

Vismara, Colombi, and Rogers (2009) evaluated an Early Start Denver Model (ESDM) parent training program with eight parents of children with ASD. ESDM focuses on creating a nurturing environment in which parent-child interactions can be fostered including the use of ABA strategies to teach communication and imitation skills. Parents attended a 12 week (1 hour per week) training course outlining concepts such as prompting, fading, and functional behaviour

assessments through reading materials, open discussions, and practicing strategies with feedback. From weekly 10 minute parent-child observation probes, parents' correct use of ESDM teaching strategies increased from 45-67% correct at baseline to 93-97% correct after training.

Additionally, children's imitative and verbal behaviours were seen to increase above the near-zero baseline levels after parents started training.

Whittingham, Sofronoff, Sheffield, and Sanders (2009) evaluated Stepping Stones Triple P (Positive Parenting Program), a program for parents of children with ASD. Child participants were paired, matched on diagnosis and language skills, and one was randomly assigned to the intervention group while the remaining child was placed on the waitlist to receive the intervention after the completion of the study. Twenty-nine families of children with ASD took part in the parenting program while 30 families remained on the waitlist. The intervention group was put into groups of four to five parents for five weekly group sessions. Strategies discussed during the group sessions included rewarding appropriate behaviour and how to prepare for events where problem behaviour is likely to occur. Interspersed among the group sessions were four individual in-home sessions with observation and feedback on parents' use of strategies. Data were collected through a variety of questionnaires. Parent and child behavioural data were not collected. Parents reported that they tried to use most of the strategies taught throughout the program and that these strategies were helpful. Parents were satisfied with the program and felt that both their own and their children's behaviours were improving.

Crone (2010) compared parent training in the home versus in a clinic environment for four parents of children with ASD. Parents were trained on how to reduce their children's problem behaviours during meal time. Parents were taught ABA terms like antecedents and consequences, and depending on the function of her child's behaviour, each parent was taught

which strategies to use and which not to use during meal time through modelling, rehearsal, and feedback both with and without the child to reduce the problem behaviour. Parents were able to decrease children's problem behaviours during meal time, regardless of the setting in which parents received training.

Given that the procedures for implementing parent training within services for children with ASD are not always apparent, Ingersoll and Dvortcsak (2006) outlined their model for parent training in early childhood special education programs. Nine families with children with ASD participated in a 9 week parent training program which covered "indirect teaching strategies" such as following the child's lead and "direct teaching strategies" such as prompting and reinforcement (p. 181). A combination of six group sessions and three individual sessions were used to disseminate the teaching strategies. During group sessions, trainers would lead presentations and provide videos regarding the teaching strategies and facilitate group discussion on the strategies. The individual training sessions allowed parents to receive specific feedback from the trainers on the teaching strategies they used with their child. Data were collected from a multiple choice quiz and a satisfaction survey. No behavioural data were collected from either the parents or the children. Parent knowledge scores on the teaching strategies increased from 29% before training to 75% after training. The parent satisfaction survey indicated that parents enjoyed the program and saw their children develop new skills as a result of the program. However, only half of the families were able to participate in the full program. If child care had been made available, this may have increased parental attendance rates. Also, parents were less clear on the application of these teaching strategies at home, indicating that individual training sessions in the home may have been valuable for parents.

Fava and Strauss (2011) also outlined a parent training program provided as part of an alternating in-clinic/in-home intensive ABA program for children with ASD. Across three weeks (20 or more hours per week) and through a mix of group, individual, home, and centre-based training sessions, parents were taught to provide structured ABA interventions in their home using manuals, videos, and direct training from a clinical psychologist. The children's intervention alternated between three weeks of clinic-based ABA delivered by trained professionals for 29 hours each week and three weeks of home-based ABA delivered by trained parents for 14 hours each week. After 6 months in this intervention, preliminary results were collected. Fava, Strauss, Valeri, D'Elia, Arima, and Vicari (2011) found that for nine children who progressed mainly in their home environment (who mastered an average of 67.7% of behavioural targets in the home), parents were providing more in-home sessions and with greater intervention fidelity than parents of the three children who progressed mainly in the clinic environment (who mastered an average of 62.5% of targets in the clinic). Children who progressed mainly in the clinic mastered more behavioural targets. Children who progressed mainly in the clinic also had higher scores on adaptive functioning and functional communication, suggesting that these skills might be more difficult for parents to learn to teach as effectively as professionals. However, parents did display intervention fidelity at levels similar to professionals after training. These results suggest that parents can be taught to implement ABA interventions in the home which help to develop new skills in their children.

Self-instructional ABA training. Extending the review of the parent training program described above, Koegel and colleagues (1978) wanted to look at the training videos alone to determine if those were sufficient to allow for DTT teaching skills to be acquired without the use of a trainer. The video was broken down into two segments: antecedent teaching strategies and

consequent procedures. A student teacher of children with ASD, foster mother of a child with ASD, and an anthropology undergraduate student participated in this evaluation with six children with ASD. The adults were given the antecedent and consequent strategy videos in varying orders as determined by the multiple baseline design being used. Their correct use of DTT with children with ASD increased from an average of 24% during baseline to 80% after training. The adults' use of antecedent and consequent strategies did not increase until after they had viewed that portion of the video. The children's use of new skills did not increase until after the adults had viewed both of the videos. This suggests that with only videos training both antecedent and consequent strategies for DTT, adults are able to teach children with ASD to use new skills.

Thiessen, Fazzio, Arnal, Martin, Yu, and Keilback (2009) evaluated a revised manual designed to teach DTT. Four university students received this manual which covered ABA topics such as reinforcement, extinction, and shaping. After studying each section, students were given a written test and had to achieve 100% correct to move on to the next section of the manual. The students were observed teaching a confederate who role-played a child with ASD before and after training. Correct DTT teaching scores increased from 46-57% before training to 83-90% after training. As the participants achieved scores greater than 80% correct, they were observed teaching an actual child with ASD. These generalization probe scores for correct DTT teaching ranged from 71% to 83%.

Thomson, Martin, Fazzio, Salem, Young, and Yu (2012) used the same self-instructional manual as Thiessen et al. (2009). Eight ABA instructors were hired who had no formal experience working with children with ASD or using DTT. These instructors were given the manual, and the new instructors had to achieve 100% correct on a knowledge test before moving onto the next section. The manual also prompted the new instructors to practice the strategies and

rate their ability to use the strategies. Baseline scores ranged from 31.3% to 57.7% for correct DTT teaching with a confederate role-playing a child with ASD. After training, scores ranged from 57.1% to 87.7%. For the instructors who did not achieve correct scores of 80% or higher, a video modelling DTT was provided. After viewing this video, the four instructors whose scores fell below 80% after training increased to 73.8 – 91.9% after watching the video.

Granpeesheh, Tarbox, Dixon, Peters, Thompson, and Kenzer (2010) evaluated a self-instructional training program for behaviour therapists who implement ABA interventions with children with ASD. The training in ABA covered topics such as DTT, antecedents, responses, and consequences. A comparison of therapists who received in-person ABA training with therapists who received training through a computer program found that both groups' knowledge of ABA improved significantly, with the scores of therapists who received in-person training being only somewhat more accurate. As evidenced by the research highlighted above, the literature supports the implementation of diverse strategies such as combinations of verbal instruction and role-play and even self-instructional materials to train individuals in various behavioural principles for use with children with ASD.

Self-instructional parent training. While therapist-led parent training for parents of children with ASD improves both parenting skills and children's behaviour (Masse, 2009; Perry & Condillac, 2010), there is a lack of research showing whether or not parents of children with ASD can use self-instruction to be taught the principles of ABA. A few of the more recent self-instructional program evaluations are highlighted below.

A comparison of a self-directed PCIT parent training program comprised of written materials for parents of children with behaviour problems (without ASD) with a group intervention of the same program did not produce statistically significant differences (Berkovitz,

O'Brien, Carter, & Eyberg, 2010). In both groups, children's problem behaviours decreased along with ineffective parenting strategies. This suggests that self-instruction can be an effective way for parents to increase their knowledge of various ABA strategies.

Kling, Forster, Sundell, and Melin (2010) compared the problem and prosocial behaviours of children as well as the appropriate/inappropriate parenting practices of 159 families randomly assigned to three groups: a practitioner-assisted parent management training group, a self-directed parent management training group, or a waitlist control group. Appropriate parenting practices increased and child problem behaviours decreased for both the training groups compared to the waitlist group. Families who received the practitioner-assisted training had lower post-training scores for child problem behaviours compared to the self-directed training group. This difference may be because families in the former group were more likely to complete their homework assignments due to regular meetings with staff throughout the training. While practitioner support may be an important tool in delivering effective parent training, self-directed training provides benefits to parents not seen by those on a waitlist control group.

Looking specifically at self-instructional learning for parents of children with ASD, researchers found that a self-instructed learning group, using a written manual and interactive DVD, scored significantly higher on videotaped behaviour probes which demonstrated their accurate implementation of the pivotal response treatment (PRT, an ABA strategy) than a waitlist control group (Nefdt, Koegel, Singer, & Gerber, 2010). Parents who used the self-instructional materials increased from 16.5% correct PRT use before training to 75.4% correct after training. Parents who did not receive the self-instructional materials decreased from an average of 15.1% correct PRT use to 5.7% correct over time.

Jang, Dixon, Tarbox, Granpeesheh, Kornack, and de Nocker (2012) evaluated a web-based parent training program which outlined ABA, DTT, antecedents, consequences, and a variety of other ABA concepts. Twenty-eight caregivers (including two grandmothers and two fathers) of children with ASD completed the interactive computer program, with a multiple choice test after each section and a final exam required to move to each new section and pass the overall training. Only scores of 85% correct or higher were accepted. Participants' correct ABA knowledge scores were 34% higher on average after training. While the training program supports the use of self-instruction to teach parents of children with ASD about ABA, the authors specifically state that self-instruction is meant to provide the basics on which parents can build their knowledge with direct training from a professional. Given that neither caregivers' implementation of ABA strategies with the children nor the children's behaviours were observed, this study does not provide evidence that self-instruction enables caregivers to deliver effective ABA interventions.

Filling the Gaps

In summary, written manuals, videos, and computer programs have all been used to successfully train parents of and individuals who work with children with ASD to understand and use various ABA strategies. However, there exist a number of gaps in the literature which future research needs to address. One limitation listed in the research above is that parent behaviours are not always observed, and effectiveness of parent training is based solely on child behaviour measures. This gives an incomplete view of the relationship between parent training, parent behaviours, and child behaviours. Additionally, some studies do not include any behavioural data and rely only on participants' knowledge test scores or subjective informant reports regarding behaviour change as determinants for the effectiveness of a training program.

Another limitation to the studies described above is that some do not include baseline measures, and therefore lack experimental control, and simply assume that untrained participants would have low baseline knowledge and skills scores. Some of the studies used a confederate who role-played a child with ASD instead of having participants teach an actual child with ASD as a measure of their skills. Finally, more research is needed to evaluate self-instruction with parents who have children with ASD. This current study addresses these limitations by collecting both parent/participant and child behaviour data in addition to knowledge scores, using a multiple baseline design for experimental control, and observing participants interacting with actual children with ASD. Also, this study aims to provide information regarding the effectiveness of self-instructional programs in ABA, as there is a paucity of literature surrounding this topic.

Study 1

Method

Participants

Participants were a convenience sample of seven adults who self-reported little to no knowledge of ABA and were not parents of children with ASD. Table 1 includes demographic information for these participants. Participants had access to the Internet to watch the training videos and read the training manual.

Table 1

Study 1 Participant Demographics

Participant	Gender	Age in years	Highest level of education completed	Occupation
KH	Female	48	College	Administrative assistant

KS	Female	20	High school	Student
KL	Female	22	High school	Student
PN	Male	27	High school	Student
RH	Male	64	University	Retired teacher
RP	Male	50	High School	Recreation director
SH	Female	34	University	Teacher

Setting

Participants studied the self-instructional ABA training program and completed knowledge tests in their own homes. The videos from the training package were viewed through the Internet using YouTube, and the training manual was scanned and e-mailed to participants as JPG files along with the knowledge tests.

Materials

Simple Steps ABA ASD Training Pack

Each participant received portions of the *Simple Steps* training package, designed by autism and ABA experts in Northern Ireland (<http://www.simplestepsautism.com/>), to teach parents of children with ASD about the science and practice of ABA. Interventions based on ABA are the treatments of choice for ASD (Dillenburger, 2011). Families of children with ASD in Northern Ireland and other countries around the world may not have access to ABA services as families in Canada do. *Simple Steps* was initially delivered as a pilot program in 2007 and grew to an online and multi-language product in 2010. The package includes a DVD, written information brochure, and CD-ROM of resources. The training materials were distributed in

sections so that self-instructional training could be evaluated using pre- and post-training test scores. This study is the first experimental evaluation of *Simple Steps*.

Up to three *Simple Steps* sections were delivered to participants. In Section 3.3, “Mentalism Explained,” what is and is not “behaviour” is discussed. Section 4.0, “Understanding Behaviour,” describes antecedents, behaviours, and consequences, and the importance of using this information to determine the function of behaviour. Section 5.0 of *Simple Steps*, “Measuring Behaviour,” addresses the various ways behaviour can be measured. Introductory sections on the diagnosis of autism and the science of ABA were not given to participants due to time constraints. Two additional sections on increasing new behaviour and working with problem behaviours were also withheld from participants because they were not being observed interacting with children with ASD.

Dependent Variable

Participant knowledge. Participants’ knowledge of ABA principles was tested through written tests. The tests (“Defining Behaviour from Summary Labels,” “Mentalism,” “Summary Labels,” “Identifying ABCs,” “Measuring Behaviour 1,” and “Measuring Behaviour 2”) were developed by the primary author and are shown in Appendices A-F. Results are summarized as percentage correct on each test.

Study Design

A pre- and post-test design was used for each section of *Simple Steps* delivered to observe any changes in ABA knowledge scores after participants reviewed the training materials.

Procedure

Participants first reviewed the consent form (Appendix G) describing what was involved in the study, had all their questions answered about the study, and signed the consent.

Participants then filled out a demographics questionnaire to gather information such as income and education that might be related to scores on the knowledge tests (Appendix H) and were e-mailed one version of the knowledge test to determine their baseline ABA score. Next, participants were e-mailed YouTube links to the *Simple Steps* video and JPG files of the manual describing “Mentalism Explained.” When they were satisfied with the amount of time they had spent reviewing the materials, participants completed a different version of the knowledge test. Next, participants were e-mailed videos and manual pages corresponding to “Understanding Behaviour,” and they completed another version of the knowledge test when they were ready. Finally, participants were e-mailed “Measuring Behaviour” videos and manual pages to review and completed one last knowledge test afterward. Participants did not receive feedback on their scores until after the completion of their participation in the study.

Study 1 Results and Discussion

ABA Knowledge Scores

Overall, participants’ mean knowledge scores increased from pre- to post-training (see Figure 1). Looking at each of the three *Simple Steps* sections, participants’ mean knowledge scores also increased from pre- to post-training (see Figure 2). These results provide preliminary evidence that this self-instructional training program can increase participants’ ABA knowledge.

Modifications to the Knowledge Tests

It was recorded for each question whether or not participants scored 100% correct both at baseline and after training. If so, these questions were removed from the test because they were deemed too easy and were replaced with remaining questions from the master list. If all participants received 0% correct both at baseline and after training for a question, that question was removed from future tests because it was deemed too difficult for the training provided. For

the questions corresponding to “Defining Behaviour,” participants were reusing the summary label in their new definition, such as “The child is lazy when he won’t clean his room.” The summary label “lazy” should not occur in a correctly rewritten sentence. It was, therefore, specified in the answer key that “mentalism” must not be occurring in the rewritten definition for it to be scored as correct. It was also decided that the phrase, “There is no penalty for answering a question incorrectly” should be eliminated from the directions because, for the main study, participants would fail to receive marks for incorrect answers. In the pilot study, participants were giving incorrect answers, but no marks were deducted. Therefore, it was possible for someone who had made a number of mistakes to end up with the same test score as someone else who had made no mistakes at all. More specifically, the “Mentalism” test was increased to a score out of three instead of two, and the “Summary Labels” test was increased to a score out of 30 instead of 15. Finally, for the questions related to “Measuring Behaviour,” the verbal instruction, “There is only one correct dimension per question” was added when testing was explained because some participants were giving multiple responses per question.

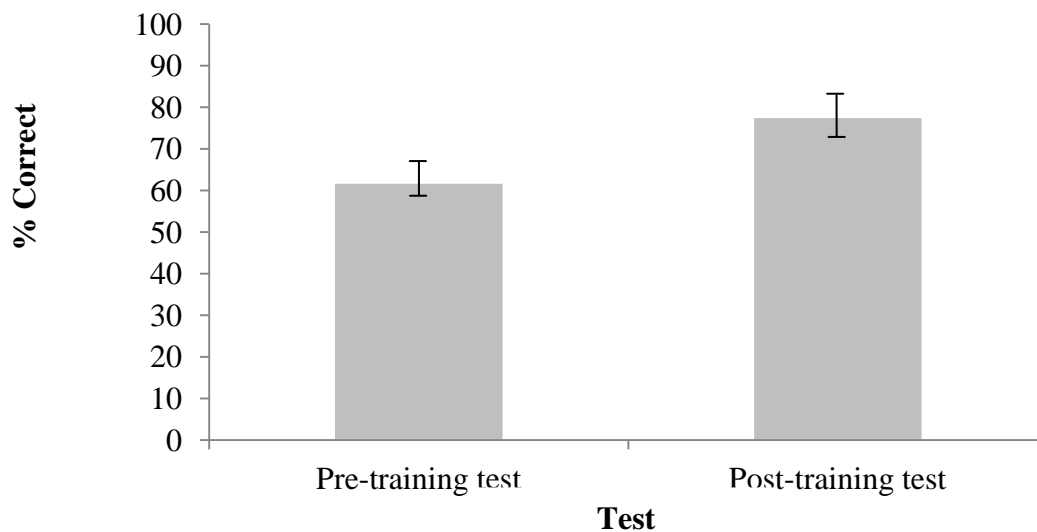


Figure 1. Mean overall knowledge scores at pre- and post-training for six participants with standard error in Study 1.

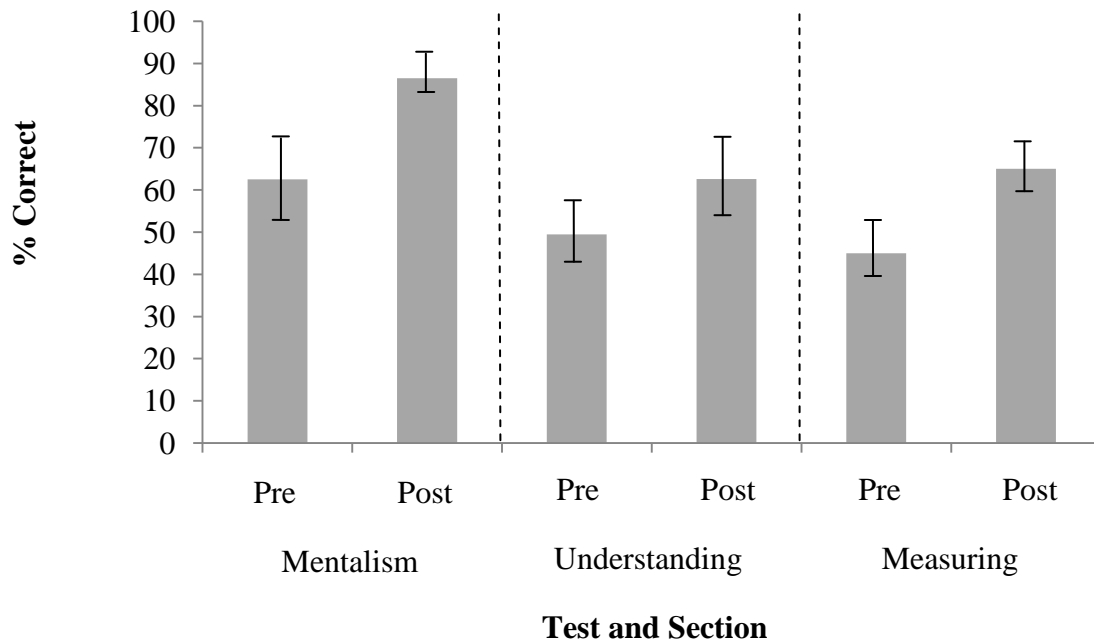


Figure 2. Mean pre- and post-training scores for each Simple Steps section with standard error in Study 1: Mentalism, $n = 7$; Understanding Behaviour, $n = 6$; and Measuring Behaviour, $n = 6$.

From the results of Study 1, the knowledge tests were revised, and the first author knew approximately how much of a time commitment future participants would need to make to be a part of Study 2. Additionally, the Study 1 procedure was easily followed by the participants, and test scores suggested that *Simple Steps* could increase consumers' ABA knowledge. Therefore, a similar procedure was used to evaluate the self-instructional ABA training package in a subsequent study with parents of and students who work with children with ASD.

Study 2

Method

Participants

Three parent-child dyads were recruited from a local agency where they were on a waitlist to receive services for their child who had a diagnosis of ASD from a physician or

psychologist. These three dyads are henceforth referred to as Parent-Child Dyad 1 (P1), Parent-Child Dyad 2 (P2), and Parent-Child Dyad 3 (P3). Additionally, three undergraduate students and five children with ASD were recruited from a two-week summer day camp that runs at a local university offering movement programs for children and youth with ASD. Student-child dyads were five pairings of three university student summer camp volunteers with five individuals with ASD. Please see Tables 2 and 3 for demographic information for these participants. Student-Child Dyad 1 (S1) was the same pairing across the two weeks of summer camp. Student-Child Dyad 2 (S2) occurred for the first week of day camp. The same student was in Student-Child Dyad 3 (S3), but during the second week of day camp, she worked with a different child. Student-Child Dyad 4 (S4) occurred during the first week of camp. The same student from S4 was in Student-Child Dyad 5 (S5), but he worked with a new child during the second week of camp. Parents and students were not participating in any mediator training programs for the duration of the study and had not previously received training in ABA. Parents and students had access to either a DVD player or the Internet to watch training videos and were able to read at a Grade 10 reading level. Parents were given an excerpt of *Simple Steps* to read aloud to ensure literacy skills.

Table 2

Adult Participant Demographics

Adult participant	Gender	Age in years	Highest level of education completed	Occupation
P1	Female	34	College	Homemaker
P2	Female	32	College	Registered Nurse

P3	Female	44	Graduate/ Professional	Resource Teacher
V1	Female ^a	33	University	Student
V2	Female ^a	23	High school	Student
V3	Male	23	High school	Student

Note. P1 = Parent 1. P2 = Parent 2. P3 = Parent 3. V1 = Student 1. V2 = Student 2. V3 = Student 3

^aSelf-disclosed non-verbal learning disability.

Table 3

Child Participant Demographics

Child Participant	Gender	Age in years	Diagnosis	Age at diagnosis in years	Taught by parent/student
1	Male	8.6	PDD-NOS ADHD	6.8 3.0	P1
2	Male	3.7	AD	3.5	P2
3	Female	8.4	AD	4.0	P3
4	Female	15.1	AD	12.0	S1
5	Male	17.1	AD	3.0	S2
6	Male	10.1	AD	1.8	S2
7	Male	7.0	AS ADHD	6.1 undisclosed	S3
8	Male	9.3	AS ADHD	4.5 undisclosed	S3

Note. PDD-NOS = Pervasive Developmental Disorder – Not Otherwise Specified. ADHD = Attention Deficit-Hyperactivity Disorder. AD = Autistic Disorder. AS = Asperger Syndrome. P1 = Parent 1. P2 = Parent 2. P3 = Parent 3. S1 = Student 1. S2 = Student 2. S3 = Student 3.

Setting

Participants studied the self-directed ABA training program in their own homes. The DVD from the training package was viewed on the participants' DVD player (often a personal computer) or through the Internet using YouTube. For the parents, a quiet, clean area of the home was used for test taking and parent-child teaching observations, such as the kitchen table. Two of the students also completed knowledge tests in their homes. The third student completed his tests in a quiet area on campus. For all of the students, videotaped observations occurred in a gymnasium at the summer camp.

Materials

Simple Steps ABA ASD Training Pack

Each participant received portions of the *Simple Steps* training package as described above in Study 1. An additional section was provided to Study 2 participants, Section 6.0, "Increasing Behaviour and Teaching New Skills," which explains how to use reinforcement and other ABA principles to increase new behaviours in a child with ASD. Introductory sections on the diagnosis of autism and the science of ABA were not given to participants due to time constraints. A final section on working with problem behaviours was also withheld from participants until their completion of the study because problem behaviours were not addressed during the study due to time constraints and ethical reasons.

Dependent Variables

Participant knowledge and skills. Parents' and students' knowledge of ABA principles was tested through modified written tests as described in Study 1. Additionally, participants'

ability to apply ABA strategies when teaching the children was tested using behavioural probes. The behaviour probe (“Delivery of Praise”) was developed by the primary author and is shown in Appendix I. Results are summarized as percentage correct on each test for the knowledge questions and the rate of praise delivery for skills for the observational probes.

Self-efficacy. Parents were given the Parenting Sense of Competence (PSOC; Gibaud-Wallston & Wandersman 1978, as cited in Johnston & Mash, 1989; Appendix J) scale pre- and post-intervention to determine whether or not parent reports of general self-efficacy increased after the use of *Simple Steps*. General parental self-efficacy is simply a feeling of overall competence as a parent. The PSOC has been used extensively in family research (Jones & Prinz, 2005) and displays an adequate level of internal consistency ($\alpha = .75$ and $.79$ for mothers and fathers respectively after items 1, 5, and 7 were removed; Gilmore & Cuskelly, 2008). The PSOC scale contains 17 questions on a 6-point scale. A lower score indicates greater parental self-efficacy. The lowest possible score is 17, while the highest possible score is 102.

An alternative form of measuring self-efficacy to general self-efficacy is task-related self-efficacy which is the competence an individual feels regarding a specific activity, such as increasing new skills in her/his child. To measure task-related self-efficacy, parents and students completed a 4-question, 6-point scale (similar to the PSOC) created by the first author (Appendix K). Each question related to one of the four sections participants were taught with the *Simple Steps* training package. Parents and students completed this measure pre- and post-intervention to determine whether or not they reported increases in task-related self-efficacy after the use of *Simple Steps*.

Child behaviour. Each child in a parent-child dyad was observed at weekly behavioural probes and each child in a student-child dyad was observed in daily behavioural probes to

determine whether or not the child's behaviour was changing as the parents or students implemented what they had learned through the "Increasing Behaviour and Teaching New Skills" phase of *Simple Steps* (designed to teach the child a new skill). The child's independent and prompted responses were the behaviours of interest, and the parent-child/student-child interaction was videotaped so that interobserver agreement could be taken with an additional observer. Independent responses were defined by the first author in accordance with the teaching goal of parent or student (e.g. When the parent says, "Give blue" and holds out her hand, the child will pick up the blue toy and place it in the parent's hand without physical prompting). Prompted or incorrect responses were any behaviours that deviated from the correct response (e.g. The child picked up the red toy when asked for blue, did not respond, or required an increased level of prompting for a correct response). A complete list of each child's target behaviour can be found in Appendices L-S.

Consumer satisfaction. After the completion of each *Simple Steps* phase, parents and students were asked to use a 5-point scale ranging from "not at all" to "very" for both how "enjoyable" and "helpful" they found the materials to be. Parents and students were also able to leave comments regarding components of the phase that they liked or disliked (see Appendix T). Although the comments were not anonymous, in an effort to reduce the possibility that participants would not want to offend the first author by giving unsatisfactory scores to the materials, participants were told that researchers from Northern Ireland had created *Simple Steps*.

Interobserver agreement (IOA). IOA of participants' test scores were measured by having 9 second scorers mark at least 30% of the participants' knowledge tests and videotaped interactions separately from the first author. Eight second scorers had completed their undergraduate degree, four of whom were pursuing a Master's degree, and one was enrolled in a

community college program. Four of the second scorers had expertise in ABA (like the first author), while the remaining five scorers did not. However, all second scorers were trained by the first author with tests and videos not used to measure IOA to a criterion of 85% agreement. The second scorers were naive to the purpose of the study and phase the test/video was from (baseline, training, follow-up). For the knowledge tests, second scorers were given each participant's completed tests with a code name (participant's initials and version number of the test) and did not have access to participants' personal information. For the 10 minute videotaped observation probes of parent-child/student-child interactions, second scorers provided score reliability on the participants' delivery of reinforcement and the children's correct responses. The second scorers signed an oath of confidentiality (see Appendix U).

IOA for knowledge tests. Participant ABA knowledge scores were calculated using an answer sheet to check participants' answers with the correct answers. IOA for knowledge scores were calculated by taking the number of agreements between the second scorer and the first author (both scorers agreed the participant's answer was either correct or incorrect) and dividing it by the number of agreements plus the number of disagreements between the two scorers. IOA ranged from 82.1-100% for knowledge scores with a mean score of 92.7% agreement

IOA for praise. Participant delivery of praise was calculated as rate of praise per 10 minutes. Taking the second scorer's calculation and the first author's calculation for rate of praise, the smaller number was divided by the larger number to give a score for percent agreement. IOA ranged from 0-100% for rate of praise with a mean score of 73.1% agreement.

IOA for child behaviour using interval recording. Using 10 second partial interval recording, scorers noted if the child's target behaviour occurred at any point during the interval to determine the percentage of intervals where the target behaviour was occurring (see

definitions of each child's target behaviour in Appendices L-S). IOA was calculated by dividing the number of intervals that the second scorer and first author agreed on by the number of intervals that the second scorer and first author both agreed and disagreed on. IOA for child behaviour using interval recording ranged from 66.7-100% with a mean score of 84.4% agreement.

IOA for child behaviour using task analyses. Some child behaviours were better scored using a task analysis that broke down the target behaviour into detailed steps. Children were scored on the number of steps which were prompted (e.g. physical or gestural) and the number of steps they completed independently. IOA for child behaviour was calculated by dividing the number of prompted and independent behaviours that the second scorer and first author agreed on by the number of prompted and independent behaviours that the second scorer and first author both agreed and disagreed on. IOA for child behaviour using task analyses ranged from 60-100% with a mean score of 87% agreement.

Experimental Design

The design of this study was a multiple baseline across participants and/or skills (e.g. Feldman, Case, Rincover, Towns, & Betel, 1989). All parents and students started in a baseline phase, where they were given a knowledge test that covered *Simple Steps* materials yet to be trained to determine their baseline understanding of ABA principles. P1, S1, S2, and S3 followed a multiple baseline across skills design while P2 and P3 were in a multiple baseline across participants and skills design. As P2 entered the study before P3, Parent 2 was selected first to start using the training package once her baseline showed a stable state of response. For Parent 2, her knowledge was tested weekly until she scored above 80 % correct on two consecutive tests for the section being trained or she did not show an increasing trend in

knowledge after three consecutive tests. At this time, Parent 2 moved onto training for the next section of *Simple Steps*, moved to post-training (weekly reminders to review material were no longer given) for the previously trained section, and remained in baseline on all other untrained sections. Also, Parent 3 moved from her extended baseline start to receiving training on the first section of *Simple Steps* when P2 moved onto her second training phase. All participants except Parent 1 were given Section 3.3, “Mentalism Explained,” to start. Parent 1 did not receive training on this section as she had a baseline score above 80% correct. Therefore, she started training with Section 4.0, “Understanding Behaviour.” As with Parent 2 and Parent 3, Parent 1 was given weekly knowledge tests until she scored above 80% correct on two consecutive tests for the section being trained or she did not show an increasing trend in knowledge after three consecutive tests. Parent 1 then moved onto training for the next section of *Simple Steps*, moved to post-training for the previously trained section, and remained in baseline on all other untrained sections. Parents’ movement from baseline to the program intervention to follow-up continued across all four *Simple Steps* sections.

The same procedures were followed for S1, S2, and S3; however, due to time constraints, the students only had 2 weeks to learn the material, while the parents had at least 12 weeks to review the material. Therefore, one test score over 80% correct was sufficient to move the student participant onto the next *Simple Steps* module, and only two consecutive scores under 80% was sufficient to move the student participant on. Another modification to the student training was that Student 3 did not receive training on “Understanding Behaviour” as his scores reached 100% during baseline for that section of *Simple Steps*. Otherwise, participants’ movement from baseline to the program intervention to post-training continued across all four *Simple Steps* sections as described for the parents above.

This multiple baseline design allowed the authors to show that any changes in participants' knowledge and teaching skills were due to the training package and not carryover or test-retest effects when the baseline scores remained low and did not increase to heightened scores until after training. Alternatively, when participants' scores did start to increase across baseline, this may have pointed to a practice or generalization effect. This means that participants may have been scoring higher on the tests as a result of having viewed previous tests or were starting to apply and expand on their knowledge, displaying new skills without having received direct training on those skills. The multiple baseline across participants allows for an experimental design even when participants showed generalization effects on yet-to-be-trained skills. In addition, a multiple baseline across children was also used to determine whether or not mediator training was related to changes in child behaviour.

Procedure

Parents, students, and/or parents of child participants of Study 2 followed a similar procedure to Study 1 starting with a consent form (Appendices V-X) and demographics questionnaire (see Appendix H for the adult demographics questionnaire and Appendix Y for the demographics questionnaire to gather information such as child age and diagnosis that might be related to child behaviour). The measures for general and/or task-related self-efficacy were also delivered to parent and student participants at this time (Appendices I & J). These three measures took approximately 15 minutes to complete. Next, weekly baseline testing started for parents while one baseline test was given to students. Participants took between 10 and 40 minutes to complete the short answer/multiple choice-type knowledge test. To measure ability to apply ABA strategies, participants were videotaped for 10 minutes interacting with their child/the child they were working with so that delivery of praise could be tracked as well as child

correct/incorrect behaviour. All parent testing occurred in the parents' homes. All student testing occurred either on the university campus or in the participants' homes.

Throughout the written knowledge tests, the first author was not present but was present during the 10-minute observational probes. Participants received the written tests through e-mail or in person and returned completed tests by e-mail or in person to the first author. During these weekly/daily e-mails, participants were reminded to track how often they were reviewing the materials. After completing training for the second section of *Simple Steps*, participants were reminded one time prior to completing their tests that they would be tested on all modules, even sections previously trained, and they could continue to review old materials before completing the tests. Participants did not receive feedback on their scores until after the completion of their participation in the study. Participants were allowed to watch the *Simple Steps* videos and read the manuals for those sections under training at their leisure in accordance with the multiple baseline design. The tests and behavioural probes were completed by parents within one week of reviewing each section of the training package and by students within 24 hours of training.

Baseline. Participants' knowledge of ABA and their ability to implement related techniques were tested before they were given the training package, *Simple Steps*. Participants received variations of the same tests throughout the baseline, treatment, and post-training conditions that corresponded with each of the sections of the training package they learned (described in Table 4). Participants were informed that there was the possibility that they would have to wait several weeks (for parents) or days (for students) before they could access the training package. Participants were asked to complete the knowledge tests to the best of their ability and were instructed to rely only on their current knowledge base and to continue without

any assistance if they had any questions. Participants were assured that all their questions would be answered either during or upon the completion of their participation in the study.

Simple Steps training. Only a small portion of the *Simple Steps* training package was delivered to parents and students for evaluation. A summary of the training materials used can be seen in Table 4. Participants were visited weekly (parents) or daily (students) to collect the knowledge tests and videotape adult-child interactions for the 10 minute observational probe. Participants were asked to record how often and for how long they reviewed the materials between each testing week/day (Appendix Z). The tests corresponding with each section of *Simple Steps* being trained were created by the first author base upon the training materials. Before a participant received training on any section of *Simple Steps*, their knowledge scores were used as baseline measures. After a participant moved on to receive training on a new section of *Simple Steps*, their knowledge scores on the previously trained sections became post-training scores. Participants kept materials from previously trained sections and could continue to review these materials in post-training if they chose to do so.

Table 4

Outline of Training Materials

Simple Steps Section	Video length in minutes	Manual pages	Topics covered	Corresponding tests/behaviour probes
3.3 Mentalism Explained	6	18-21	Mentalism and summary labels	Defining Behaviour from

				Summary Labels ^a , Mentalism ^b , and Summary Labels ^c
4.0 Understanding Behaviour	21	21-28	Functions of behaviour and assessments	Identifying ABCs ^d
5.0 Measuring Behaviour	5	20, 29-31	Measuring behaviour	Measuring Behaviour 1 ^e and Measuring Behaviour 2 ^f
6.0 Increasing Behaviour and Teaching New Skills	25-30	32-41	Reinforcement, prompting, and shaping	Delivery of Praise ^g

Note. ABC = Antecedent-Behaviour-Consequence. ^aSee Appendix A for test. ^bSee Appendix B for test. ^cAppendix C for test. ^dSee Appendix D for test. ^eSee Appendix E for test. ^fSee Appendix F for test. ^gSee Appendix G for definition for scoring praise.

Participants were first given Section 3.3 of *Simple Steps*, “Mentalism Explained,” to review as often as they liked. When participants reached mastery criteria for this section of *Simple Steps* (at least 80 % correct responses across two weeks for parents or two days for students) or their scores did not improve (no increasing trend in knowledge after three consecutive tests for parents or two for students), they then received the training package for Section 4.0, “Understanding Behaviour.” When the mastery criteria for Section 4.0 was reached or scores did not improve, participants received materials from Section 5.0 of *Simple Steps*, “Measuring Behaviour.”

The final component of *Simple Steps* that parents and students were tested on was Section 6.0, “Increasing Behaviour and Teaching New Skills.” This section was not given to the pilot study participants due to time constraints. Participants in Study 2 were asked, “What skill would you like to teach your child/the child you work with?” and “What should this skill/behaviour look like for the child?” Participants were able to select multiple behaviours within the same skills set, such as gross motor imitation of “arms up,” “touch toes,” and “turn around.” The difference in video times was due to each participant receiving a different video specific to the skill s/he chose to teach. There is a different video for chaining, imitation, discrimination, sorting, and matching. Participants were only given one of these videos depending on which skill they selected to teach the child. The first author selected which video to give each participant based on what was most appropriate to learn so as to teach the skill. For example, if a participant selected to teach their child gross motor skills, they were given the video on imitation, but not the other videos. The 10 minute observational probe was aimed at testing participants’ abilities to implement the strategies discussed in this last delivered section of *Simple Steps*.

The child's behaviour was also recorded during the 10 minute observational probe. Either 10 second interval recording or task analyses were used to determine the percentage of intervals/task steps in which the child was independently displaying the target behaviour.

After the completion of the entire training package, participants again filled out the self-efficacy questionnaires. Upon their completion in the study, participants were given the aforementioned four sections of *Simple Steps* on DVD along with an untrained section on reducing problem behaviour as extra information that might prove beneficial to the participant.

For *Simple Steps* sections not found to increase a participant's knowledge of ABA to a score of at least 80 percent after training, the first author provided one-on-one training to the participant using Behavioural Skills Training (Miltenberger, 2008) consisting of instructions, modelling, role-playing, and feedback until the skill was learned after the participant's completion of all tests and observational probes. One-to-one training also consisted of reviewing the knowledge tests and explaining those sections where the participant scored incorrectly. All participants received feedback on their knowledge tests and their teaching skills specific to their child in a debriefing meeting after completing the study.

Post-training. During the post-training period, participants were given the same tests as those delivered throughout the baseline and intervention conditions that corresponded with each of the sections of the training package they had already mastered or were unable to master. Post-training tests were delivered weekly for parents for at least two weeks after each of the four trained *Simple Steps* sections. One 3 month follow-up test was also delivered after the completion of the last *Simple Steps* section. For students, due to time constraints and incomplete data, post-training data was not collected for all *Simple Steps* sections. Participants kept the *Simple Steps* materials and could look at them at their leisure during post-training/follow-up, and

they were asked to track how often they reviewed the materials. Supplemental training (as described above) was provided to participants if, at follow-up, they no longer reached mastery criteria on any *Simple Steps* section.

Results

The participants' scores on the knowledge tests and their teaching skills displayed during behavioural probes were collected before and after training on each section of *Simple Steps* in a multiple baseline across skills design. For the tests "Summary Labels," "Understanding Behaviour," and/or "Measuring Behaviour" to be included in a participant's multiple baseline graphs, each baseline knowledge score needed to be below 80% correct. For "Defining Behaviour" and "Mentalism" to be included in a participant's multiple baseline graphs, baseline knowledge scores needed to be below 66.7% (two out of three). One exception is Parent 3's scores, as all her baseline data scores exceeded this criterion. Therefore, "Measuring Behaviour" was graphed for Parent 3 to fit the multiple baseline design with Parent 2. "Defining Behaviour" was only graphed for Student 2, and "Mentalism" scores were never graphed for any participant because it was difficult to deduce any changes in participant knowledge for this section with the total scoring only being out of three. All scores not graphed are summarized by participant in Tables 5-10. All participants' scores for teaching new skills (rate of praise per 10 minutes) are included in the multiple baseline graphs. All participants are in a multiple baseline across skills, while Parents 2 and 3 are additionally in a multiple baseline across participants. Scores for the children's development of new skills are included in the graphs, while only Children 2 and 3 are in a multiple baseline of skills across children.

P1's Results

Figure 3 shows a multiple baseline across two skills, Measuring Behaviour and Teaching New Skills, for Parent 1. Her baseline knowledge scores ranged from 10% to 60% correct for Measuring Behaviour, and her post training scores increased to 70% to 100% correct. Her 3 month follow-up score was 60% correct. Parent 1's delivery of praise ranged from zero to three instances of praise within 10 minutes before training and increased to a range of zero to five instances of praise after training. The mother delivered four instances of praise at the 3 month follow-up. Child 1's correct independent creation of a webpage ranged from 0% to 33.3% at baseline and increased to 50% to 75% correct after his mother received training in "Increasing Behaviour and Teaching New Skills."

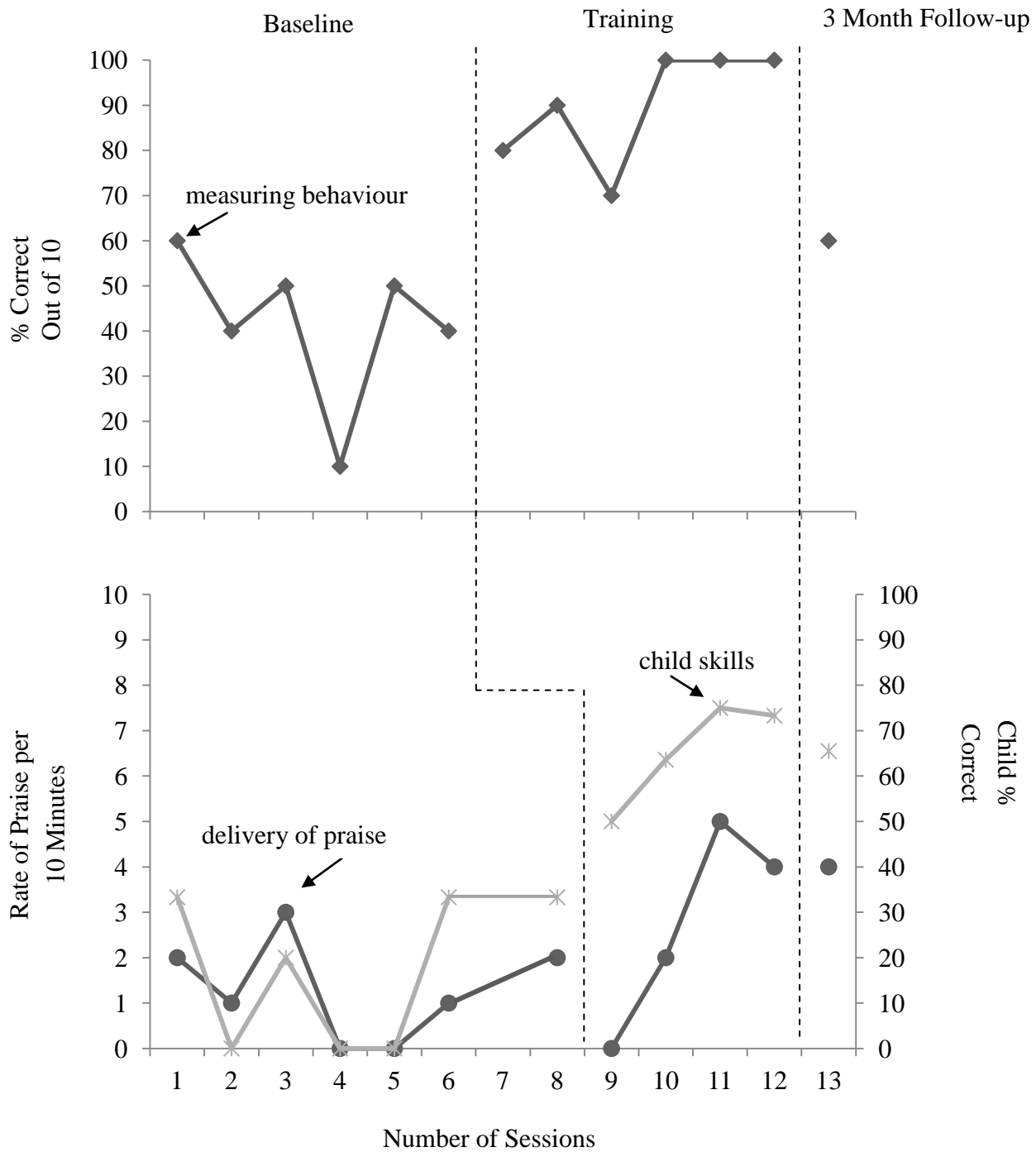


Figure 3. Scores for Parent 1 and Child 1. Percent correct on “Measuring Behaviour,” and rate of praise per 10 minutes for “Teaching New Skills” during baseline, training, and at 3-month follow-up for Parent 1. Independent correct responses for creating a webpage for Child 1 during baseline, training, and at 3-month follow-up.

Table 5

Parent 1 Knowledge Test Scores Not Included in the Multiple Baseline

Week	Knowledge test			
	Defining behaviour (percent correct out of 3) ^a	Mentalism (percent correct out of 3) ^a	Summary labels (percent correct out of 30) ^a	Understanding behaviour (percent correct out of 12)
1	100.0	67.7	100.0	91.7
2	67.7	67.7	100.0	83.3
3	33.3	0.0	100.0	50.0
4	100.0	100.0	100.0	75.0 ^b
5	33.3	67.7	100.0	75.0
6	100.0	67.7	100.0	83.3
7	67.7	100.0	100.0	83.3
8	67.7	67.7	100.0	100.0
9	100.0	100.0	100.0	75.0
10	67.7	100.0	100.0	83.3
11	100.0	100.0	100.0	100.0
12	67.7	67.7	100.0	91.7
24 ^c	100.0	67.7	93.3	66.7

^aParticipant never received training on this section. ^bFirst test after training for this section of Simple Steps. ^c3 month follow-up.

P2 and P3's Results

Figure 4 shows a multiple baseline across parents, skills, and children's skills for Parents 2 and 3 and Children 2 and 3. The skills graphed for Parents 2 and 3 were Measuring Behaviour and Teaching New Skills. The skills graphed for Children 2 and 3 were Attending to a Book and Tying Shoes respectively. Parent 2's baseline knowledge scores ranged from 30% to 80% correct for Measuring Behaviour, and her post training scores were similar ranging from 30% to 70% correct. Her 3 month follow-up score was 44% correct. Parent 3's baseline knowledge scores ranged from 30% to 90% correct for Measuring Behaviour, and her post training scores increased to 80% to 100% correct. Her 3 month follow-up score was 80% correct. While Parent 3 did have one baseline score at 90% correct for Measuring Behaviour, her other baseline scores remained low at 30% to 60% correct. After training on this section, Parent 3 only received Measuring Behaviour scores at or above 80%. For Teaching New Skills, Parent 2's delivery of praise ranged from 6 to 23 instances of praise within 10 minutes before training and decreased to a range of two to three instances of praise after training. She delivered 18 instances of praise at the 3 month follow-up. Parent 3's delivery of praise ranged from 5 to 26 instances of praise within 10 minutes before training and changed to a range of 9 to 21 instances of praise after training. This mother delivered 20 instances of praise at the 3 month follow-up.

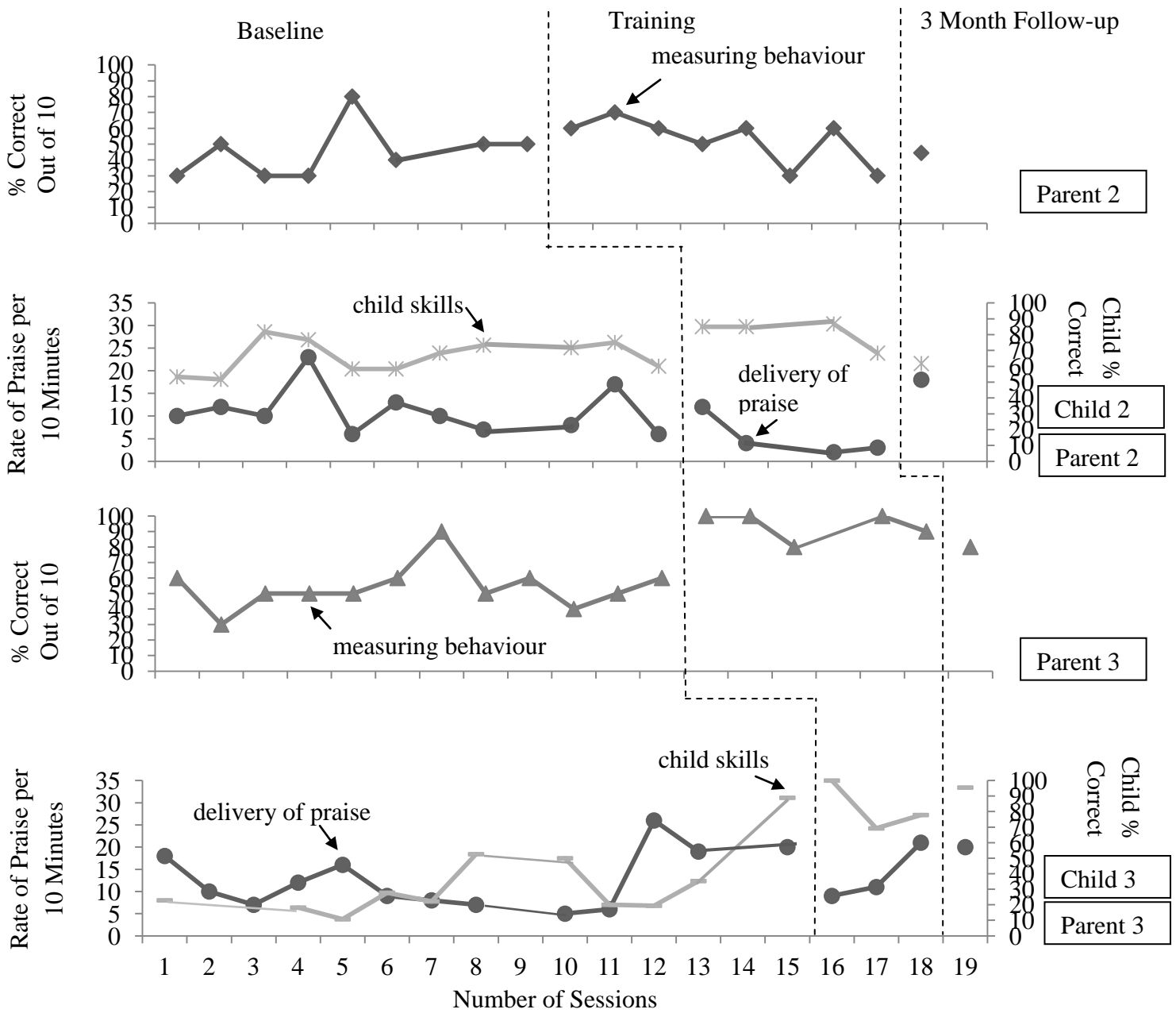


Figure 4. Scores for Parent 2, Child 2, Parent 3, and Child 3 in a multiple baseline across parents and skills. Percent correct on “Measuring Behaviour,” and rate of praise per 10 minutes for “Teaching New Skills” during baseline and training for Parents 2 and 3. Percentage of intervals with independent correct responses for attending to a book for Child 2 during baseline and training. Percentage of steps within a task analysis with independent correct responses for shoe tying for Child 3 during baseline and training.

Table 6

Parent 2 Knowledge Test Scores Not Included in the Multiple Baseline

Week	Knowledge test			
	Defining behaviour (percent correct out of 3)	Mentalism (percent correct out of 3)	Summary labels (percent correct out of 30)	Understanding behaviour (percent correct out of 12)
1	33.3	33.3	100.0	75.0
2	33.3	100.0	100.0	58.3
3	0.0 ^a	100.0 ^a	100.0 ^a	83.3
4	33.3	100.0	100.0	83.3
5	0.0	100.0	100.0	66.7
6	67.7	100.0	100.0	75.0
7 ^b				
8	0.0	100.0	100.0	91.7
9	33.3	100.0	100.0	100.0 ^c
10	33.3	100.0	100.0	75.0
11	67.7	100.0	100.0	91.7
12	33.3	100.0	100.0	83.3
13	33.3	100.0	100.0	75.0
14	33.3	100.0	100.0	91.7
15	33.3	100.0	100.0	100
16	33.3	100.0	100.0	75.0

17	33.3	33.3	100.0	91.7
29 ^d	0.0	100.0	100.0	83.3

^aFirst test after training for this section of Simple Steps. ^bNo test this week. ^cPercent correct out of 9. ^d3 month follow-up.

Table 7

Parent 3 Knowledge Test Scores Not Included in the Multiple Baseline

Week	Knowledge test			
	Defining behaviour (percent correct out of 3)	Mentalism (percent correct out of 3)	Summary labels (percent correct out of 30)	Understanding behaviour (percent correct out of 12)
1	67.7	67.7	100.0	91.7
2	33.3	33.3	100.0	33.3
3	67.7	67.7	100.0	58.3
4	67.7	67.7	100.0	91.7
5	67.7	67.7	100.0	50.0
6	67.7 ^a	67.7 ^a	100.0 ^a	100.0
7	100.0	67.7	100.0	100.0
8	100.0	67.7	100.0	91.7
9	100.0	67.7	100.0	100.0 ^a
10	67.7	67.7	100.0	91.7
11	100.0	67.7	100.0	91.7
12	100.0	67.7	100.0	75.0

13	100.0	67.7	100.0	83.3
14	100.0	67.7	100.0	100.0
15	100.0	67.7	100.0	91.7
16 ^b				
17	100.0	67.7	100.0	75.0
18	67.7	67.7	100.0	91.7
30 ^c	67.7	67.7	100.0	75.0

^aFirst test after training for this section of Simple Steps. ^bNo test this week. ^c3 month follow-up.

For the multiple baseline across children's skills, Child 2's correct independent attending to a book ranged from 51.7% to 85% at baseline and maintained between 68.3% to 86.7% correct after his mother received training in "Increasing Behaviour and Teaching New Skills." Child 3's correct independent shoe tying ranged from 10.7% to 88.9% at baseline and became less variable at 69.2% to 100% after her mother received training. Child 2's skills remained consistent across 17 weeks while Child 3's skills started to increase at baseline levels in the last 15 to 18 weeks of intervention.

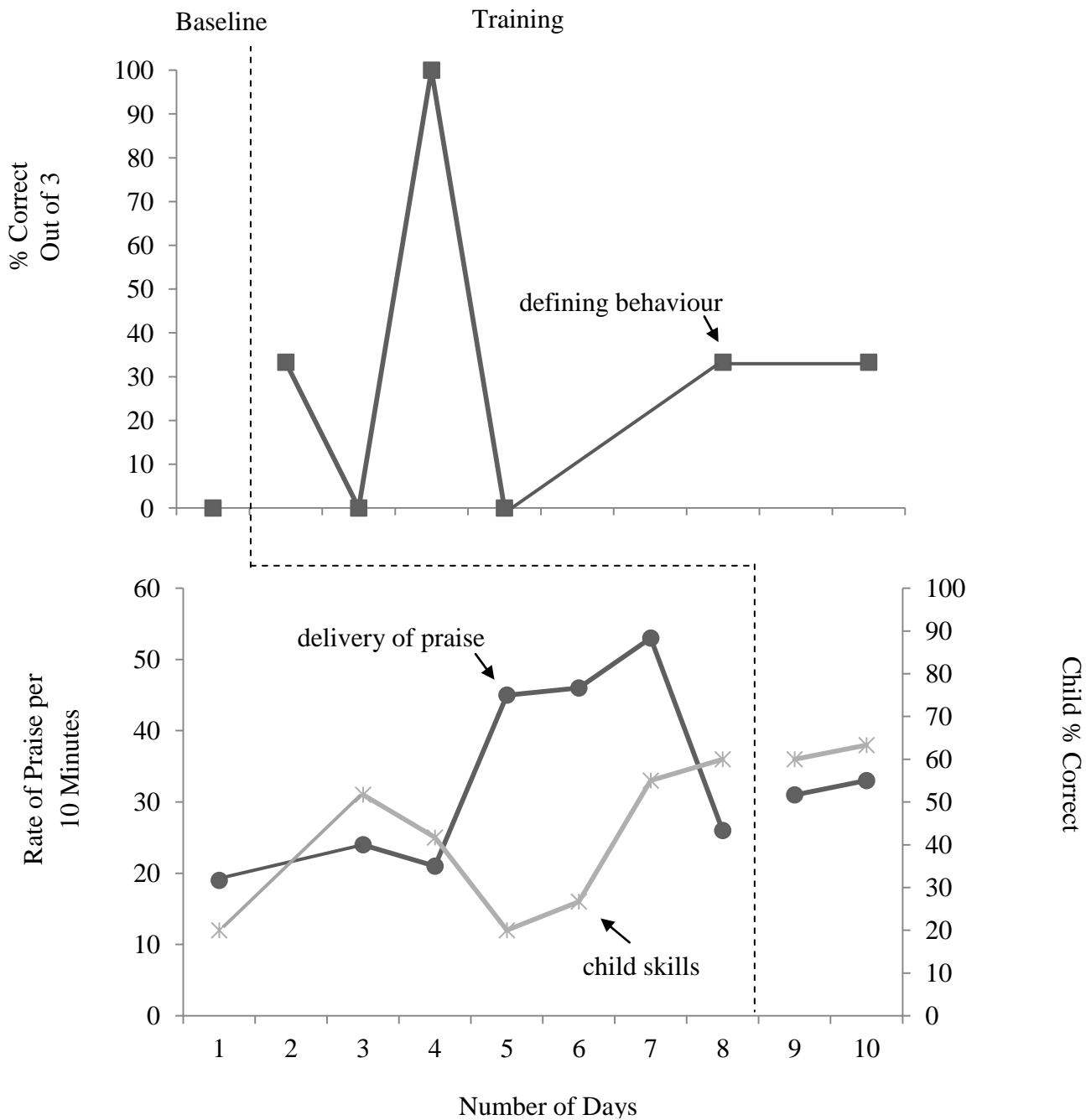


Figure 5. Scores for Student 1 and Child 4. Percent correct on “Defining Behaviour from Summary Labels,” and rate of praise per 10 minutes for “Teaching New Skills” during baseline and training for Student 1. Independent correct responses for physical activity for Child 4 during baseline and training.

Table 8

Student 1 Knowledge Test Scores Not Included in the Multiple Baseline

Week	Knowledge test			
	Mentalism (percent correct out of 3)	Summary labels (percent correct out of 30)	Understanding behaviour (percent correct out of 12)	Measuring behaviour (percent correct out of 10)
1	66.7	86.7	41.7	80.0
2	100.0 ^a	100.0 ^a	83.3	30.0
3	66.7	96.7	83.3	70.0
4	100.0	96.7	75.0 ^a	50.0
5	100.0	90.0	77.8 ^b	60.0
6 ^c				
7 ^c				
8	66.7	96.7	91.7	70.0 ^a
9 ^c				
10	100.0	90.0	83.3	80.0

^aFirst test after training for this section of Simple Steps. ^bPercent correct out of 9. ^cNo test this week

S1's Results

Figure 5 shows a multiple baseline across two skills, Defining Behaviour and Teaching New Skills, for Student 1. The student's baseline knowledge score for Defining Behaviour was 0% correct, and her post training scores increased to 0% to 100% correct. For Teaching New Skills, Student 1's delivery of praise ranged from 19 to 53 instances of praise within 10 minutes

before training and remained at 31 and 33 instances of praise after training. Child 4's correct independent completion of physical activities ranged from 20% to 60% at baseline and maintained at 60% and 63.3% correct after Student 1 received training in "Increasing Behaviour and Teaching New Skills."

S2's Results

Figure 6 shows a multiple baseline across four skills, Defining Behaviour, Understanding Behaviour, Measuring Behaviour, and Teaching New Skills, for Student 2. Four components of *Simple Steps* were selected for this multiple baseline to show the lack of training effect for this student across multiple sections of the training program. Student 2's Defining Behaviour baseline knowledge score was 33.3%. Afterward, this student achieved mainly scores of 0% correct until her last test score of 67.7%. The student's baseline knowledge scores for Understanding Behaviour ranged from 33.3% to 58.3% correct, and her post training scores increased to 58.3% to 83.3% correct. Baseline scores for Measuring Behaviour ranged from 20% to 70% correct for Student 2. After training, her scores maintained at 70% and 50% correct.

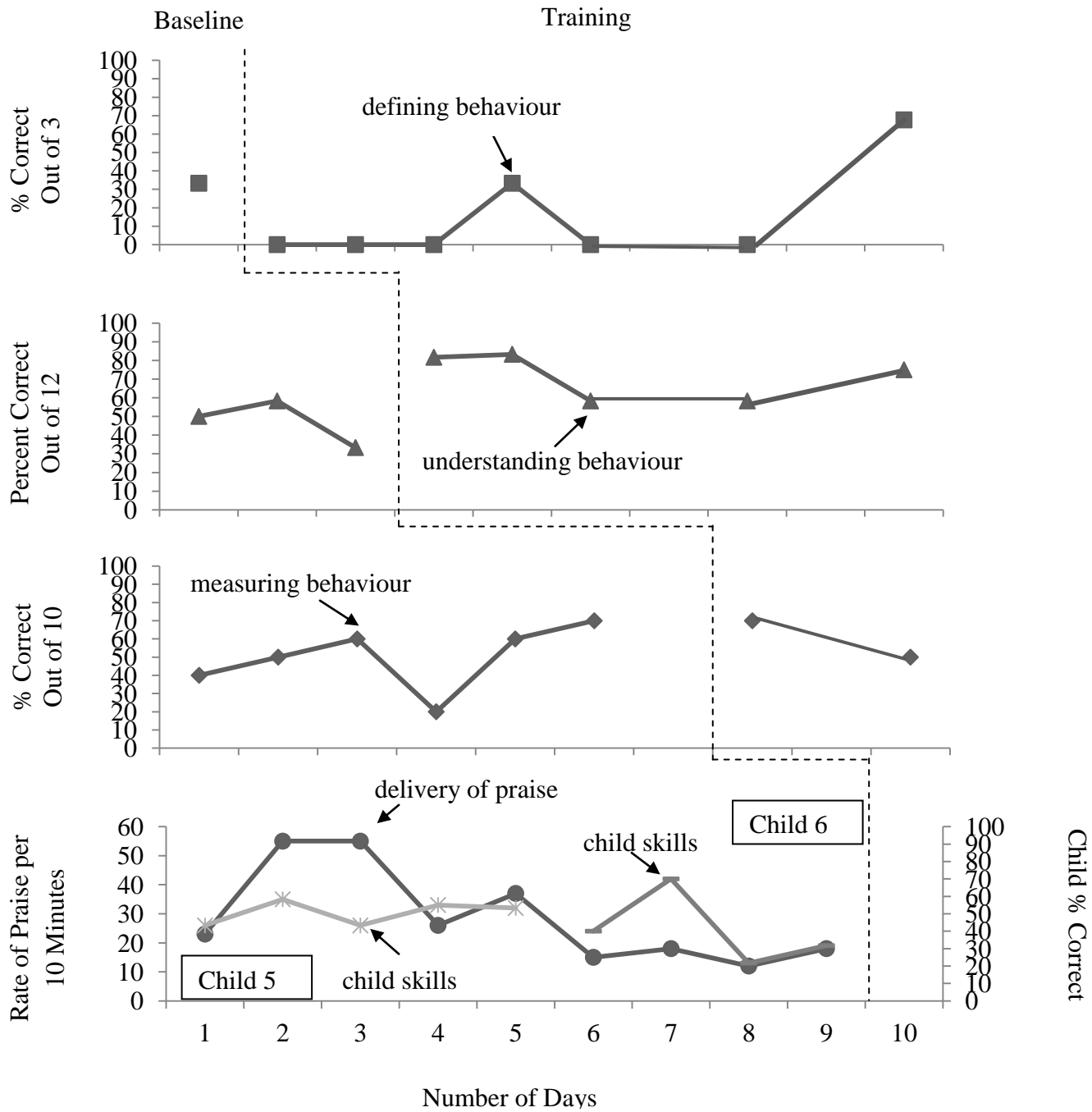


Figure 6. Scores for Student 2, Child 5, and Child 6. Percent correct on “Defining Behaviour,” “Understanding Behaviour,” “Measuring Behaviour,” and rate of praise per 10 minutes for “Teaching New Skills” during baseline and training for Student 2. Independent correct responses for physical activity for Child 5 and Child 6 during baseline and training.

Table 9

Student 2 Knowledge Test Scores Not Included in the Multiple Baseline

Week	Knowledge test	
	Mentalism (percent correct out of 3)	Summary labels (percent correct out of 30)
1	66.7	83.3
2	66.7 ^a	46.7 ^a
3	66.7	90.0
4	66.7	73.3
5	66.7	90.0
6	66.7	86.7
7 ^b		
8	66.7	96.7
9 ^b		
10	100.0	100.0

^aFirst test after training for this section of Simple Steps. ^bNo test this week.

Student 2's delivery of praise ranged from 12 to 55 instances of praise within 10 minutes before training in a fairly steady decline after the first week of data collection. Unfortunately, the child was unavailable for videotaping after the student reviewed the training materials, so there are no post-training data on Student 2's delivery of praise. Child 5's correct independent completion of physical activities ranged from 43.3% to 58.3% across five baseline points, and Child 6's correct independent completion of physical activities ranged from 21.7% to 70% across four baseline points.

S3's Results

Figure 7 (below) shows a multiple baseline across two skills, Measuring Behaviour and Teaching New Skills, for Student 3. The student's baseline knowledge scores for Measuring Behaviour ranged from 40% to 60% correct, and his post training scores increased to 90% to 100% correct. For Teaching New Skills, Student 3's delivery of praise ranged from 4 to 50 instances of praise within 10 minutes before training and remained at 17 and 38 instances of praise after training. This student was able to increase his rate of praise after it dropped during the first week and maintain consistent levels of praise throughout training. Child 7's correct independent following directions ranged from 41.7% to 76.7% across baseline, and Child 8's correct independent following directions ranged from 30% to 70% across training for Student 3. Because Child 7 did not have post-training scores and Child 8 did not have baseline scores, neither child's data were included in Figure 7.

Self-Efficacy

As seen in Table 11, parental self-efficacy scores improved after completion of *Simple Steps* training (note that decreased PSOC scores connote improvement). As seen in Table 12, participants' task-related self-efficacy scored improved after completion of *Simple Steps* training (note that increased scores connote improvement) with the exception of one participant whose scores decreased.

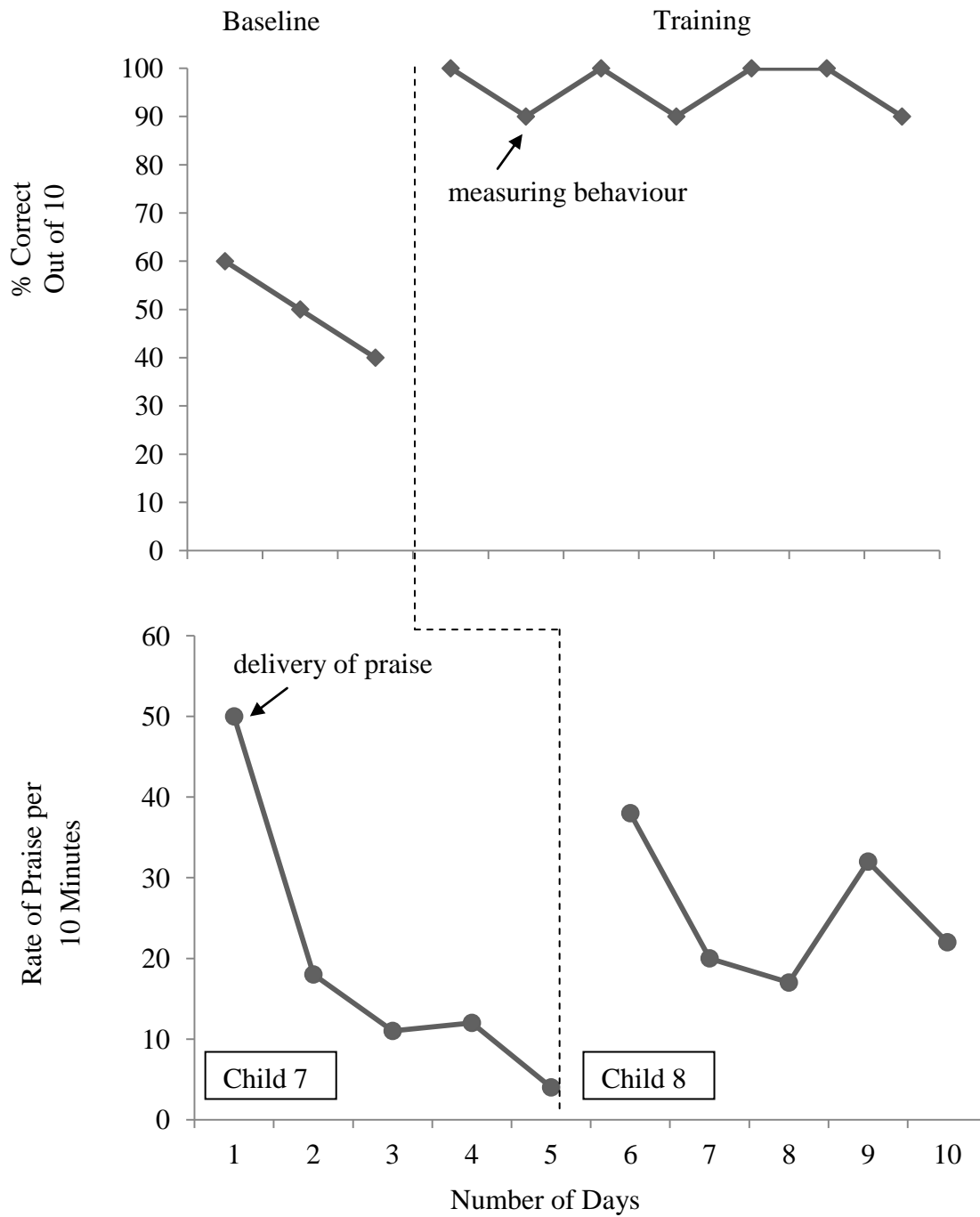


Figure 7. Scores for Student 3. Percent correct on “Measuring Behaviour,” and rate of praise per 10 minutes for “Teaching New Skills” during baseline and training for Student 3.

Table 10

Student 3 Knowledge Test Scores Not Included in the Multiple Baseline

Week	Knowledge test			
	Defining behaviour (percent correct out of 3)	Mentalism (percent correct out of 3)	Summary labels (percent correct out of 30)	Understanding behaviour (percent correct out of 12) ^a
1	0.0	100.0	13.3	91.7
2	0.0 ^b	100.0 ^b	100.0 ^b	58.3
3	66.7	100.0	100.0	100.0
4	0.0	66.7	100.0	91.7
5	66.7	66.7	100.0	75.0
6	66.7	66.7	100.0	83.3
7	66.7	33.3	100.0	100.0
8	66.7	66.7	100.0	91.7
9	66.7	100.0	100.0	83.3
10	100.0	66.7	100.0	91.7

^aStudent never received training on this section. ^bFirst test after training for this section of Simple Steps.

Table 11

Parenting Sense of Competence Scale Scores Pre- and Post-Training

Parent	Pre-training score		Post-training score	
	Total	Mean per item	Total	Mean per item
1	45.0	2.6	42.0	2.5
2	62.0	3.6	48.0	2.8
3	59.0	3.5	40.0	2.4
Australian mothers ^a	60.9 ^{b, c}	4.4 ^{b, d}		

Note. *M* = mean. The general population Australian mothers' scores were taken from Gilmore and Cuskelly (2008).

^a*n* = 586. ^bMinus Items 1, 5, and 7. ^cStandard deviation = 8.4. ^dStandard deviation = 0.6.

Table 12

Participant Task-related Self-Efficacy Ratings Pre- and Post-Training

Participant	Pre-training score		Post-training score	
	Total	<i>M</i> per item	Total	<i>M</i> per item
Parent 1	19.0	4.8	22.0	5.5
Parent 2	14.0	3.5	18.0	4.5
Parent 3	12.0	3.0	17.0	4.3
Student 1	18.0	4.5	19.0	4.8
Student 2	18.0	4.5	15.0	3.8
Student 3	18.0	4.5	19.0	4.8

Consumer Satisfaction

Consumer satisfaction ratings for each *Simple Steps* section were mostly “enjoyable” and always “helpful.” There were no ratings of “not at all” or “not very” enjoyable or helpful. Please see Table 13 for a summary of consumer satisfaction ratings.

Table 13

Number of Ratings for each Section of Simple Steps

Section	Did you enjoy reviewing the materials?			Did you find the materials helpful?	
	Neutral	Somewhat enjoyable	Very enjoyable	Somewhat helpful	Very helpful
Mentalism	3	2	0	2	3
Explained ^a					
Understanding	1	2	2	1	4
Behaviour ^a					
Measuring	1	2	3	2	4
Behaviour ^b					
Teaching New	1	1	4	2	4
Skills ^b					

^an = 5. ^bn = 6.

Discussion

In this evaluation of *Simple Steps*, a self-instructional program designed to teach parents of children with ASD the basic principles of ABA, some evidence was provided to support self-instruction as an effective method to teach parents and students about ABA. All six participants

had one section of *Simple Steps* on which their test scores increased as they learned about that ABA concept through the self-instructional training program on which the knowledge tests were based. However, only two of the participants were able to maintain scores above 80% across all post-training sessions for the section which evidenced training effects. All participants also had at least one section of *Simple Steps* on which their baseline test scores were too high to show any meaningful change after training. Additionally, two participants, one parent and one student, failed to show improvements from low baseline scores (below 80% correct) after training on two sections of *Simple Steps*, “Mentalism Explained – Defining Behaviour” and “Measuring Behaviour.” For the five children whose parents or students received training on “Increasing Behaviour and Teaching New Skills,” two of the children had at least one score above 80% correct after their mothers received training, suggesting that *Simple Steps* may help parents to increase appropriate behaviour in their children with ASD. Each *Simple Steps* section is discussed in more detail below.

Mentalism Explained

Skill improvement. For “Summary Labels,” Student 3 scored 13.3% correct on his baseline test, and all subsequent test scores (post-training) were 100% correct. For “Defining Behaviour,” Parent 2 scored 1/3 and 2/3 correct at baseline, but she was able to maintain perfect scores on her definitions after training for 75% of her tests. This provides some evidence to support the effectiveness of *Simple Steps* in training ABA knowledge.

Lack of skill improvement. This was the section in which participants showed the highest baseline scores. For “Mentalism,” all participants had scores of 2/3 or greater during baseline. This made it difficult to see any meaningful changes after training. For “Summary Labels,” all parents scored 100% correct during baseline, and two students scored above 80%

correct at baseline. Additionally, after training, Student 2 still had post-training scores below 80% correct. Participant results for “Defining Behaviour” were more variable. Two parents scored 2/3 or higher during baseline. Parent 1 scored 100% correct during baseline. This mother held a diploma in Human Services Counselling and had worked in women’s shelters and homeless shelters where incident reports needed to be written in clear and descriptive terminology (the purpose of the “Defining Behaviour” test). This may explain why her scores were so high in pre-training.

While all participants were able to demonstrate the ability to identify summary labels and distinguish them from behaviours during baseline and after training, their ability to rewrite summary labels so that they became descriptive behaviours was not as strong. Even after training, four participants could only score as high as 2/3 or 3/3 on infrequent occasions (70% of tests or less). Student 3 explicitly stated that he would have liked *Simple Steps* to include a sample definition of behaviour describing the components of a good definition because he was not confident in creating his own behavioural definitions.

Recommendations to improve training. *Simple Steps* states that definitions of behaviour can include actions that people do as well as their thoughts and feelings, and that it is important to define terms clearly for communication with service providers (p. 18). However, consumers are not given explicit examples of appropriate behaviours to replace summary labels. Consumers are simply told that “unhappy” is a summary label, but not that “frowning” may be a behaviour that shows “unhappy.” *Simple Steps* does state that defining behaviour should occur “so that an actor or actress could follow written instructions to replicate a particular behaviour” (p. 19). Therefore, this is what participants were expected to be able to do for the “Defining Behaviour” test. *Simple Steps* does give one example of how to rewrite the summary label

temper tantrum/aggression: “John hits his mother when he is asked to tidy his bedroom” (p. 21).

While clearly describing both the behaviour and the antecedent to the behaviour, this sole example may be insufficient to teach consumers how to define behaviours given the lack of mastery displayed by participants in this study.

Understanding Behaviour

Skill improvement and lack of improvement. Participants also scored very well on baseline tests for this section of *Simple Steps*. Five of the six participants scored 80% correct or higher during baseline testing, and two of these participants reached scores of 100% correct. *Simple Steps* includes descriptions and example of antecedents and consequences, on which all participants but Student 2 scored 100% correct during baseline. The concept with the lowest baseline scores was functions of behaviour. Half of the participants received scores of 75% or lower for correctly determining the function of a behaviour during baseline. These participants all achieved scores of 100% for correct function at some point following training. For the participant with baseline scores below 80% correct, *Simple Steps* was shown to improve her scores above 80%. However, this improvement in “Understanding Behaviour” scores did not maintain more than two days after the student reviewed the materials. This suggests that, for consumers with low knowledge scores for how to fill out an ABC chart and hypothesize the function of a behaviour, *Simple Steps* can increase this knowledge, but the gains may not remain once the consumer stops reviewing the materials.

Recommendations to improve training. Because understanding the function of behaviour was the area in which participants had the greatest room for improvement, *Simple Steps* could aim to strengthen their description of this topic. The way functions of behaviours were presented to consumers seemed to lack clarity, which was reflected in the participants’ test

responses. First, *Simple Steps* mentioned four main functions of behaviour: to escape being asked to do something, to try to obtain an item that was withheld, to try to continue a preferred activity while delaying an unpreferred activity, and to try to gain attention (p. 21). These four examples actually only describe three different functions of behaviour: escape a demand, access a tangible/activity, and gain attention. This is one way *Simple Steps* lacks clarity in describing the way that children's behaviours serve different functions. Second, *Simple Steps* again outlined four functions of behaviour but worded them differently: gain attention, avoid a demand, access a desired item, and communicate the desire for an item (p. 22). This might further confuse the untrained consumer as "communication" is a new function listed along with the three previously mentioned functions. However, communication is a summary term for a set of behaviours that serve a particular function (e.g. to communicate desire for escape or desire for a tangible). After training, participants listed "communication" as a function for behaviour during their tests (and were given correct scores when this function was possible); however, a more specific function such as "tangible" or "escape" was usually more appropriate for each question. The third list of functions offered by *Simple Steps* was escape a demand, gain social attention, and self-stimulatory reasons (p. 28). Again, a new and previously unmentioned function was added to the list (self-stimulation). The five functions explained in the DVD were social attention, escape/avoidance, wanting something, attempted communication, and self-stimulation. Structuring the written manual to mirror the description of functions of behaviour offered in the DVD might help to provide consistency and clarity regarding this concept for consumers. Additionally, "communication" could be taken out of this section of *Simple Steps* and moved to "Increasing Behaviour" and possibly "Decreasing Behaviour," as increasing functional communication is likely a goal for many parents that will help to reduce problem behaviours.

Measuring Behaviour

Skill improvement. For this section of *Simple Steps*, participants' results were highly variable. Two participants, Parent 1 and Student 3, had baseline scores below 80% correct for "Measuring Behaviour" which increased above 80% correct after training. One additional participant, Parent 3, had 11/12 of her baseline scores 60% correct or below with only one of her baseline scores being 90% correct. After training, all of her scores remained at 80% or higher, including her 3 month follow-up score. These results indicate that Measuring Behaviour knowledge scores do not improve until after training, and when knowledge scores are initially low, training increases these score above 80% correct. However, for Parent 1, these training effects were not maintained across all post-training tests or at the 3 month follow-up, possibly because she did not review the training materials at all over the 3 months. For Student 3 these results were maintained for the duration of the intervention. This suggests that training in this section of *Simple Steps* may not produce consistent scores above 80% correct.

Lack of skill improvement. The remaining three participants had variable baseline scores, some reaching as high as 80% correct for "Measuring Behaviour." None of these participants showed an increase in post-training scores as they all remained at 80% correct or lower. These results indicate that when Measuring Behaviour knowledge scores are highly variable before training (scores of 80% correct or higher are reached during baseline measures), training effects may not be seen. There was no training effect on Measuring Behaviour for Parent 2, Student 1, or Student 2, as their scores remained at 80% correct or lower after training.

Recommendations to improve training. Participants were given definitions and examples of four behavioural dimensions: frequency, duration, latency, and interresponse time. While this was sufficient to increase knowledge in these concepts for some participants, other

participants were unable to correctly identify these terms consistently. *Simple Steps* also offers a CD-ROM of resources for its consumers which includes frequency tally charts, frequency behaviour graphs, duration data collection sheets, latency data collection sheets duration, and interresponse time data collection sheets. Each resource includes a completed sheet as an example. If these resources had been offered to participants during training, it may have helped to improve their knowledge scores for “Measuring Behaviour.” Additionally, consumers could be given videos to watch of children displaying problem behaviours. Consumers could then record data on each behavioural dimension for these video examples and compare their records to a master list of correct responses to test their ability to use each behavioural dimension to track behaviour.

Increasing Behaviour and Teaching New Skills

Skill improvement. A trend seen across five of the participants was for rate of praise to decrease over time without training with alternating fluctuations and decreases. For the five of these participants who received training in this section of *Simple Steps*, three participants displayed a mean increase in rates of praise after training. Parent 1 had a mean of 1.3 instances of praise per 10 minutes before training and a mean of 2.8 instances of praise after training with 4.0 instances of praise per 10 minutes at follow-up. Parent 3 had a mean of 12.5 instances of praise per 10 minutes before training and a mean of 13.7 instances of praise after training with 20 instances of praise per 10 minutes at follow-up. Student 3 had a mean of 19.0 instances of praise per 10 minutes before training and a mean of 25.8 instances of praise after training. These results suggest that *Simple Steps* can educate participants in the importance of delivering reinforcement (in the form of verbal and physical praise) when trying to increase appropriate behaviour in children with ASD.

Lack of skill improvement. Looking specifically at Parent 1's results, the evidence suggests that for low baseline rates of praise (other participants were delivering between 5 and 55 instances of praise per 10 minutes), *Simple Steps* training may not increase this rate by more than one or two instances of praise within a 10 minute period. The increases seen at the last two data points after training (five and four instances of praise in 10 minutes) were maintained at the 3 month follow-up. However, more data on the mother's delivery of praise, such as is she praising prompted or unprompted behaviours, is required to understand how the parent's delivery of praise is influencing her child's behaviour or vice versa.

For Parent 2, who continued to show decreases in delivery of praise even after training, a mean of 11.2 instances of praise per 10 minutes before training and a mean of 3.0 instances of praise after training were observed. However, Parent 2 displayed 18 instances of praise per 10 minutes at the 3 month follow-up. She was the only parent to review the *Simple Steps* materials over the 3 month period. She was also the only participant to use edible and tangible reinforcement (only at the 3 month follow-up). Consistent with her scores, Parent 3 stated that she had difficulty applying the knowledge learned through *Simple Steps* to teach her child, but she was able to review the materials as needed over the 3 months to determine how to best implement the strategies with her son. Student 1 also showed decreases in delivery of praise after training. She averaged 33.4 instances of praise per 10 minutes before training and a mean of 32.0 instances of praise after training. It must also be noted that for Parent 3 that although her average rate of praise increased, the individual praise delivery each week did not increase above the highest baseline levels after training. These results suggest that some participants were not able to increase their rates of praise after training on this *Simple Steps* section.

While it may be possible that participants' rates of praise could decrease after they learn to thin reinforcement because *Simple Steps* briefly mentions gradually requiring the child to complete more difficult tasks before delivering reinforcement, Child 2's post-training skills were not consistently above 80% correct or baseline scores, which is when a parent would start to fade reinforcement. For Student 1, while her child's skills were improving (although never above 65% correct), the drastic drop from 53 instances of praise to 26 instances per 10 minutes is not gradual fading, and the student had not been trained in teaching new skills at this time.

Recommendations to improve training. While participants were offered definitions of both positive and negative reinforcement, categories of reinforcers (tangible, social, activity, and token), and reminded that reinforcers vary across time and people, participants never used reinforcers other than social reinforcers (such as verbal praise and physical affection) with the children. The DVD also modelled therapists using toys, verbal praise, and taking a break to reinforce a child's behaviour; however, parents and students continued to rely only on praise to reinforce children's behaviours after training. *Simple Steps* also offers a video (not used in this study) on how to conduct preference assessments which the participants were not given due to time constraints. In this video, a therapist models showing a child a variety of toys, food, and drink to determine which item(s) the child seems most interested in (and could potentially be used as reinforcers). Access to this video in this study may have increased participants' use of alternative forms of reinforcement.

Additionally, Student 3 noticed that one of the *Simple Steps* therapists was using a token board with a child. He indicated that he would have liked to learn more about this technique. The manual briefly defines token reinforcers (which participating children did not receive) and the videos include therapists using token economies with their children. The consumer would have

to navigate the CD-ROM of resources before finding a short “Guide to use” for token boards (which participants did not receive). While participants mentioned that they enjoyed seeing the therapists employ the ABA strategies with the children, one parent mentioned that she would have liked to see more examples of actual parents implementing the strategies.

Finally, while the *Simple Steps* DVD mentions gradually expecting the child to complete progressively more difficult tasks before delivering reinforcement, there is neither mention of rate of reinforcement in any of the materials nor how to thin reinforcement. Including a description of schedules of reinforcement (fixed and variable interval and ratio schedules) and providing an area on the data collection sheets for therapists to record the schedule of reinforcement might help consumers to effectively use reinforcement to increase their child’s appropriate behaviours.

Overall Recommendations

All *Simple Steps* sections would benefit from having feedback available for consumers regarding their knowledge. Multiple participants expressed wanting more immediate feedback to determine whether or not they were interpreting and implementing the self-instructional materials correctly. Tests similar to the ones used in this study could be provided to consumers so they could check their understanding of the concepts. Additionally, feedback from experts should be available in the form of direct observation of consumer implementation of these ABA concepts with children with ASD. For example, parents could send in videos of themselves delivering a teaching program or collecting data on their child’s behaviour so experts could directly see the parents’ skills and provide comments and advice. All recommendations are summarized in Table 14.

Table 14

Summary of Recommendations to Improve Simple Steps

Section	Recommendations
Mentalism explained	<ul style="list-style-type: none"> • Offer explicit examples of behaviours which can replace summary labels • Offer multiple examples of how to describe a behaviour without using summary labels
Understanding behaviour	<ul style="list-style-type: none"> • Consistently describe only four functions of behaviour: escape, tangible, attention, and sensory • Keep written descriptions of functions consistent with information in DVD • Place “communication” in Increasing and/or Decreasing Behaviour sections
Measuring behaviour	<ul style="list-style-type: none"> • Offer videos which consumers can watch to practice collecting data using behavioural dimensions
Increasing behaviour and teaching new skills	<ul style="list-style-type: none"> • Provide a video on how to create and implement a token board for reinforcement • Offer information regarding schedules of reinforcement and how to thin reinforcement
All sections	<ul style="list-style-type: none"> • Offer feedback on consumer knowledge and skills in the form of written tests and observation through video

Child Skills

Child 1 clearly showed an increase in skills from a mean of 17.1% independent correct website creation before parent training to a mean of 69.5% correct after parent training.

Conclusions cannot be made from observations of Child 5 and Child 6 because their student never received training on teaching new skills while working with either child; however, these children's baseline scores remained stable across the 5 and 4 respective days they attended camp which is expected given the Student 2's lack of training. Conclusions cannot be made from observations of Child 7 and Child 8 because Student 3 only received training on this section of *Simple Steps* after working with Child 7 and before working with Child 8. Therefore, there is no pre-student training baseline score to compare Child 8's post-student training behaviour with. Both Child 7 and Child 8's behaviour remained stable across each of their 5 days at camp. Child 7's stable baseline is expected as Student 3 did not receive training on teaching new skills during his time with this child. The remaining children did not show clear improvements in their skill development.

Child 2 displayed a mean of 67.8% correct attending to a book before parent training and a mean of 80.0% correct after parent training. However, this child had two baseline scores above 80%. His average correct response for the six weeks pre-parent training was 63.3%, and his average correct response for the next 6 weeks pre-parent training was 72.2%, suggesting an increasing baseline score. Child 3 displayed a mean of 33.5% correct shoe tying before parent training and a mean of 82.3% correct after parent training. However, this child had a score of 88.9% correct right before parent training. Child 4 displayed a mean of 39.3% correct physical activity before student training and a mean of 61.7% correct after student training. However, this child had two consecutive increasing scores of 55.0% and 60.0% correct right before student

training. These increases in new child skills during baseline which continue after parent and student training do not allow the conclusion that increases in child skills were due to parent or student implementation of correct ABA after training.

All parents had been teaching their child a new skill for at least 8 weeks, and they had an additional three weeks to teach their child after training. Students, however, had only a maximum of 10 days to teach their child a new skill, and a maximum of 5 days to teach their child after training. One student even reviewed the training materials for “Teaching New Skills” at the same time as meeting and teaching a new child for the first time. This lack of time for students to review materials and practice teaching children with ASD may account for the baseline and post-training scores of all of the summer camp’s children’s skills being below 80% correct, as a maximum of 10 days may not be a sufficient length of time to see new skill development. Additionally, variable parent praise scores with increases in child skills during baseline makes it difficult to note any change in child skill due to parent teaching.

Self-Efficacy

It is interesting to note that even before parent training and with additional PSOC items which would increase self-efficacy scores thereby lowering overall self-efficacy, parents in this study had higher self-efficacy (lower scores) than an Australian normative sample. After *Simple Steps* training, parents’ self-efficacy increased further (lower scores) indicating that this self-instructional training manual may have strengthened parents’ overall sense of competence as a parent. For the task-related self-efficacy measure, all participants’ ratings except Student 2 indicated increased self-efficacy in specific tasks related to implementing ABA interventions after *Simple Steps* training. Parents’ scores increased by a mean of four points while students’ scores only increased by a mean of 1 point except for Student 2 whose score decreased by 3

points. Two-thirds of parents' scores were lower than students' task-related self-efficacy scores pre-training. The high pre-training self-efficacy scores for students as compared to parents combined with the slight improvement in self-efficacy scores and even decrease for one student after training suggest that students might not hold a realistic view prior to receiving training in ABA of all of the skills that are necessary to effectively teach a child with ASD. Therefore, students may have felt highly competent regarding their ability to teach a child with ASD prior to training, but after training, students may have realised the intricacies involved in teaching a child with ASD and felt only slightly more effective as a teacher. Parents might also report lower task-related self-efficacy scores as they spend more time with their children than a student at a summer camp and face additional difficulties in the home that students do not encounter in a recreational activity setting.

Consumer Satisfaction

Overall, participants found *Simple Steps* to be enjoyable and helpful. The most common thing participants liked about each *Simple Steps* section was how simple the language was and how easy the concepts were to understand. Another comment that emerged from participants was that they could see how these concepts could be applied to their children or the children with whom they worked. There were only three comments regarding things participants did not like about *Simple Steps*. One participant found the "Explaining Mentalism" section to be too long and detailed for the concepts presented. Another participant found that at the end of the "Increasing Behaviour and Teaching New Skills" section, she still had not learned enough to feel comfortable reducing her child's challenging behaviours. However, there is a section of *Simple Steps* that does address this issue which the participants were given access to after their completion in the study. Finally, a third participant mentioned that she would have liked more

time to review the *Measuring Behaviour* material. This was the shortest *Simple Steps* video, running just under 5.5 minutes in length. Therefore, it is likely that this comment was simply a statement regarding the participant's own lack of time to devote to the material, and not a critique of the length of time it might take to review and understand the material.

Implications of the Study

This self-instructional training program demonstrates some effectiveness in educating parents and student students on the principles of ABA and how to incorporate these ideas into teaching children with ASD. The availability of self-instructional materials for parents of and students who work with children with autism provides a low-cost and easily accessible source of information on ABA. This is particularly helpful to families on waiting lists for services in their communities. It also provides a reliable source of information for students who have little to no experience supporting children with ASD. The flexibility of teaching oneself at one's own pace is also an appealing alternative to one-on-one coaching sessions provided by a behaviour therapist. However, due to the variability in participants' scores after training, this study does not recommend that *Simple Steps* be used to replace in-person training provided by an experienced professional. *Simple Steps* could act as a starting point for parents and students to gain a solid knowledge base in ABA and then obtain more in-depth knowledge and specific feedback and training regarding effective delivery of ABA interventions from a professional.

Limitations

While this study built upon the limitations of previous research by including measures of parent, student, and child behaviour change as well as knowledge test scores in an experimental multiple baseline design, there still exist a number of limitations which must be considered. First, participants were not given the entire *Simple Steps* ABA ASD training package; therefore, the

results of this study must be interpreted with caution because only small portions of the package were isolated and presented in succession to participants only after they had been tested on their knowledge. Participants may have displayed higher knowledge and skills if they were able to review the materials in their entirety. Second, like previous reviews of self-instructional training materials, this study did not isolate which component or combination of components of self-instruction were most effective, the written manual or the videos, in training parents and students to deliver ABA interventions to children with ASD. Third, while parents of children with ASD were able to participate in multiple baseline measures, due to time constraints, students working with children with ASD were only able to provide one baseline point for “Mentalism Explained.” This makes it difficult to make conclusions regarding the any training results for this section of *Simple Steps*. Fourth, while all participants reviewed each section of *Simple Steps* at least one time, parents were able to review and integrate the materials across multiple weeks while students only spent a maximum of two days reviewing the materials. If all participants had reviewed the material the same number of times across the same number of days, this may have reduced the variability in results. Fifth, participants did not comment on the perceived level of difficulty of the knowledge tests; however, their high baseline scores for “Summary Labels” indicated that this test was too easy and low post-training scores on “Defining Behaviour” suggested that this test was too difficult. Participants’ results should be considered in redesigning future knowledge tests delivered in subsequent evaluations of *Simple Steps*.

Future Research

Due to the variability in participants’ results for this study and the paucity of research evaluating self-instructional programs teaching ABA, additional studies should seek to expand the knowledge regarding which self-instructional programs can increase learner ABA knowledge

and skills and by how much. Implementing the modifications to *Simple Steps* suggested above and/or evaluating *Simple Steps* in its entirety, follow-up research could evaluate whether or not these changes would make *Simple Steps* more effective ABA training package. Research should also look at how self-instructional materials can supplement a training program delivered by a behaviour therapist. For example, if learners are given a self-instructional manual before attending group or individual training sessions, do their scores increase more quickly and/or do they achieve higher scores than learners who only receive therapist-directed training? Future research could also determine how much time a learner must spend reviewing self-instructional material to gain an adequate level of knowledge. Then additional research could highlight how to increase learner motivation to review the material such as incentives to engage in reviewing materials. In this study, parents and students reported many life events that made it difficult for them to devote the amount of time they would have liked to reviewing the training package.

Conclusion

This study provides preliminary evidence that *Simple Steps* may improve some areas of ABA knowledge for use with children with ASD by parents and students. Because results were variable, further research should evaluate the training program in its entirety to determine whether or not *Simple Steps*, as a whole, can increase consumer ABA knowledge and skills. If *Simple Steps* is found to be effective in increasing consumer ABA knowledge and skills, this would be an affordable and accessible training program for parents of children with ASD and students who work with children with ASD.

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Appendix A

Defining Behaviour from Summary Labels

Please rewrite the statements below so that they are less ambiguous and more behaviourally descriptive.

1. Adam is aggressive.

Rewrite:

2. Adam is sweet.

Rewrite:

3. Emma is sad.

Rewrite:

4. The boy is spoiled.

Rewrite:

5. The child is lazy.

Rewrite:

6. She is having a temper tantrum.

Rewrite:

7. I am exercising.

Rewrite:

8. You are funny.

Rewrite:

9. He is impatient.

Rewrite:

10. That child is good.

Rewrite:

Answers: The following is just a sample of correct answers. Many correct answers are possible. A correct answer should always describe an observable action. A precise definition of a behaviour should be clear enough that an actor could follow this written description and replicate the behaviour. This will most likely be the physical form the behaviour takes. The re-written sentence should NOT include mentalism. E.g. Because he is *aggressive*, when Adam is asked to clean his room, he throws his shoes at his mother. This will result in a mark of 0.

1. When Adam is asked to clean his room, he throws his shoes at his mother.
2. When Adam sees his mother crying, he walks over to her and gives her a hug.
3. Emma has a loss of appetite and won't get out of bed.
4. When he is told he can't have a chocolate bar, the boy stomps his feet and yells.
5. The child had an English paper due on Monday, but he didn't hand it in until Wed.
6. She is shouting and throwing her toys around the room.
7. I am running 5 kilometres in 25 minutes.
8. Everyone at the office smiles and laughs when you talk.
9. He is frowning while looking at his watch because the doctor is 2 minutes late.
10. That child sits quietly at circle time without being asked.

Appendix B

Mentalism

Pick the six sentences in which mentalism is occurring.

1. Adam throws the ball at Emma because he is aggressive.
2. Adam stops throwing the ball because Emma frowns.
3. Adam whistles because he is cheeky/insolent and immature.
4. Adam is sweet because he gives Emma a flower.
5. Your child will not do his homework because he is lazy.
6. Your child will do his homework because he wears glasses.
7. Students enjoy recess because they get to play tag.
8. Students are annoying because they talk to their friends during class.
9. That child is inflexible because she has autism.
10. That child shouts because she wants her mother's attention.

Mentalism is occurring in statements 1, 3, 4, 5, 8, and 9.

1. "Aggression" can summarize/describe behaviours like throwing a ball at someone, but that does not explain why this behaviour occurs. If we use the words "is aggressive" to describe the act of throwing objects at a person, then when we try to explain the behaviour using statement 1 above, we end up with: Adam is aggressive because he is aggressive.
3. Again, let's use the summary labels "cheeky" and "immature" to describe the behaviour "whistling." Just as above, when we use a summary label to describe and explain a set of behaviours this leads to circular reasoning: Adam whistles because he is cheeky and immature. How do you know Adam is cheeky and immature? Because he whistles. Which is the same as saying: Adam is cheeky and immature because he is cheeky and immature.
4. Summary label "sweet" describes the behaviour "give a flower." Circular reasoning occurs because we say: Adam is sweet because he gives Emma a flower. How do we know Adam is sweet? Because he gives Emma a flower.
5. Attending parents evening, you are told that your child will not do his homework because he is lazy. You ask his teacher to explain how she knows that he is lazy, and she explains that she knows this because he won't do his homework. The teacher is using the description of the behaviour (lazy) to explain the reason for the behaviour (lazy).
8. The description of the behaviour (talking during class is annoying) is being used to explain why the behaviour occurs (because the students are annoying).
9. "Autism" is a summary label to describe various behaviours, such as inflexibility, that are observed during diagnosis. It is a mistake to say that a child behaves a certain way

because she has autism. In statement 9, autism is used to both describe and explain inflexibility. The cause of the behaviour still needs to be determined.

The rest are testable explanations. We might find that the statements are not true.

2. The behaviour for observation would be “stop throwing ball” and the behaviour under control would be “frowning.” We could measure how often or how quickly Adam stops throwing the ball when Emma frowns compared to when Emma does not frown.
6. The behaviour for observation would be “start/complete homework” and the behaviour under control would be “wearing glasses.” We could measure how often the child does their homework when they are wearing glasses compared to when they are not wearing glasses.
7. The behaviour for observation would be “enjoyment at recess” and the behaviour under control would be “playing tag.” We could measure students ratings of how enjoyable recess is when they play tag compared to when they do not play tag.
10. The behaviour for observation would be “shouting” and the behaviour under control would be “attention.” We could measure how many times or how long the child shouts when attention is provided to the child after/during shouting compared to when the child is not given attention for shouting.

Appendix C

Summary Labels

Summary Labels from Video

Cheeky	Immature	Aggressive	Noisy	Sweet
Playful	Attention-seeking	Cool	Spoiled	Charming
Apologetic	Irritating	Non-compliant	Withdrawn	Non-communicative
Inflexible	Unresponsive	Obsessive	Unimaginative	Lazy

Behaviours from Video

Hit	Walking	Whistle	Throw	Smile
Frown	Give a toy	Share	Talking	Rub chin
Wave arms	Waiting	Stomp feet	Move head to the side	Push cart
Complete a puzzle	Ask a question	Sit in chair	Eat a chip	Hold hands

New summary labels & behaviours

Cranky	Sad	Happy	Angry	Vengeful
Caring	Helpful	Loyal	Hard-working	Smart
Stand up	High five	Cutting grass	Making lunch	Read
Write	Sing	Pick flowers	Cry	Shout

This page contains words that are either **summary labels** OR **behaviours**. Please place an “S” beside the **summary labels** and a “B” beside the **behaviours**.

Cheeky	Eat a chip	Aggressive	Making lunch	<i>Apologetic</i>
Stomp feet	Caring	Shout	Irritating	Hold hands
Sit in chair		Smile	Immature	Pick flowers
<i>Sad</i>	Inflexible	Read	Happy	Attention-seeking
Move head to the side		Unresponsive	<i>Helpful</i>	Throw
Cranky	Rub chin	Cry	Talking	Push cart

This page contains words that are either **summary labels** OR **behaviours**. Please place an "S" beside the **summary labels** and a "B" beside the **behaviours**.

<i>Sweet</i>	<i>Complete a puzzle</i>	Stand up	<i>Noisy</i>	<i>Smart</i>
Charming	Loyal	Write	Spoiled	Hit
Walking	Whistle	Obsessive	Ask a question	Frown
<i>Hard- working</i>	<i>Share</i>	<i>Non- compliant</i>	<i>Angry</i>	<i>Wave arms</i>
Give a toy	Withdrawn	High five	Cutting grass	Non- communicative
Waiting	Unimaginative	Sing	Vengeful	Lazy

Appendix D

Identifying ABCs

From the description below, pick one desirable or undesirable behaviour, and fill out the *Simple Steps* ABC Chart. Specify the antecedent event, the target behaviour, and the consequent event. List one possible function for each behaviour.

Based on the manual:

1. Approaching an intersection on the road, the traffic light turns from green to yellow. You speed up your car to make it through the light before it turns red. An oncoming vehicle tries to turn left in front of you, and you hit the vehicle.
2. Your cell phone rings and you answer, "Hello." It is your best friend calling to see how your day is going.
3. Your alarm clock starts beeping at 7 am. You wake up and turn off your alarm. You are on-time for work that morning.
4. You ask your child to pick up his toys. He starts crying. You put him in his "time-out" chair while you clean up his toys.
5. Sally asks her mom for a cookie. Sally's mom says, "No, you can't have a cookie right now because we are eating dinner in 5 minutes." Sally starts crying, and her mother says, "Fine. You can have one cookie."
6. Dad asks Johnny to turn off his video game and start his homework. Johnny throws his backpack across the room and shouts, "No!" Dad replies, "You can play 5 more minutes of your video game before you start your homework then."
7. Julie is having coffee downtown with her husband when his cell phone rings. Julie's husband is talking to his mother on his cell phone, and Julie says, "This coffee tastes really strong. I think it's giving me a headache." Her husband quickly ends his phone call with his mother and asks Julie if she would like to go home.
8. Every morning, the students who completed their math homework from the previous day get to select a board game to play. The students who did not finish their math homework must use this time to complete their questions.

Directly from manual:

9. A parent has invited a neighbour over to the house for a cup of tea and is chatting with them in the kitchen. Upon seeing the parent talking to someone else, the child begins to scream. The parent excuses themselves to pick up the child and comfort him.

10. A child is told, "Tidy up your toys," and the child begins to scream. In order to stop the child from screaming, the parent says, "It's ok. I'll do it myself."
11. At the grocery store, a child sees a box of cookies that he wants. When the parent says "No" the child the child begins to scream. Embarrassed, the parent quickly hands the child the box of cookies and the child stops screaming.
12. A child is standing in the kitchen, crying beside a cupboard. The child begins to scream. The parent removes numerous items from the cupboard and offers them to the child. The child stops crying when she receives potato chips.

From the video:

13. Adam is playing in the sandbox with his peers. He begins to put sand on the sleeve of his shirt. The teacher does not come over to see what Adam is doing, so Adam starts to throw the sand around. The teacher comes over to spend time with another child at the sandbox, so Adam leaves to find another staff member. Adam follows a new staff member over to the table, where she is about to start a puzzle with another child. Adam taps the staff member on the arm, and she looks at Adam to ask what he wants.
14. Seth and his therapist are sitting at the table. The therapist has a green card and a yellow card on the table. The therapist asks Seth to give him the green card. Seth responds by holding the therapist's hand. The therapist again asks for the green card. Seth gets out of the chair and crawls away from the table. The therapist brings Seth back to the table and asks for the green card.
15. Craig is playing with a train. When play time is over, the therapist comes over to Craig and asks him to put the train away. Craig continues to play with the train, so the therapist prompts him to stand up. Craig sits back down and continues to play with the train. The therapist then helps Craig put the train away into a bin. Craig takes the train out of the bin and continues to play with it.
16. Joel finds a therapist, takes her by the hand, and leads her into the kitchen. The therapist doesn't know what Joel wants, so he goes to another staff member and starts crying. This new staff member doesn't know what Joel wants either. Joel hides in a corner and a therapist comes over and offers Joel a snack. Joel sits at the table and eats his snack.
17. When Mike is alone in his room, he taps on a toy drum and makes a lot of noise.

Watch each video below. Pick one desirable or undesirable behaviour from each video. Fill out the *Simple Steps* ABC Chart for each video. Specify the antecedent event, the target behaviour, and the consequent event. List one possible function for each behaviour.

18. <http://youtu.be/RRAg-KKTioE>

19. <http://youtu.be/18IYBk0ITPk>

20. <http://youtu.be/U-TzIBhQjKE>

21. <http://youtu.be/eeuOp72weN0>

Answers:

1. A – light turns yellow; B – speed up; C – car accident OR

A – light turns yellow; B – come to stop; C – avoid accident

Function – avoid waiting OR avoid accident

2. A – phone ringing; B – answer phone; C – chat with friend

Function – enjoyable conversation/social attention

3. A – alarm clock sounds; B – wake up; C – on-time for work

Function – positive social attention for being on-time for work OR avoid negative social attention for being late for work

4. A – demand (pick up toys); B – crying; C – removal from situation, doesn't have to clean

Function – escape demand

5. A – denial of cookie; B – crying; C – given cookie

Function – tangible reinforcement

6. A – asked to stop what doing to do something less favourable; B – throw object; C – allowed more time to play

Function – escape/delay demand

7. A – husband talking to someone else; B – complain; C – husband provides comfort

Function – attention

8. A – homework to complete; B – complete homework; C – play game OR

A – homework to complete; B – delay completion of homework; C – finish homework, no game

Function – activity reinforcement OR delay of demand

9. A – parent talking to neighbour; B – child screams; C – parents comforts child

Function – attention

10. A – demand (tidy up); B – child screams; C – parent cleans up, not the child

Function – escape demand

11. A – denied request (cookies); B – child screams; C – child gets cookies

Function – tangible

12. A – child standing at cupboard; B – child screams; C – parent finds potato chips

Function – communication

13. A – playing in sandbox; B – sand on sleeve; C – no teacher attention OR A – no teacher attention; B – throw sand; C – teacher gives attention to another child OR A – staff member start puzzle with another child; B – tap staff on arm; C – look to child to ask what he wants

Function – attention

14. A – demand placed (give green card); B – ignore request, place hand on therapist; C – therapist repeats demand OR A – therapist repeats demand; B – child crawls away; C – child brought back to table

Function – escape

15. A – asked to put toy away; B – ignore, continue to play; C – prompt child to stand up OR A – prompt child to stand away from toy; B – sit down to play with toy; C – toy put in bin OR A – toy put in bin; B – child takes toy out to play; C – continues to play

Function – tangible/wants something, but not allowed

16. A – look for therapist; B – take therapist hand; C – therapist doesn't know what he wants OR A – therapist doesn't know what he wants; B – cries with new staff; C – staff doesn't know what's wrong OR A – staff doesn't know what he wants; B – hide in corner; C – staff offers snack OR A – staff offers snack; B – child sits at table; C – eats snack

Function – communication

17. A – child alone; B – beat drum; C – noise sounds

Function – self –stimulatory

18. A – boy eating treats; B – comment (“Mmmm...delicious); C – girl offered treat

Function – tangible

19. A – boy typing on computer; B – sighs; C – boy looks up at girl

Function – attention

20. A – boy asks for help; B – girls says no; C – boy puts box down

Function – escape

21. A – loud music playing; B – hands placed on ears; C – boy turns off music

Function – escape, communication

Identifying ABC's Answer Sheet

Antecedent	Behaviour	Consequence	Function
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			

Appendix E

Measuring Behaviour 1

From the following examples, please list which dimension of behaviour (frequency, duration, latency, or interresponse time) is being used to measure the behaviour. There is only one correct dimension per question.

1. Scott is failing in math class this semester. His teacher has started to keep a tally of every homework math sheet that Scott completes and will compare that to how many math sheets Scott does not complete before she creates a behaviour plan to help Scott with math.
2. John's parents feel that John has been disrespectful toward them lately. His parents are making note of every time John makes a rude comment to them. They will bring this list with them to their next family therapy session.
3. Ashley usually plays by herself at recess. The teacher is tracking how long Ashley remains playing with her peers over recess and will share the information with Ashley's Educational Assistant.
4. Megan's parents are concerned with her low grades. They have decided to record how long Megan spends watching TV every day before they try to reduce the amount of time she spends in front of the TV.
5. Victoria always cleans her room 24 hours after her parents ask her to, but they wish she would start to clean the very same day that they ask.
6. When the English teacher tells the students to put their books away, all of the students have their books tucked neatly in their desks within 15 seconds because they know the teacher will not let the class go for recess if there are any books left on the desks.
7. While crossing the street with her little sister, Shellee saw a car driving quickly up the road. She shouted, "Stop!" and in half a second, Shellee's sister stood frozen at the side of the road, waiting for the car to pass.
8. Walter never gets to go to the movies because the time between the end of one of his temper tantrums and the beginning of the next never lasts more than 30 minutes! When the time between Walter's temper tantrums is at least three hours long, his dad will take him to see a movie.
9. Jordan is in the middle of being potty trained. His mother would like to increase how often Jordan initiates going to the bathroom.
10. Barbara is learning how to speak. Her parents are excited because she learned 4 new words last week and 8 new words this week.
11. Grandma is disappointed because yesterday Dylan could take five steps toward her without falling, but today when she tried to show Grandpa, Dylan could only take a half step before he lost his balance.

12. Christopher's mom is keeping a record of how many times each day Christopher attempts to play with his brother.
13. On Monday, Eric's teacher saw that Eric had initiated play with his peers at recess 10 times. On Wednesday, when Eric brought his favourite book to school, the teacher counted only one time where Eric initiated play with his peers.
14. Hillary sneaks out of bed six times every night after her parents tuck her in.
15. Last semester, Krystal would only study during the 15 minute bus ride to school on the morning of the exam. This semester, Krystal spends 30 minutes studying on Monday and Wednesday night every week.
16. Currently, Mark spends three hours watching TV every day. His parents would like to find a way to reduce the amount of time Mark spends watching TV to one hour every day.
17. When asked, "What is your name?" It only takes two seconds for the child to respond, "Lisa."
18. Danielle has 50 tantrums every week, and her twin sister, Fiona, has 10 tantrums each week. Their parents think that Danielle's behaviour is worse than her sister's.
19. Danielle has tantrums that last 60 seconds each, and her twin sister, Fiona, has tantrums that last 30 minutes each. Their classroom teacher feels that Fiona's behaviour is worse than her sister's.
20. As soon as one of Danielle's tantrums ends, her next one starts after five minutes. Her twin sister, Fiona, has tantrums every 30 minutes. Their soccer coach believes that Danielle's behaviour is worse.

Answers

The first 20 questions come from the DVD and Resource Book:

1. Frequency
2. Frequency
3. Duration
4. Duration
5. Latency
6. Latency
7. Latency
8. Interresponse time
9. Frequency
10. Frequency
11. Frequency
12. Frequency
13. Frequency
14. Frequency
15. Duration
16. Duration
17. Latency
18. Frequency
19. Duration
20. Interresponse time

Appendix F

Measuring Behaviour 2

From the following descriptions, please list which dimension of behaviour (frequency, duration, latency, or interresponse time) should be used to measure the behaviour. There is only one correct dimension per question.

1. A teacher would like to increase how often a student completes his homework.
2. Parents would like to decrease how often their child talks back to them.
3. A teacher would like to increase the length of time a student spends playing with his peers.
4. Parents would like to decrease how long their child spends watching TV each day.
5. Parents would like to decrease how long they must wait for their teenager to start cleaning his room after they ask him.
6. A primary school teacher would like to ensure that her students start to tidy up their toys quickly when she indicates that it is time to clean up and move on to the next activity.
7. While out on walks, a parent would like her child to respond immediately to the command "Stop!" because the family lives next to a busy main road.
8. A parent would like to increase the amount of time between his child's temper tantrums.
9. Parents are trying to potty train their child. They would like to know how many times he can go to the bathroom independently.
10. A parent is trying to determine how many new words her baby is learning each week.
11. Excited parents want to know how many steps their child can take, who has just learned to walk.
12. A teacher would like to track how often a student initiates play with peers.
13. A parent would like to track the number of times her child initiates play with a sibling.
14. A parent would like to know exactly how many times his child gets out of bed each night after being tucked in.
15. A teacher would like to know how much a time a student spends studying for each exam.
16. The amount of time a child spends watching TV needs to be decreased.

17. A child needs to learn to respond quickly to the question, "What's your name?"
18. A teacher would like to compare the number of tantrums each student displays in class.
19. A parent would like to compare how long each of her children's tantrums last.
20. A parent would like to compare how much time passes between each of her children's tantrums.
21. A parent would like to decrease their child's tantrums. The child only has two tantrums every day, but they last for one hour each.
22. A parent would like to decrease their child's tantrums. The tantrums only last for 60 seconds, but they occur 20 times every day.

Answers

The first 20 questions come from the DVD and Resource Book:

21. Frequency
22. Frequency
23. Duration
24. Duration
25. Latency
26. Latency
27. Latency
28. Interresponse time
29. Frequency
30. Frequency
31. Frequency
32. Frequency
33. Frequency
34. Frequency
35. Duration
36. Duration
37. Latency
38. Frequency
39. Duration
40. Interresponse time
41. Duration
42. Frequency

Appendix G

August 2011
Informed Consent

Dear [Participant]:

Project Title: Effectiveness of self-instructional training in applied behaviour analysis: A pilot study

Principal Investigator (PI):
Dr. Maurice Feldman, professor
Centre for Applied Disability Studies
Brock University
(905) 688-5550 Ext. 4894; mfeldman@brocku.ca

Student Principal Investigator (SPI):
Courtney Phillips, M.A. Candidate
Centre for Applied Disability Studies
Brock University
cp10jv@brocku.ca

INVITATION

You are invited to participate in a study that involves research. The overall purpose of this study is to determine whether people can learn about applied behaviour analysis (ABA) through the use of a self-guided program. The purpose of the pilot study is to determine which questions will be used on the final version of the knowledge test and how long it will take to review the training program and complete the knowledge test.

WHAT'S INVOLVED

As a participant, you will be asked to review a self-guided online training program that introduces the principles of Applied Behaviour Analysis (ABA) – the science on which several effective therapies for autism spectrum disorder (ASD) are based. You will then be asked to fill out various tests (a combination of true/false, creating definitions, and fill-in-the-blank) to assess knowledge gained from the online training program. The duration of this pilot study will last approximately 4 weeks. Participation in the evaluation of the online program will take approximately one hour every week of your time. Because the online program is self-guided, the time spent engaging in program material is at your discretion. By participating in this study, you agree that you do not have any current knowledge of ABA and that you will not increase your knowledge of ABA by using sources other than the *Simple Steps* training package.

POTENTIAL BENEFITS AND RISKS

Possible benefits of participation include access to a self-guided training program for parents of children with an ASD. Also, you may feel good that your participation in this study may help improve the program for parents of children with an ASD. There are no known or anticipated risks associated with participation in this study.

CONFIDENTIALITY

Although your name will be associated with the raw data collected in the study, you will not be identified individually in any way in written reports of this research. Data collected during this study will be stored in a locked file cabinet in Dr. Maurice Feldman's laboratory. Data will be kept for five years, after which time all data will be shredded and disposed of. Access to this data will be restricted to Dr. Maurice Feldman (Professor), Courtney Phillips (Master's Thesis Student), and research assistants under the supervision of Dr. Feldman.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw from this study at any time and may do so without any penalty or loss of benefits to which you are entitled. The mark Courtney Phillips will receive for this project will not be affected should you choose not to take part in this study. Should you choose to withdraw at any point during the study, all existing information about you will be electronically deleted and/or shredded (if paper records exist).

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. For information on when feedback about this study will be available, please contact Dr. Maurice Feldman using the contact information provided above.

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact Courtney Phillips using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University (File #11-009). If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

CONSENT FORM

I agree to participate in this study described above. I give the researchers of this project permission to contact me in the future for another study related to this project. I have made this decision based on the information I have read in the Informed Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time without penalty.

Name: _____

Signature: _____

Date: _____

Appendix H

Participating Adult Information

Name: _____

Contact Information: Phone Number _____

Email Address _____

Mailing Address _____

Date of Birth (mm/dd/yyyy): _____

Average Annual Household Income (please circle one):

Less than \$5000	\$25000 – 29999	\$50000 – 54999	\$75000 – 79999
\$5000 – 9999	\$30000 – 34999	\$55000 – 59999	\$80000 – 84999
\$10000 – 14999	\$35000 – 39999	\$60000 – 64999	\$85000 – 89999
\$15000 – 19999	\$40000 – 44999	\$65000 – 69999	\$90000 – 94999
\$20000 – 24999	\$45000 – 49999	\$70000 – 74999	More than \$95000

Highest Diploma Obtained (please circle one):

None	Trade	University
High School	College	Graduate/Professional

Program: _____

Occupation (please describe and circle one): _____

Part-time Full-time No Occupation

Do you have any previous education in applied behaviour analysis (ABA; please circle one)?

YES NO

How would you rate your current ABA knowledge (0 = none; 3 = moderate; 6 = expert)?

0 1 2 3 4 5 6

Appendix I

Delivery of Praise

Count each instance of the following: the parent/student provides verbal praise, a smile, or displays enthusiasm to the child when a correct response is completed. The parent/student could also provide physical touch such as a tickle or high five.

Comments which count as praise could be “That was better” or “Nice.” Excited exclamations such as “Oh!” also count as praise.

Different comments will be counted separately, even if the parent/student delivers different comments after only *one* correct child response (e.g. “Good job!” AND “You know the number four!” after the child says “Four”). In the above example, you would score “2” for delivery of praise.

Repetitive comments such as “Good, good” only count as 1 instance of praise unless there’s more than 1 second between the identical utterances.

Only praise delivered at the child participant counts. Praise delivered at other children in the room does not count.

“Come on,” and “keep going” are instructions, not praise.

“Ok” is not praise unless it’s delivered enthusiastically. Usually, “Ok” usually signals that the parent/student is about to deliver another instruction, which is not an instance of praise.

Enthusiasm and inflections in the parent/student’s voice while reading a book DO NOT count as instances of praise. E.g. If a parent says, “One, two, THREE!” the “THREE!” does NOT count as verbal praise. Praise must occur after the child’s correct behaviour.

"Thank you" is verbal praise when it occurs after a correct child behaviour.

If a parent/student repeats words that the child says, repetitions that affirm a correct answer from the child count verbal praise. E.g. if the child says “Bunny,” and the parent replies "Bunny, yes" or "Bunny, ya" that is verbal praise. But if the parent only replies "Bunny," then that is not verbal praise because it could be just the parent correcting the child’s pronunciation.

Appendix J

Parenting Sense of Competence Scale
(Gibaud-Wallston & Wandersman, 1978)

Please rate the extent to which you agree or disagree with each of the following statements.

	Strongly Disagree	Somewhat Disagree	Disagree	Agree	Somewhat Agree	Strongly Agree		
	1	2	3	4	5	6		
1. The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired.			1	2	3	4	5	6
2. Even though being a parent could be rewarding, I am frustrated now while my child is at his/her present age.			1	2	3	4	5	6
3. I go to bed the same way I wake up in the morning, feeling I have not accomplished a whole lot.			1	2	3	4	5	6
4. I do not know why it is, but sometimes when I'm supposed to be in control, I feel more like the one being manipulated.			1	2	3	4	5	6
5. My mother was better prepared to be a good mother than I am.			1	2	3	4	5	6
6. I would make a fine model for a new mother to follow in order to learn what she would need to know in order to be a good parent.			1	2	3	4	5	6
7. Being a parent is manageable, and any problems are easily solved.			1	2	3	4	5	6
8. A difficult problem in being a parent is not knowing whether you're doing a good job or a bad			1	2	3	4	5	6

one.

- | | | | | | | |
|---|---|---|---|---|---|---|
| 9. Sometimes I feel like I'm not getting anything done. | 1 | 2 | 3 | 4 | 5 | 6 |
| 10. I meet my own personal expectations for expertise in caring for my child. | 1 | 2 | 3 | 4 | 5 | 6 |
| 11. If anyone can find the answer to what is troubling my child, I am the one. | 1 | 2 | 3 | 4 | 5 | 6 |
| 12. My talents and interests are in other areas, not in being a parent. | 1 | 2 | 3 | 4 | 5 | 6 |
| 13. Considering how long I've been a mother, I feel thoroughly familiar with this role. | 1 | 2 | 3 | 4 | 5 | 6 |
| 14. If being a mother of a child were only more interesting, I would be motivated to do a better job as a parent. | 1 | 2 | 3 | 4 | 5 | 6 |
| 15. I honestly believe I have all the skills necessary to be a good mother to my child. | 1 | 2 | 3 | 4 | 5 | 6 |
| 16. Being a parent makes me tense and anxious. | 1 | 2 | 3 | 4 | 5 | 6 |
| 17. Being a good mother is a reward in itself. | 1 | 2 | 3 | 4 | 5 | 6 |

Appendix K

Task-Related Mediator Self-Efficacy

Please rate the extent to which you agree or disagree with each of the following statements. You may write additional comments if you would like to provide details associated with your response.

	Strongly Disagree 1	Somewhat Disagree 2	Disagree 3	Agree 4	Somewhat Agree 5	Strongly Agree 6		
1.			1	2	3	4	5	6
	I am able to create clear and precise descriptions of my/a child's behaviour without using summary labels, such as "lazy," so that even someone who has never met my/the child could understand what his/her behaviour looks like.							

Comments:

2.			1	2	3	4	5	6
	I know why my/a child is behaving a certain way, and I can point out events that are occurring before and after my/the child's behaviour that explain his/her behaviour.							

Comments:

- | | | | | | | | |
|----|---|---|---|---|---|---|---|
| 3. | I am able to accurately measure my/a child's behaviour, selecting the most appropriate dimension of behaviour to measure and using this information to make comparisons and predictions regarding my/the child's behaviour. | 1 | 2 | 3 | 4 | 5 | 6 |
|----|---|---|---|---|---|---|---|

Comments:

- | | | | | | | | |
|----|---|---|---|---|---|---|---|
| 4. | I know how to increase new skills in my/a child, constantly use effective reinforcement, and provide prompts to help my/the child complete a new skill. | 1 | 2 | 3 | 4 | 5 | 6 |
|----|---|---|---|---|---|---|---|

Comments:

Appendix L

Child 1 Target Behaviour: Create a Webpage

Independent webpage creation can occur at any of the steps below when the child completes the step without any prompting (such as verbal or gestural) from Mom.

Task Analysis: Take a Photo & Upload to Computer

1. Strap camera around neck
2. Turn on camera
3. Select correct setting (e.g. auto, portrait, night time)
4. Turn flash on/off
5. Remove lens cap
6. Hold lens cap out of field of view
7. Focus on object
8. Take photo/press button
9. Review photo
 - a. If photo unacceptable, repeat steps 6-9
 - b. If photo acceptable, move to step 10
10. Get cord (for attachment to camera/computer; usually found in camera case)
11. Attach cord to correct port in computer
12. Attach other end of cord to correct plug in camera
13. Remove neck strap
14. Computer will register new device → select “Import photos” from Auto play menu
15. Select “Import” from new dialogue box (do not add title)
16. Turn off camera when pictures have finished importing (window will open with photos)
17. Close flash

18. Unplug cord from computer

Task Analysis: Edit Photo

1. Open Photoshop
2. Select photo to edit
 - a. Go to File → Open → Libraries → Pictures → today's date (folder) → select desired photo
3. Edit photo as desired (e.g. rotate, crop, colour)
 - a. Image → image rotation → 180°
 - b. Paint brush → select desired colour → hold and drag mouse over area to be coloured
 - c. Select square tool → highlight area for fill (hold and drag mouse) → Right click on photo in middle of box for fill → fill → colour → select colour → ok
 - d. Crop → drag arrow over area to keep
 - e. Zoom in/out
4. Save file
 - a. File → Save As → select jpg format → save → ok

Task Analysis: Upload Photo to Website/Add Webpage

1. Open internet
2. Type in website address
3. Login (username & password)
4. Select "edit webpage"
5. Go to Pages → add a page → name page

6. Drag & drop photo box → click on upload → my documents → Simple Steps → select photo
7. Edit photo in webpage → select photo → click edit → use rotate, crop, etc. → save & close

Task Analysis: Add text to webpage

1. Drag & drop textbox onto page
2. Click on text and enter information (copy from pre-written text)
3. Save work (click “publish”)
8. Close out of publish

Appendix M

Child 2 Target Behaviour: Attend to Book

Child will not

- Lay/roll on floor/Mom's lap
- Twist away from Mom
- Flop to ground
- Crawl/walk away from book/Mom
- Reject physical prompts from Mom to sit/stay/look
- Attempt to engage in play/tickles with Mom
- Laugh/make noises unrelated to commenting on the book
- Grab book/turn pages of book when Mom says, "No/Stop!"

Child will

- Sit/stand beside Mom/book
- Accept verbal/physical prompts to remain in area
- Look at book/Mom
- Remain quiet unless making comments related to book
- Turn pages of book when asked, when page is finished

Appendix N

Child 3 Target Behaviour 1: Tie Shoes

Independent shoe tying can occur at any step below when the child completes the step without any prompts (such as physical, gestural, verbal, or modelling) from Mom **or** the use of a book as guide.

Task Analysis 1: Ties Shoes A

1. Hold laces up/grab laces
2. Cross laces
3. Wrap one lace underneath the other
4. Pull the lace through the hole, tightening/making a knot
5. Make one loop/ “bunny ear”
6. Make a second loop/ “bunny ear”
7. Cross the loops/ “ears” (leaving a hole)
8. Pull one loop/ “ear” through the hole
9. Pull on loops/ “ears” to tighten/knot laces

Task Analysis 2: Tie Shoes B

1. Hold laces up/grab laces
2. Cross laces
3. Wrap one lace underneath the other
4. Pull lace through the hole, tightening/making a knot
5. Make one loop
6. Wrap remaining lace around the loop, creating a hole
7. Push lace through the hole making a second loop
8. Pull on loops to tighten/make a knot

Appendix O

Child 4 Target Behaviour: Physical Activity

Independent completion of physical activity is occurring when the child is asked to do something related to physical exercise such as completing an obstacle course or walking backwards, and she engages in the activity without prompts from her student (such as physical or gestural).

Verbal prompts DO NOT count as prompts. The child can be independently engaging in a physical activity with verbal prompts.

The child might be asked to do any number of activities such as jump or grip onto the rope.

If the child refuses to engage in or complete the activity, this is not independent completion of the physical activity. If the child is incapable of engaging in or completing the activity, this is not independent completion of the physical activity.

The physical activity must take the correct form to be considered independent. For example, the child must walk backwards. Walking backwards is one consecutive left/right or vice versa alternation of the feet across the ground. If the child independently side-steps after being asked to walk backwards, this is NOT an independent completion of that activity.

Free time or waiting for a new instruction is not physical activity.

Record the independent completion of a physical activity in the interval it starts in. For example, if the child is independently crawling through a tunnel, and this behaviour spans across three 10-second intervals, only count this behaviour in the first 10-second interval.

Each component of the obstacle course is a separate physical activity. The obstacle course does not count as one activity.

Appendix P

Child 5 Target Behaviour: Physical Activity

Independent completion of physical activity is occurring when the child is asked to do something related to physical exercise such as bending at the waist or balancing on uneven surfaces, and he engages in the activity without prompts from his student (such as physical or gestural).

Verbal prompts DO NOT count as prompts. The child can be independently engaging in a physical activity with verbal prompts.

The child might be asked to do any number of activities such as lift a heavy ball above his head or pass a ball back and forth with a partner.

If the child refuses to engage in or complete the activity, this is not independent completion of the physical activity. If the child is incapable of engaging in or completing the activity, this is not independent completion of the physical activity.

The physical activity must take the correct form to be considered independent. For example, the child must bend at the waist. If the child independently bends his knees to bend over after being asked to bend at the waist, this is NOT an independent completion of that activity.

Free time or waiting for a new instruction is not physical activity.

When the instruction is, "Do this," it is ok for a model prompt to be given. The correct imitation of this behaviour will count as correct.

Appendix Q

Child 6 Target Behaviour: Physical Activity

Independent completion of physical activity is occurring when the child is asked to do something related to physical exercise such as completing an obstacle course or lifting weighted balls, and he engages in the activity without prompts from his student (such as physical or gestural).

Verbal prompts DO NOT count as prompts. The child can be independently engaging in a physical activity with verbal prompts.

The child might be asked to do any number of activities such as move on a scooter or pass a ball back and forth with a partner.

If the child refuses to engage in or complete the activity, this is not independent completion of the physical activity. If the child is incapable of engaging in or completing the activity, this is not independent completion of the physical activity.

The physical activity must take the correct form to be considered independent. For example, the child must lie on his stomach and pass a ball back and forth. If the child independently throws the ball on his side after being lie on his stomach, this is NOT an independent completion of that activity.

Free time or waiting for a new instruction is not physical activity. Swinging on the ropes is free time unless an instruction to “swing” is given.

“Come with me” or completing a visual schedule are not physical activities.

Social skills, such as saying sorry to a peer, are not physical activities.

When the instruction is, “Do this,” it is ok for a model prompt to be given. The correct imitation of this behaviour will count as correct.

Appendix R

Child 7 Target Behaviour: Following Directions

Independent following directions is occurring when the child is asked to do something related to physical exercise such as completing routine with 10 jumping jacks and 10 one-footed jumps on a trampoline, and he engages in the activity without prompts from his student (such as physical or gestural).

Verbal prompts DO NOT count as prompts. The child can be independently engaging in a physical activity with verbal prompts.

The child might be asked to do any number of activities such walk along a balance beam or walk backwards. Each behaviour (one jumping jack, or one balance beam) counts. If the child is asked to do 10 jumps, they have the opportunity to do this correctly 10 times. This is NOT one trial.

If the child refuses to engage in or complete the activity, this is not independent completion of the physical activity. If the child is incapable of engaging in or completing the activity, this is not independent completion of the physical activity.

Any physical activity that occurs while the student is delivering his instructions DOES NOT count as following directions.

Physical activity that occurs while the child is delivering instructions counts.

The physical activity must take the correct form to be considered independent. For example, the child must do a star jump. To be considered correct, the child must jump off the trampoline with his arms in a “V” and his legs in an upside down “V.” If the child independently jumps off of the trampoline with his knees bent after being asked to do a star jump, this is NOT an independent completion of that activity.

Free time or waiting for a new instruction is not physical activity.

When the instruction is, “Do this,” it is ok for a model prompt to be given. The correct imitation of this behaviour will count as correct.

It is important to listen to the student giving instructions to determine if the child is correctly following those directions or not. For example, if the child is asked to walk three times around the balance beams, but the child walks around four times, the first three times are correct (if the child doesn't fall off), but the fourth lap around is incorrect.

Appendix S

Child 8 Target Behaviour: Following Directions

Independent following directions is occurring when the child is asked to do something related to physical exercise such as completing routine with 10 jumping jacks and 10 one-footed jumps on a trampoline, and he engages in the activity without prompts from his student (such as physical or gestural).

Verbal prompts DO NOT count as prompts. The child can be independently engaging in a physical activity with verbal prompts.

The child might be asked to do any number of activities such walk along a balance beam or walk backwards. Each behaviour (one jumping jack, or one balance beam) counts. If the child is asked to do 10 jumps, they have the opportunity to do this correctly 10 times. This is NOT one trial.

If the child refuses to engage in or complete the activity, this is not independent completion of the physical activity. If the child is incapable of engaging in or completing the activity, this is not independent completion of the physical activity.

Any physical activity that occurs while the student is delivering his instructions DOES NOT count as following directions.

The physical activity must take the correct form to be considered independent. For example, the must walk along a balance beam. To be considered correct, the child must walk the entire length of the beam without falling off or being prompted. If the child independently takes three steps on the balance beam and falls of, this is NOT an independent completion of that activity. If the child starts over and walks the entire length of the balance beam independently, this counts as correct.

Free time or waiting for a new instruction is not physical activity.

When the instruction is, “Do this,” it is ok for a model prompt to be given. The correct imitation of this behaviour will count as correct.

It is important to listen to the student giving instructions to determine if the child is correctly following those directions or not. For example, if the child is asked to jump 10 times on the trampoline, the first 10 times are correct, but all subsequent jumps are incorrect.

Record the independent following direction of a physical activity in the interval it starts in. For example, if the child is independently walking across a balance beam, and this behaviour spans across three 10-second intervals, only count this behaviour in the first 10-second interval.

Appendix T

Consumer Satisfaction

1. Did you enjoy reviewing the materials for *Simple Steps* Section “X”?
(Please circle one)

1	2	3	4	5
Not At All Enjoyable	Not Very Enjoyable	Neutral (Neither enjoyable nor not enjoyable)	Somewhat Enjoyable	Very Enjoyable

2. Did you find the materials for *Simple Steps* Section “X” helpful?
(Please circle one)

1	2	3	4	5
Not At All Helpful	Not Very Helpful	Neutral (Neither helpful nor unhelpful)	Somewhat Helpful	Very Helpful

3. Please share any comments regarding things that you **liked** about *Simple Steps* [Section]:

4. Please share any comments regarding things that you **did not** like about *Simple Steps* [Section]:

Appendix U

CENTRE FOR APPLIED DISABILITY STUDIES

OATH OF CONFIDENTIALITY

Effectiveness of self-instructional parent-training on the behaviour of children with ASD: A pilot study

I, _____ do swear/affirm that I will not disclose or give to any person, other than the Principal Student Investigator, Ms. Courtney Phillips, and her supervisor, Prof. Maurice Feldman, any information or documentation pertaining to participants in this study, unless required to do so by law.

Signature: _____

Date: _____

Signature of Witness: _____

Date: _____

Appendix V

February 2012

Informed Consent

Dear [Parent]:

Project Title: Effectiveness of self-instructional parent training in applied behaviour analysis

Principal Investigator (PI):
Dr. Maurice Feldman, professor
Centre for Applied Disability Studies
Brock University
(905) 688-5550 Ext. 4894; mfeldman@brocku.ca

Student Principal Investigator (SPI):
Courtney Phillips, M.A. Candidate
Centre for Applied Disability Studies
Brock University
cp10jv@brocku.ca

INVITATION

You are invited to participate in a study that involves research. The purpose of this study is to determine whether parents can learn about and implement principles of applied behaviour analysis (ABA) through the use of a self-guided program.

WHAT'S INVOLVED

As a participant, you will be asked to review a self-guided training program that introduces the principles of Applied Behaviour Analysis (ABA) – the science on which several effective therapies for autism spectrum disorder (ASD) are based. You will then be asked to fill out various tests (a combination of true/false, creating definitions, and fill-in-the-blank) to assess knowledge gained from the training program. You will also be asked to be observed and videotaped while teaching your child a new skill to determine whether the principles explained in the program can be easily implemented by parents to teach their children with ASD. Your individual results will be available upon your completion of this study. This will include videotaping you and your child interacting for approximately 20 minutes each week. By participating in this study, you give permission for your child to receive ABA intervention (as implemented by yourself) and for your child to be videotaped. The duration of this study will last approximately 12 weeks plus a 3-month follow-up. Participation in the evaluation of the parent training program will take approximately one and a half hours every week of your time. Because the program is self-guided, the time spent engaging in program material is at your discretion.

Participation in this study requires that you and/or your child are not receiving behavioural services and that you are able to read at approximately a Grade 10 level (the average level of written material). Before you begin reviewing the materials, you will be asked if you and/or any of your children are accessing behavioural services. You will also be asked to read a paragraph aloud to the investigator to confirm that you can read the manual. A minimum of 80% of the words in the paragraph must be read correctly to continue participation in this study. By participating in this study, you agree that you do not have any current knowledge of ABA and

that you will not increase your knowledge of ABA by using sources other than the *Simple Steps* training package.

Summary of Participation	
Task	How Often?
Reading level	Once (before training)
Demographics questionnaire	Once (at beginning of study)
Self-efficacy measures	Twice (once at beginning of study and once at end)
Knowledge tests	Weekly (minimum 10 weeks plus once in follow-up)
Videotaped observations	Weekly (minimum 10 weeks plus once in follow-up)
Consumer Satisfaction Ratings	Four times (at the end of each training section)
Self-directed learning	At least once weekly (minimum 8 weeks)

POTENTIAL BENEFITS AND RISKS

Because your knowledge and skills will be tested on a weekly basis, but you will not receive feedback on your scores until the completion of your participation in this study, you may feel worried that you not understand the material and/or are not teaching your child correctly. You will be given feedback on your performance after your completion of this study. Possible benefits of participation include access to a self-guided training program for parents of children with ASD. Skills and knowledge to help improve the quality of life of for you and your child may be gained. Feelings of self-efficacy as a parent may be increased. Also, you may feel good that your participation in this study may help improve this program for other parents of children with ASD. There are no other known or anticipated risks associated with participation in this study.

CONFIDENTIALITY

Although your name will be associated with the raw data collected in the study, you will not be identified individually in any way in written reports of this research. Data collected during this study will be stored in a locked file cabinet in Dr. Maurice Feldman's laboratory. Data will be kept for five years, after which time all data will be shredded and disposed of. Access to this data will be restricted to Dr. Maurice Feldman (Professor), Courtney Phillips (Master's Thesis Student), and research assistants under the supervision of Dr. Feldman.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw yourself and/or your child from this study at any time and may do so without any penalty or loss of benefits to which you are entitled. If you withdraw, you may keep any learning materials that have been delivered to you, but further materials will not be provided. Should you choose to withdraw at

any point during the study, all existing information about you will be electronically deleted and/or shredded (if paper records exist).

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. At no time would your name ever be divulged. For information on when feedback about this study will be available, please contact Dr. Maurice Feldman using the contact information provided above.

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact Courtney Phillips using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University [File # 11-081]. If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

CONSENT FORM

I agree to participate in this study described above. I give the researchers of this project permission to contact me in the future for another study related to this project. I have made this decision based on the information I have read in the Informed Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time without penalty.

Name: _____

Signature: _____

Date: _____

Appendix W

June 2012

Informed Consent

Dear Student:

Project Title: Effectiveness of self-instructional parent training in applied behaviour analysis

Principal Investigator (PI):
Dr. Maurice Feldman, professor
Centre for Applied Disability Studies
Brock University
(905) 688-5550 Ext. 4894; mfeldman@brocku.ca

Student Principal Investigator (SPI):
Courtney Phillips, M.A. Candidate
Centre for Applied Disability Studies
Brock University
cp10jv@brocku.ca

INVITATION

You are invited to participate in a study that involves research. The purpose of this study is to determine whether individuals can learn about and implement principles of applied behaviour analysis (ABA) through the use of a self-guided program.

WHAT'S INVOLVED

As a participant, you will be asked to review a self-guided training program that introduces the principles of Applied Behaviour Analysis (ABA) – the science on which several effective therapies for autism spectrum disorder (ASD) are based. You will then be asked to fill out various tests (a combination of true/false, creating definitions, and fill-in-the-blank) to assess knowledge gained from the training program. You will also be asked to be observed and videotaped while teaching a child with ASD a new skill to determine whether the principles explained in the program can be easily implemented by individuals to teach children with ASD. The child's parents will give prior consent for the child's involvement in the study. Your individual results will be available upon your completion of this study. This will include videotaping you and a child with ASD interacting for approximately 20 minutes each week. By participating in this study, you give permission to be videotaped. The duration of this study will last approximately 2 weeks. Participation in the evaluation of the training program will take approximately one hour every day of your time. Because the program is self-guided, the time spent engaging in program material is at your discretion.

Participation in this study requires that you are not receiving training in ABA and that you are able to read at approximately a Grade 10 level (the average level of written material). You will also be asked to read a paragraph aloud to the investigator to confirm that you can read the manual. A minimum of 80% of the words in the paragraph must be read correctly to continue participation in this study. By participating in this study, you agree that you do not have any current knowledge of ABA and that you will not increase your knowledge of ABA by using sources other than the *Simple Steps* training package.

Summary of Participation	
Task	How Often?
Reading level	Once (before training)
Demographics questionnaire	Once (at beginning of study)
Self-efficacy measures	Twice (once at beginning of study and once at end)
Knowledge tests	10 (Daily Mon-Fri for 2 weeks)
Videotaped observations	10 (Daily Mon-Fri for 2 weeks)
Consumer Satisfaction Ratings	Four times (at the end of each training section)
Self-directed learning	At least once daily for 2 weeks

POTENTIAL BENEFITS AND RISKS

Because your knowledge and skills will be tested on a daily basis, but you will not receive feedback on your scores until the completion of your participation in this study, you may feel worried that you do not understand the material and/or are not teaching the child correctly. You will be given feedback on your performance after your completion of this study. Possible benefits of participation include access to a self-guided training program to teach children with ASD. Skills and knowledge to help you support the child may be gained. Feelings of self-efficacy as someone who works with children with ASD may be increased. Also, you may feel good that your participation in this study may help improve this program for parents of and other workers with children with ASD. There are no other known or anticipated risks associated with participation in this study.

CONFIDENTIALITY

Although your name will be associated with the raw data collected in the study, you will not be identified individually in any way in written reports of this research. Data collected during this study will be stored in a locked file cabinet in Dr. Maurice Feldman's laboratory. Data will be kept for five years, after which time all data will be shredded and disposed of. Access to this data will be restricted to Dr. Maurice Feldman (Professor), Courtney Phillips (Master's Thesis Student), and research assistants under the supervision of Dr. Feldman.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw yourself from this study at any time and may do so without any penalty or loss of benefits to which you are entitled. Withdrawing from this study will not influence your independent study grade. If you withdraw, you may keep any learning materials that have been delivered to you, but further materials will not be provided. Should you choose to withdraw at any point during the study, all existing information about you will be electronically deleted and/or shredded (if paper records exist).

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. At no time would your name ever be divulged. For information on when feedback about this study will be available, please contact Dr. Maurice Feldman using the contact information provided above.

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact Courtney Phillips using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University [File # 11-081]. If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

CONSENT FORM

I agree to participate in this study described above. I give the researchers of this project permission to contact me in the future for another study related to this project. I have made this decision based on the information I have read in the Informed Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time without penalty.

Name: _____

Signature: _____

Date: _____

Appendix X

August 2012

Informed Consent

Dear Parent:

Project Title: Effectiveness of self-instructional training in applied behaviour analysis

Principal Investigator (PI):
Dr. Maurice Feldman, professor
Centre for Applied Disability Studies
Brock University
(905) 688-5550 Ext. 4894; mfeldman@brocku.ca

Student Principal Investigator (SPI):
Courtney Phillips, M.A. Candidate
Centre for Applied Disability Studies
Brock University
cp10jv@brocku.ca

INVITATION

Your child is invited to participate in a study that involves research. The purpose of this study is to determine whether individuals can learn about and implement principles of applied behaviour analysis (ABA) through the use of a self-guided program.

WHAT'S INVOLVED

As a participant, your child will be taught a new skill by a Brock student volunteer. This volunteer will be asked to review a self-guided training program that introduces the principles of Applied Behaviour Analysis (ABA) – the science on which several effective therapies for autism spectrum disorder (ASD) are based. The volunteer will then be asked to fill out various tests (a combination of true/false, creating definitions, and fill-in-the-blank) to assess knowledge gained from the training program. Your child and the volunteer will be observed and videotaped while the volunteer teaches your child a new skill to determine whether the principles explained in the program can be easily implemented by individuals to teach children with ASD. This will include videotaping your child interacting with the volunteer for approximately 20 minutes every day. Your child's results will be available upon your completion of this study. By consenting for your child to participate in this study, you give permission for your child to receive ABA intervention (as implemented by the volunteer) and for your child to be videotaped. The duration of this study will last approximately 2 weeks. Participation in this study will take approximately 20 minutes of your child's time every day.

Participation in this study requires that you and/or your child are not receiving behavioural services. You will be asked if you and/or any of your children are accessing behavioural services.

POTENTIAL BENEFITS AND RISKS

Possible benefits of participation include access for your child to an ABA intervention that may improve your child's skills or knowledge. Also, you and your child may feel good that your

child's participation in this study may help improve this program for other parents and individuals who work with children with ASD. There are no other known or anticipated risks associated with participation in this study.

CONFIDENTIALITY

Although your child's name will be associated with the raw data collected in the study, your child will not be identified individually in any way in written reports of this research. Data collected during this study will be stored in a locked file cabinet in Dr. Maurice Feldman's laboratory. Data will be kept for five years, after which time all data will be shredded and disposed of. Access to this data will be restricted to Dr. Maurice Feldman (Professor), Courtney Phillips (Master's Thesis Student), and research assistants under the supervision of Dr. Feldman.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw your child from this study at any time and may do so without any penalty or loss of benefits to which you are entitled. If you withdraw, your child's participation in the ASD Summer Movement Camp will not be affected. Should you choose to withdraw your child at any point during the study, all existing information about your child will be electronically deleted and/or shredded (if paper records exist).

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. At no time would your name ever be divulged. For information on when feedback about this study will be available, please contact Dr. Maurice Feldman using the contact information provided above.

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact Courtney Phillips using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University [File # 11-081]. If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

CONSENT FORM

I agree for my child to participate in this study described above. I give the researchers of this project permission to contact me in the future for another study related to this project. I have made this decision based on the information I have read in the Informed Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that

I may ask questions in the future. I understand that I may withdraw this consent at any time without penalty.

Name: _____

Signature: _____

Date: _____

Appendix Y

Child Information

Name: _____

Date of Birth (mm/dd/yyyy): _____

Number of Siblings: _____ Ages of Siblings: _____

Diagnosis (please circle): Autistic Disorder PDD-NOS Asperger Syndrome

When was your child diagnosed: _____

Other medical conditions (please describe; e.g., seizures, allergies): _____

Education (please circle): Daycare

Elementary School (please provide grade level) _____

Special Education Services (please describe):

Describe classroom (e.g. segregated, 1:1 EA): _____

Are you and/or your child accessing **behavioural** interventions and services (please circle one):
 YES NO

If yes, please describe the interventions/services and number hours accessed per week:

Please list other interventions and services that you and/or your child are receiving (e.g., speech-language, sensory integration, social skills training, special diets, mega-vitamins):

Appendix Z

Time spent reviewing *Simple Steps*

3.3 Mentalism Explained

	Date	Number of Times	Length of Time
DVD			
Manual			

4.0 Understanding Behaviour

	Date	Number of Times	Length of Time
DVD			
Manual			

5.0 Measuring Behaviour

	Date	Number of Times	Length of Time
DVD			
Manual			

6.0 Increasing Behaviour and Teaching New Skills

	Date	Number of Times	Length of Time
DVD			
Manual			