Effects of Early Intervention on ABLA-R Scores in Children with Autism Spectrum Disorder

by

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Abstract

The Assessment of Basic Learning Abilities, revised (ABLA-R; Kerr et al., 1977) tests fundamental visual and audio/visual discrimination skills. There is little research on the progression of children with Autism Spectrum Disorder (ASD) through the ABLA-R levels, and even less data on the effects of Early Intensive Behavioural Intervention (EIBI) on ABLA-R progress. The present study compares groups of children with ASD, aged 2-5 years, to examine the effects of EIBI and age on ABLA-R outcomes. I evaluated retrospective ABLA-R scores at two time points in children who participated in two different EIBI programs offered by St.Amant. There was no significant difference in pre- or post-intervention scores between groups. A separate analysis of age progression through the ABLA-R showed no statistically significant difference between ages. Results of this study demonstrate that more intensive interventions do not necessarily lead to better ABLA-R scores, a finding that carries clinical significance.

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For Stella and Hannah, who made me realize I can do anything.

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Introduction

Discrimination skills, or the ability to identify differences among stimuli, is an area of development in which children with Autism Spectrum Disorder (ASD) are often impaired (Kerr, 1977). To develop appropriate stimuli and instructional methods for teaching children with impaired discrimination skills, Kerr and Myerson created The Assessment of Basic Learning Abilities (ABLA; Kerr et al., 1977). The test measures six levels of discrimination, including visual and auditory discrimination, imitation, and matching to sample. The revised version of the test, the ABLA-R (DeWiele, 2011) retains its relevance today because it is an effective and well-studied measure of these essential discrimination skills and their application to the real world (Verbeke et al., 2007; Martin et al., 2008).

An element of the ABLA-R that remains relatively unexplored is the effect of Early Intensive Behavioural Interventions (EIBI) on ABLA-R scores in children with ASD. The purpose of this study was to fill this gap in the literature by comparing how children who participated in one of two EIBIs with different intensities, durations, and curricula scored on the ABLA-R. Additionally, we compared ABLA-R scores from children in different age categories who participated in the same EIBI. The latter comparison adds to the literature on the trajectory of children with ASD through the ABLA-R levels.

We collected data for this study from St.Amant, a not-for-profit organization in Winnipeg, Manitoba that offered two EIBI programs: the Pre-Kindergarten Program (PKP) and the Early Learning Program (ELP).

Literature Review

Assessment of Basic Learning Abilities-Revised (ABLA-R)

Kerr, Myerson and Flora created the Assessment Basic Learning Abilities (ABLA) in 1977. It was initially called the AVC (Audio-Visual Combined) Scale. It was designed to fill the need of a behavioural assessment that allowed teachers to accurately predict the best kinds of stimuli and instruction to use to teach children whose discriminative skills were impaired. The ABLA evaluates the skills that are necessary as precursors to essential learning in academic, self-care, social and vocational behaviours (Kerr, 1977). The test consists of six levels or tasks that require only nonverbal motor responses (sample data sheets can be found in Appendix A). The only materials used in ABLA testing are a yellow can, a red box with black stripes, a piece of foam and a yellow cylinder. Testers assess in a discrete-trial format, meaning that the tester presents stimuli for each trial, the student responds, and the tester delivers consequences according to the student's response. Correct independent responses are praised and reinforced with an edible treat. If the child responds incorrectly, the tester implements an error correction procedure. In this error correction procedure, the tester tells the child they are incorrect and guides them to choose the correct answer.

The student passes a level if he or she scores eight consecutive correct responses, and fails a level if he or she makes a total of eight errors in the level. Before the tester begins a particular level, they provide a demonstration, followed by a guided trial and an opportunity for an independent response. The overall test result is the highest level passed.

The levels of the original ABLA form a hierarchy of difficulty: Level 2 is more difficult than Level 1, Level 3 is more difficult than Level 2, and so on. The discriminations required by each level are as follows (Kerr, 1977):

1) Imitation. Many basic learning tasks assume that a child can correctly imitate what a teacher has demonstrated. In the imitation task, the teacher gives the child a piece of foam and asks the child to imitate them by placing the foam into a container.

2) Position Discrimination. Much early knowledge and learning requires that a child can correctly respond to the location of an object that remains relatively fixed. For example, a child learns that their bed is theirs based on its location in their home. When a child begins in the same place and moves in an appropriate direction, this child can be said to be making a position response. In the ABLA Level 2, the teacher presents the child with a yellow can and a red box that do not change places. The teacher evaluates the child on whether or not they can consistently place a piece of foam into the container on the left.

3) Visual Discrimination. In this set of tasks, a child must be able to demonstrate that an object has become a discriminative stimulus when they identify the stimuli even as it moves around in relation to other stimuli. In daily life, a child can visually discriminate their mother, as they consistently recognise and approach her, even as she moves around other people. In the ABLA Level 3, the teacher presents the child with a yellow can and a red box in randomly alternating left or right placements. The teacher evaluates the child on whether or not they can consistently place a piece of foam into the can.

4) Match-to-Sample. These tasks require visually matching or sorting objects according to a sample that has been given. In this level of testing, a child is presented with a yellow can and a red box in randomly alternating left or right placements. The student is evaluated on whether or not they can consistently place a small yellow cylinder into the can and a small red cube into the box.

5) Auditory Discrimination. Children must daily respond to words and requests spoken by adults and peers. This ability is tested in level 5 when the yellow can and red box are presented in fixed positions, and the teacher asks the child to place a piece of foam in the correct container when the teacher randomly says, "red box" or "yellow can." This task does not require visual discrimination as long as the two containers presented as options remain in the same position.

6) Auditory-Visual Combined Discrimination (AVC). In this set of tasks, a child must use their visual and auditory discrimination skills simultaneously. Level 6 consists of the presentation of the yellow can and red box in randomly alternating positions. The tester evaluates the student on whether or not they can correctly place the piece of foam into the correct receptacle when the teacher says, "red box" or "yellow can." (Kerr 1977)

In the revised version of the ABLA, all the levels are identical except for level 5, which was found to be too similar in difficulty to level 6. Ninety-Six percent of people who passed level 5 in the original ABLA also passed level 6 (Martin & Yu, 2000). The auditory discrimination task has thus been replaced by a visual non-identity matching task (Sakko et al., 2004). This task requires matching items that belong together, but are different in physical appearance (such as a knife and fork). Level 5 ABLA-R testing requires a child to place the silver word "box" into a red box, and the purple word "can" into a yellow can. Positions of the containers and stimuli are randomly alternated throughout the level (Boris, 2013).

Predictive Validity of the ABLA-R

The level of the ABLA-R that a child passes has implications for their classroom success. Martin et al. (2008) conducted a review of the literature on the predictive validity of the ABLA-R across several different domains. Seven studies evaluated how the ABLA predicted

performance on imitative and two-choice tasks (Tharinger et al.,1977; Wacker, Kerr, & Carroll 1983; Wacker, Steil, Greenebaum, 1983; Stubbings & Martin, 1995; Stubbings & Martin, 1998; Condillac, 2002; and Thorsteinsson et al., 2007). These studies had two predictions: a) participants at a particular ABLA level would pass all criterion tasks at their own and lower levels and b) participants at a specific ABLA level would fail all criterion tasks above that level. Across the studies assessed, the ABLA was able to predict with 89% accuracy learning performance on imitative and two-choice tasks.

The ABLA-R also predicts performance on three- and four-choice tasks. Martin et al. (2008) reviewed two such studies. First, Doan et al. (2007) demonstrated that the ABLA level predicted the success of three-choice tasks in 71% of participants. Wacker and Kerr (1983) were able to predict with 100% accuracy success on four-choice tasks based on ABLA levels. The ABLA has also been shown to predict compliance based on highest level completed (LaForce & Feldman, 2000; Hiebert et al., 2007), as well as object name recognition (Verbeke et al. 2007).

In a more recent study, Roy-Wsiaki (2016) mapped the ABLA-R onto a more comprehensive measure of learning ability, the ABLLS-R. The Assessment of Basic Learning and Language Abilities (ABLLS-R, Partington, 2006) measures Basic Learner Skills Assessment, Academic Skills Assessment, Self-Help Skills Assessment, and Motor Skills Assessment in a total of 544 training tasks and is a guide for curriculum planning, as well as a skill tracking system. Roy-Wsiaki found that 99 out of 267 categorizable (277 tasks were deemed non-categorizable) ABLLS-R tasks could be identified as fitting into a particular ABLA-R level based on the construction and demands of the task (e.g., Does the ABLLS-R task involve responding to objects that change places and are there any verbal cues that need to be understood? If the answer is “Yes,” the task is classified as Level 3 according to the ABLA-R.).

Roy- Wsiaki's 2016 finding provides evidence that clinicians can use the ABLA-R as a valid measure of learning abilities. Finally, Roy-Wsiaki found that children had much higher rates of acquisition for new training tasks that were matched in difficulty with their ABLA-R level. They also had significantly lower rates of acquisition for tasks that were not matched in difficulty with their ABLA-R levels, meaning that the ABLA-R can be a useful tool for predicting success in environments where these basic skills are presented daily with the purpose of encouraging learning, such as kindergarten.

Change in ABLA Scores

Typically developing children have the skills to pass all of the ABLA levels between 2-3 years of age. Visual match-to-sample skills (Level 4) typically emerge at 17-18 months, while AVC skills (Level 6) appear at 27 months. It appears that auditory discrimination will emerge sometime within the second year of life, but is correlated with factors other than age. (Casey & Kerr, 1977)

A relevant finding from Casey and Kerr (1977) was that the passing of ABLA levels was correlated with a mean length utterance of 2.3 and a vocabulary of 75 unique words in a 30-minute sample. Casey and Kerr concluded that the presence of skills necessary to pass AVC tasks was highly correlated with the language explosion in children that typically occurs between 2-3 years old in neurotypical children. Similarly, Kerr and Myerson (1977) noted that ABLA tasks are usually mastered when a child is between 2-3. This is when a child is in Jean Piaget's "preoperational" sub-period of development. In this phase of development, symbolic thought begins to develop at a rapid pace, and, along with it, verbal behaviour (Heatherington & Parke, 1975).

Casey and Kerr (1977) also found that children with Intellectual Disabilities (ID) progressed through the levels of the ABLA in the same pass/fail pattern as children without ID, although the timelines were quite different. They found that no one classified at the time with a profound disability (IQ < 25) passed all 6 ABLA levels. Those with mild ID (IQ 55-70) passed all levels by 11 years of age, and those with a moderate ID (IQ 40-55) passed all levels by 15 years of age. Many with a severe ID (IQ 25-40) did not pass all levels by the age of 18 (Vause et al. 2007). To date, there is minimal published data on the progression of children with ASD throughout the levels of the ABLA-R. Research exploring the trajectory of children with ASD through the ABLA-R points towards a similar progression through the levels as neurotypical children (Ward & Yu, 2000, Roy-Wsiaki, 2016).

Since both expressive and receptive language are often the focus of EIBI programs, we can infer that as these skills increase, we should see advances through the ABLA-R levels. Meyerson (1977) also demonstrated that in children with ID, 100-900 training trials were necessary with a child before they were able to pass a higher level. Although EIBI programs would use different exemplars, similar tasks might also be a part of programming, meaning that an EIBI program targeting the skills required for each ABLA-R level would adequately prepare a child with ASD to pass their testing and move onto the next level. To date, however, there is no research available about the effects of EIBI on ABLA-R scores in children with autism.

Autism Spectrum Disorder

Autism Spectrum Disorder (ASD), is a neurodevelopmental disability (American Psychiatric Association, 2013) affecting approximately one in fifty-nine children up to age eight in the United States (Baio et al., 2014). The most recent version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V, 2013) amalgamated several pervasive developmental

disabilities including autistic disorder, Asperger disorder, childhood disintegrative disorder, and pervasive developmental disorder not otherwise specified under the category of Autism Spectrum Disorder. For a diagnosis, three social communication deficiencies must be identified (social-emotional reciprocity, nonverbal communication, and social relationships), as well as 2 out of 4 repetitive behaviours or interests (repetitive behaviour, routines and rituals, restricted interests, and sensory behaviours; Taheri & Perry, 2012). Individuals affected by ASD vary widely regarding severity, the age of onset, levels of functioning, and social behaviours and functioning (Rutter, 2000).

Autism occurs in all racial, socioeconomic, and ethnic groups, and affects nearly four times as many males as females (Baio et al., 2014). Several studies have identified that the prevalence of ASD is increasing across Canada (Lazoff et al., 2010, Fombonne et al., 2006, Ouellette-Kuntz et al., 2014). Schieve at al. (2012) proposed that these increases may be due to several factors. These include a) internal measurement effects, or, changes in how prevalence is measured, b) population identification effects, or, variations in factors such as awareness, diagnostic criteria, and resource availability, and finally, c) variations in genetic susceptibility and exposure to non-genetic risk factors.

ASD is an all-encompassing disorder affecting many aspects of an individual's life. It is common for children with ASD to develop socially unacceptable, maladaptive, behaviours that go beyond the scope of their diagnosis and limit their amount of positive social interactions (Hall & Graff, 2012). Adults with ASD are more likely to experience depression, anxiety, ADHD and have less meaningful social relationships (Wallace, 2016). Parents raising children with ASD are also more likely to suffer more significant stress through their childrearing years (Hall & Graff, 2012).

Early Intensive Behavior Interventions (EIBI)

One of the most recommended ASD interventions worldwide is EIBI (Mottron, 2017). Although there is much new research advocating for the use of more "naturalistic" behavioral interventions such as NDBIs (Naturalistic Developmental Behavioural Interventions; Kasari, 2015; Oono et al., 2013) or the Denver Model (Dawson et al., 2010) EIBI remains widely viewed as having satisfactory principles, targets and efficacy measures (Howlin, 2009).

Ole Lovaas developed EIBI at the University of California, Los Angeles (UCLA) in the 1970's. In its original format, the "UCLA model" consisted of 2-3 years of intensive one-to-one treatment for 40 hours a week. Both parents and therapists participated in the intervention for children with ASD 3-5 years old. Lovaas' treatment was rooted in operant conditioning, using reinforcement to teach behaviours. Discrete trial teaching (DTT), was the primary method of teaching. In DTT, a teacher working one-on-one with a child gives an instruction, waits for the child to respond, and then gives an immediate consequence for the behaviour (Fazzio & Martin, 2011).

For each child in the original study (Lovass, 1987), researchers targeted various behavioural deficiencies and created individualised programming to accelerate development of selected behaviours. Year One of the treatment program focused on reducing negative behaviours, such as self-stimulation and aggressive behaviours, as well as building the foundations for teaching more complicated skills. The latter included building compliance with verbal requests, teaching imitation, establishing appropriate toy play, and training the family of the child in treatment techniques. Year Two consisted of teaching expressive and abstract language, while in the final year, the focus was on teaching appropriate and varied expressions of emotions, pre-academic tasks, and observational learning.

Upon completion of the treatment program and entry into kindergarten, each child received 10 hours per week of treatment to help the transition to mainstream schooling. After the end of the program, there were significant differences between a control group (who received 10 hours of intervention per week) and the EIBI group on both IQ and educational placement (Lovass, 1987). The children who achieved the best outcomes of this study maintained their gains into adolescence (McEachin, Smith, & Lovaas, 1993).

EIBI is now a well-established treatment option. It has been shown to significantly improve domains such as IQ, socialisation, communication, and daily living skills in children with ASD (Cohen et al., 2006; Smith et al., 2000; Sallows, 2005). Effective EIBI programs have several common and defining features, as identified by Green et al. (2002): a) Treatment is comprehensive and individualized to address each child's strengths and weaknesses while addressing all skill domains; b) several different behavioural procedures are used to build functional behaviour repertoires and reduce problem behaviours; c) one or more individuals with advanced training and experience in ABA direct the treatment; d) normal developmental sequences act as guide points for the selection of treatment goals and objectives; e) parents actively participate as therapists for their children; f) treatment is primarily delivered in a one-to-one fashion; g) treatment usually commences in the home and is then generalized into other environments such as preschool classrooms; h) programming consists of 20-30 hours a week of structured sessions; i) ideally, the treatment lasts for two or more years; and finally j) most children begin programming when they were between the ages of 3-4.

Many EIBI programs have varied the features of the original UCLA model. Two features, setting and intensity, are relevant to the present study, as St.Amant Autism Programs are delivered in several different settings and at different intensities. Cohen et al. (2006) managed

the setting of the intervention in his replication of the Lovaas study and demonstrated the superiority of EIBI given in a home-based setting. Children with ASD were either given DTT-based EIBI in their home or an inclusion-based program in their preschool classroom. Cohen found that even though the EIBI group spent less time with peers, on account of more time spent with a tutor, they showed more significant gains in all domains tested, such as communication and socialisation. Seventeen out of 21 children in the EIBI group were successfully placed in a kindergarten classroom, while only 1/21 children in the preschool group were successful in a kindergarten classroom.

Reed, Osborne, and Corness (2007) addressed intervention intensity by comparing outcome measures for children who either received 12 or 30 hours a week of behavioural treatment for nine months. Researchers found significantly larger improvements in intellectual and educational functioning in the higher intensity group than the lower intensity group.

Granpeesheh et al. (2009) extended the research on treatment intensity by evaluating the relationship between treatment intensity and age of intake on treatment outcomes of EIBI programs. This study is relevant to St.Amant programming, as children often start their programming between ages 3-5. Granpeesheh et al. provide evidence for beginning EIBI treatments as young as possible, as this variable reduces the number of hours necessary to make gains in learning. The youngest children in their study (2-5.15 years) showed the most significant increases in treatment at low intensity (<20 hours/week), while for children in the middle age category (5.15-7 years), a higher number of hours (20-40 hours/week) were required to make the same gains.

St. Amant's Early Learning Program

St. Amant's Early Learning Program was an EIBI program offered in Winnipeg, Manitoba. The program met all of the defining features of EIBI outlined by Green et al. (2002). Ideally, children began the program at age 3, allowing them to receive 2-3 years of service before they transitioned into kindergarten, though this was not always the case. In this program, each child was paired with one or two tutors with whom they participated in 35 hours per week of DTT. The programming was monitored and developed by an Autism Consultant. The Consultant was either a Board-Certified Behaviour Analyst or working toward this certification. The consultant worked with the parents to select appropriate and individualised goals for each child, typically following the ABLLS-R curriculum (Partington, 2016). Usually, the tutor and child worked in the child's home, and parents conducted an additional 5 hours a week of DTT outside other program hours. Once the child reached school-age, they were given a tutor for 10 hours a week to help them make the transition into a typical kindergarten classroom.

St. Amant's Pre-Kindergarten Program (PKP)

The Pre-Kindergarten Program included fewer of the EIBI characteristics described by Green et al. (2002). An Autism Consultant over saw each child's comprehensive and individualized program. A tutor worked one-one with the individual, but the program was different in intensity and outcome goals. The PKP was created to serve children who would otherwise "age-off" of the waitlist for the Early Learning Program without receiving any service. As a result, children beginning the PKP were typically between 4 and 5 years old and only received 7-9 months of service. Each child worked in a classroom setting for 20 hours per week (five half days), equaling a total of approximately 560-720 service hours. There was no prescribed parent involvement component in this program.

The curriculum of the program was focused primarily on kindergarten readiness and was based on the School-Readiness Questionnaire (SRQ). St.Amant clinicians developed the SRQ from selected ABLLS-R curriculum items, Assessment of Functional Living Skills items (AFLS; Partington & Mueller, 2012), and input from Kindergarten teachers. The AFLS comprises four modules that measure necessary living skills, home skills, community participation, and school skills.

Statement of the Problem

The ABLA-R measures discrimination ability, but it is currently unknown how EIBI may affect these abilities in children with ASD. As community- based EIBI programs increase in popularity, there is a need for additional research on EIBI outcomes. Because EIBI programming in Manitoba is publicly funded, there is a need to evaluate programming to provide the most effective service to children with ASD (Roy-Wsiaki, 2015). As discussed previously, there is research that compares outcomes of EIBI that differ regarding age of participants, intensity, and duration (Granpeesheh, 2009; Reed et al., 2007), but none to my knowledge that specifically address discrimination abilities.

The present study is exploratory in nature and examines two factors related to ABLA-R improvement over time: program (PKP and ELP) and age. The results of this research will help influence the creation of future EIBI programming in Manitoba and inform funders of current outcomes regarding discrimination abilities in children with ASD. This research was approved by both the University of Manitoba Psychology and Sociology Research Ethics Board and St.Amant Access.

Method

Participants

All participants in this study were children with a diagnosis of ASD who participated in the ELP or PKP. Two groups were formed to compare the effects of the PKP and ELP on ABLA-R scores. I made an additional comparison between four age groups of children who *only participated in the ELP*. A case study of a child who received no intervention was done. See figure 1 for a chart of participants filtered by inclusion criteria.

Group 1: Pre-Kindergarten Program. This group consisted of 36 children who had participated in either the 2016 PKP (February to September 2016) or the 2017 PKP (February to September 2017). I included only children who had an intake and exit ABLA-R score recorded. The mean age of participants upon entry into the PKP was 60.4 months with a minimum of 54 months and a maximum of 66 months. Gender, program attendance, age of diagnosis, and socio-economic information of participants were not available.

Group 2: Early Learning Program. This group consisted of 34 children who participated in St.Amant's ELP for one year between 2008 and 2016 and had ABLA-R scores recorded at intake and exit. The mean age of ELP participants upon entry to the ELP was 56.9 months. To keep the two intervention groups comparable in age, I only selected participants who were a minimum of 54 months. The oldest participant in this category was 71 months. Participants were in the comprehensive program (31 hours/week) in the home setting. Gender, program attendance and socio-economic information of participants were not available.

Early Learning Age Group Comparisons.

To identify general ABLA-R age trends, I analyzed some additional early learning program data. I divided 114 children into four categories based on age. Fifteen children were

classified as two-years-old and ranged from 25-35 months at the time of their intake ABLA-R. There were 32 children who were three-years-old (36-47 months), 63 four-year-olds (48-59 months), and four five-year-olds (60-71 months). These participants were also in the comprehensive program in the home setting. Additional information such as gender distribution, program attendance, age of diagnosis and socio-economic information was not available.

Case Study. A case study with one child who had received no EIBI was conducted. At the time of his first ABLA-R assessment, the participant was 57 months and had a diagnosis of ASD. This child was recruited in order to conduct comparisons between a child who had received no intervention and those who had received either the ELP or PKP. This case study included to illuminate the issue of compliance and ABLA-R scoring.

Settings

Children in the 2016 and 2017 PKP cohorts were served out of two classroom locations in Winnipeg, MB as well as rural homes. Children were evenly distributed between classroom locations and morning and afternoon sessions, each receiving a total of approximately 600 service hours. Participants from the ELP received intervention in their homes, in a quiet setting where they could work independently with their tutor. The case study participant was evaluated in an assessment room at Specialized Services for Children and Youth for the first evaluation and an assessment room in St.Amant for the second.

Procedure

All children in this study were given the ABLA-R as outlined in the Self-Training Manual by an ELP or PKP tutor (DeWiele et al, 2011). Testing was done at a quiet table with the appropriate stimuli. Testing always began at level one, moved through the levels sequentially

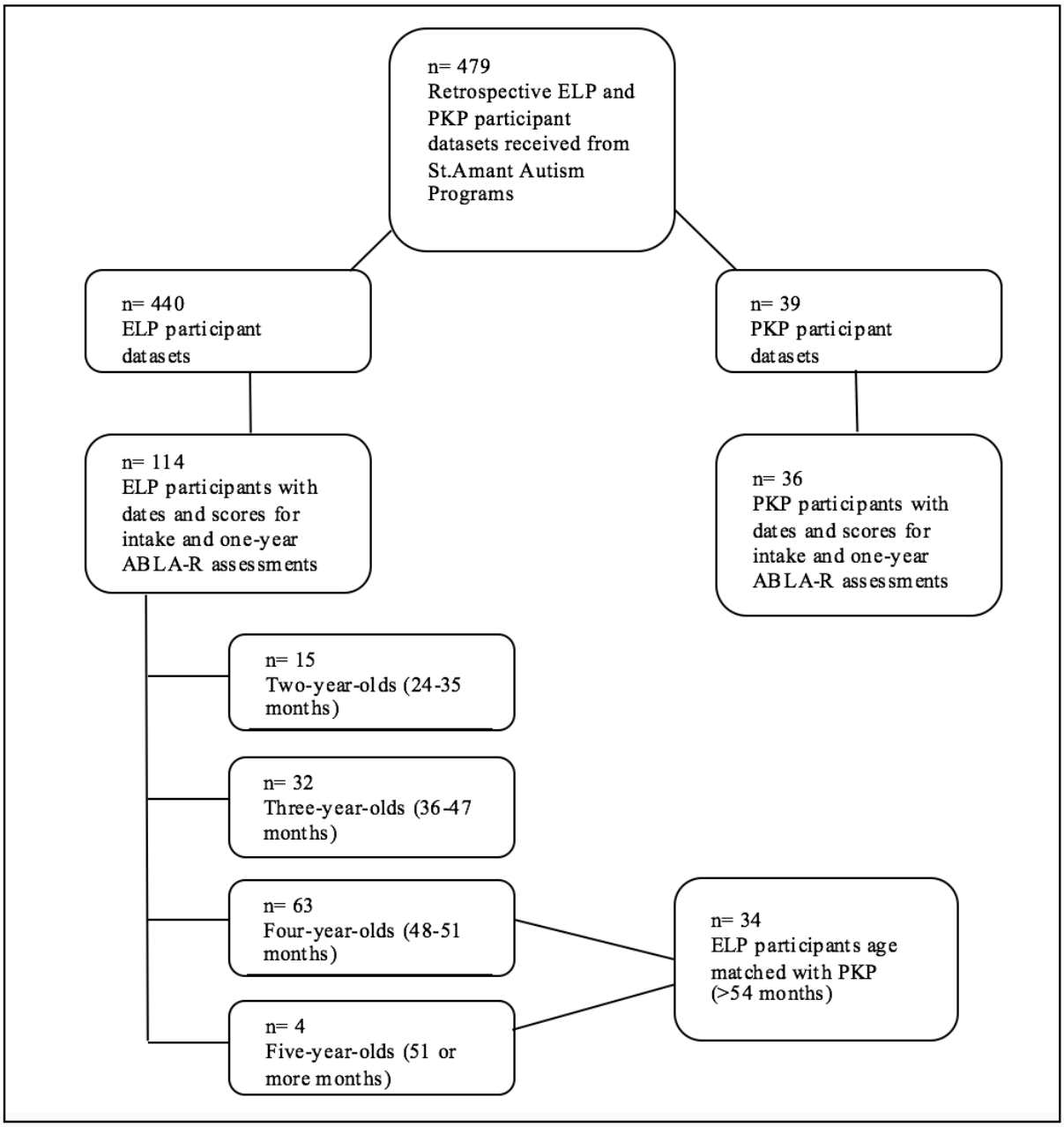

Figure 1. Number of participants in each category filtered by inclusion criteria.

and ceased when the child failed a level. Reinforcers were given for each correct response. See tables 2 & 3 outlining ABLA-R testing procedure.

PKP and ELP Groups. I received retrospective anonymized results of ABLA-R service assessments done by St.Amant for the PKP and ELP groups. PKP ABLA-R assessments were done at intake and exit of the program (approximately 9 months apart), and ELP ABLA-R assessments were done at six-month intervals throughout the child's intervention, as per St.Amant Autism Programs protocol. If at any point a child passed level 6 two consecutive times, no additional testing was done, as research has shown that once a child has passed a level, regression is unlikely (Martin et al., 1983). The testing procedure used was the same for intake and any subsequent assessments, always beginning with level one.

Case Study. The case study participant had ABLA-R scores collected by the researcher twice. The initial assessment was conducted on February 27, 2018, with the following assessment done approximately five months later, on July 20, 2018. In both scenarios, the child and tester were seated on opposite sides of a table, directly facing each other. As previously stated, each level was introduced with a demonstration by the tester, a guided trial, and a practice trial. Only after the testee made an independent, correct response on the practice trial did the testing and recording begin. If the child responded correctly, their response was reinforced with praise or an edible previously selected by the parent, and if the child erred, an error correction procedure, consisting of a demonstration trial, a guided trial, and a practice trial, was implemented. Eight consecutive independent, correct responses were required to pass a level, and eight cumulative errors marked the failure of a level (Martin & Yu, 2000).

Table 1

Testing instructions for ABLA-R levels 1-6

Situation	**Instructions**
Introduction	"I am going to ask you to do a task."
Demonstration	"When I say, "Where does it go?", it goes in here."
Guided Trial	"Let's try together... Where does it go?" *
Opportunity for Independent Response	"Now you try on your own. Where does it go?" *
Error Correction	"No, that's not where it goes."
Statements Between Levels	"We're finished with this task, now let's try something new."
Concluding Statement	We're all finished now, thank you for working with me."

Note. Adapted with permission from "The Kerr Myerson assessment of basic learning abilities revised: A self-instructional manual (second edition)" by L. DeWiele, G. L. Martin, T. Martin, C. T. Yu, and K. Thomson, 2011, Winnipeg, MB: St.Amant Research Centre, p. 13.

* For level 1, the instructions for both the guided trial and opportunity for independent response are, "Where does it go, it goes in here." In this level the instruction is always accompanied by a demonstration.

Table 2

Outline of levels and responses for ABLA-R levels 1-6

Levels	**1**	**2**	**3**	**4**	**5**	**6**
Containers & Positions	Box, Can Stable	Box, Can Stable	Box, Can Randomly Alternate	Box, Can Randomly Alternate	Box, Can Randomly Alternate	Box, Can Randomly Alternate
Test Object Presented	Foam	Foam	Foam	Cube and Cylinder Randomly Alternate	BOX and *Can* Randomly Alternate	Foam
Verbal Prompt or Question	"Where does it go?"					"Red Box" or "Yellow Can"
Correct Response	Place foam in can	Place foam in can on right	Place foam in can independent of position	Place cube in box or cylinder in can	Place BOX in box or *Can* in can	Place foam in the requested container

Note. Adapted with permission from "The Kerr Myerson assessment of basic learning abilities revised: A self-instructional manual (second edition)" by L. DeWiele, G. L. Martin, T. Martin, C. T. Yu, and K. Thomson, 2011, Winnipeg, MB: St.Amant Research Centre, p. 27.

Data Analysis

To analyze the data, I used SPSS to conduct independent-samples t-tests to evaluate differences in the PKP and ELP group means regarding age and test scores. A mixed-design ANOVA was used to compare differences in ABLA-R scores across time (time 1, time 2) and program (PKP, ELP). For this ANOVA, the ordinal data points collected from the ABLA-R were treated as a continuous variable, as has been done in previous research (Chandler & Pronin, 2012; Legault, Gutsell, & Inzlicht, 2011). All data met the assumptions of parametic statistics (Anderson, 2011).

To better understand the improvement across time made by each group, I calculated a normalized change value for each participant (Marx & Cummings, 2006). This method allows for a standardized score of improvement by calculating the improvement made out of the maximum possible improvement based on the before score: c = post-pre / (maximum possible improvement)- pre. The normalized change equation proposed by Marx and Cummings (2007) eliminates students who scored perfectly on both the intake and one-year assessment, as well as students who scored 0 on both the intake and one-year assessment. Additionally, when children who regressed in scores are evaluated, we use the formula: c = post-pre / pre. The result is a value from -1 to +1 for each participant. This value represents the ratio of the observed gain to the maximum gain, or the observed loss to the maximum loss (Marx & Cummings, 2007).

For the age category comparison, we used both univariate and mixed-design ANOVA's. We assessed the case study using descriptive statistics.

Data Entry and Reliability

Before providing any PKP or ELP data, St.Amant Autism Programs staff removed any identifying information. Once the data were received, it was analyzed using SPSS. A research

assistant conducted a check of data entered to make sure it was identical to the data provided by St.Amant.

Procedural Reliability

PKP and ELP. As part of St.Amant Autism programs protocol, tutors administering the ABLA-R in the PKP and ELPs completed online training. The lead tutor conducted reliability tests at the completion of this training using the ABLA-R Tester Evaluation Form (Awadalla et al., 2014; Appendix B). If an individual scored below 90%, the individual would repeat the level of training. This procedure is based on the successful results of a study done by Hu et al. in 2012 that examined the effectiveness of a WebCAPSI training package for the ABLA-R.

Case Study. I conducted Inter Observer Agreement (IOA) in one of the two assessments done for the case study. The observer watched the session and completed the ABLA-R Tester Evaluation Form. IOA was calculated by dividing the agreements between the observers and dividing by the total agreements plus disagreements. This value was then multiplied by 100 to create a percentage agreement. The IOA was 100%.

Results

Effect of Intervention Program on ABLA-R Scores. Independent-samples t-tests showed no significant difference between the PKP (n = 36) and ELP (n = 34) groups in before, after, or improvement scores (see Table 1). Despite efforts to control it, there was a significant group difference in mean age at intake, $t(45) = -3.93$, p=.003. A mixed-design ANOVA showed a significant effect of time on ABLA-R scores, $F(1)=36.348$, p=.001, but there was no main effect of program, $F(1)=.409$, p=.525. The interaction was not significant, $F(3)=2.387$, p=.127 (Figure 2). Two of the PKP participants regressed in their scores from intake to one-year, and one ELP participant regressed, otherwise all participants improved over time.

Table 3

Group Means for PKP and ELP

	PKP (n = 36) *M (SD)*	ELP (n = 34) *M (SD)*	*t*(68)	p
Age (months)	60.4 (4.02)	56.9 (3.4)	-3.93	.003*
ABLA-R Time 1	3.25 (2.68)	2.12 (2.61)	-1.79	.723
ABLA-R Time 2	4.42 (2.09)	4.09 (2.31)	-.624	.383
ABLA-R Difference	1.17 (2.13)	1.97 (2.22)	1.55	.323

Note: *p <.05, two tailed.

Effect of Intervention Program on Normalized Change Scores. Sixteen participants in the PKP group and 14 participants in the ELP group scored either 6 at both assessment points or 0 at both assessment points. I we eliminated these participants from analysis and calculated normalized change values for each participant. This left 20 participants in the ELP group and 20 in the PKP group. The average normalized change in the ELP (n = 20) was .66, and the average normalized change in the PKP (n = 20) was .41. These values were not significantly different, $t(38)= 1.06$, p= .103.

Effect of Age on ABLA-R Scores. The second analysis evaluated differences in ABLA-R scores between age groups within the Early Learning Program cohort using univariate ANOVAs. No significant difference was detected between groups in before, after, or difference scores (see Table 2). Of the participants unique to this analysis, 4 out of 80 regressed in their scores.

A Mixed-Design ANOVA revealed a significant effect of time on ABLA-R scores $F(1)=40.279$, p=.001 and no main effect of age $F(3)=.581$, p=.629. The interaction between time and age group approached significance, $F(3)=2.304$, p=.081 (Figure 3).

Case Study. In their first assessment, the case study participant did not pass level 1, resulting in a score of 0. At their second assessment, the child passed level five —an improvement of 5 levels.

Discussion

When it comes to school readiness in Manitoba, children in the more expensive, intensive and comprehensive ELP did not make significantly larger gains in ABLA-R improvement than children in the PKP. We must note, however, the modest interaction between time and program. Although the interaction was not statistically significant, the interaction showed that less time was necessary for children in the ELP to make gains in ABLA-R than the children in the PKP.

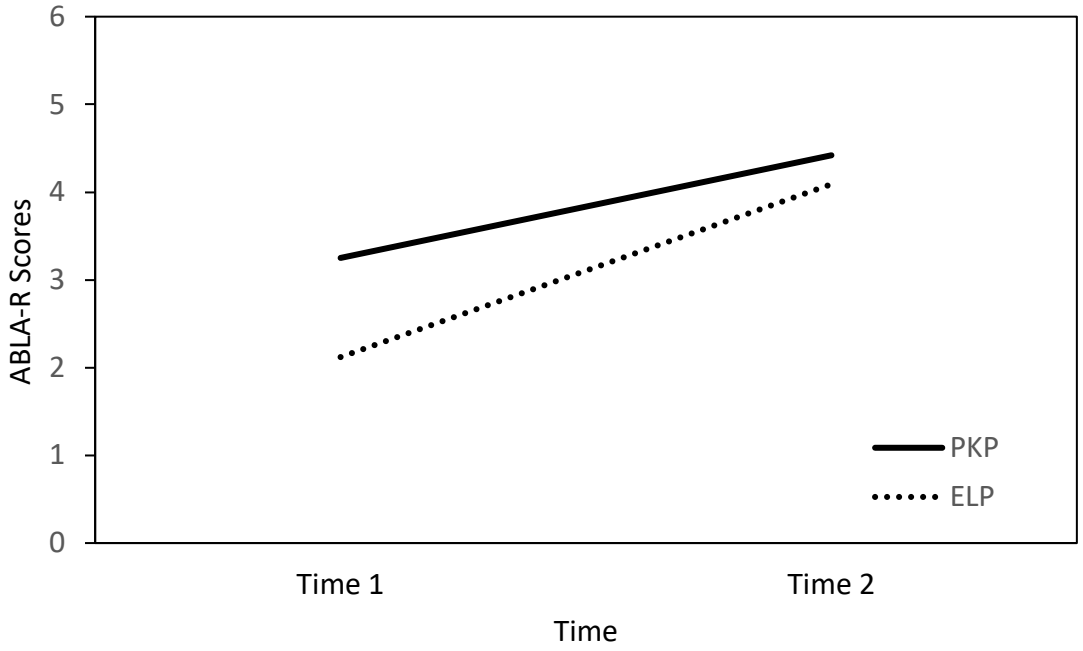

Figure 2. Mean ABLA-R scores across time for ELP and PKP participants.

Table 4

Group Means for 2,3,4 and 5-year-olds

	2-year-olds (n = 15) *M (SD)*	3-year-olds (n = 32) *M (SD)*	4-year-olds (n = 63) *M (SD)*	5-year-olds (n = 4) *M (SD)*	*F*(3)	p
ABLA-R Time 1	2.0 (1.89)	2.47 (2.18)	1.9 (2.3)	3.75 (2.87)	1.169	.325
ABLA-R Time 2	5.13 (1.06)	4.21 (1.96)	4.33 (2.07)	4.5 (3.0)	.803	.495
ABLA-R Difference	3.13 (1.55)	2.04 (2.26)	2.42 (2.26)	0.75 (1.5)	2.304	.081

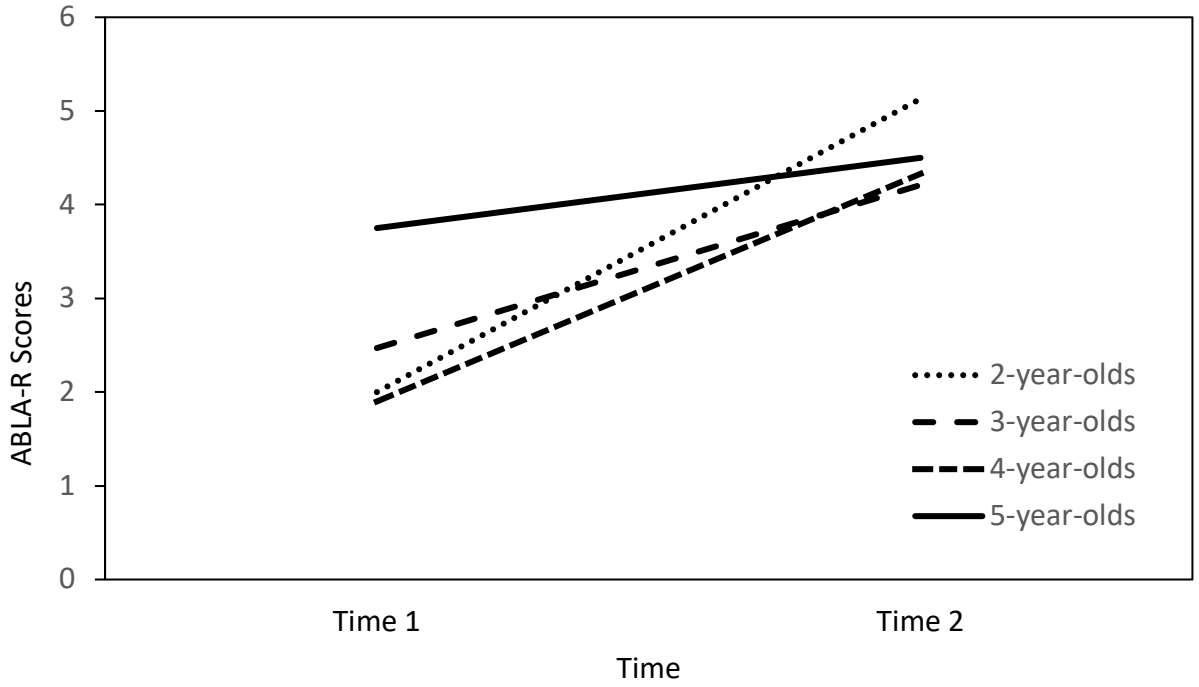

Figure 3. Mean ABLA-R scores across time for ELP participants grouped by age.

This may have been because children in the ELP had almost twice as many hours of service per week than the PKP.

This finding is consistent with Reed, Osbourne and Corness' 2007 study in which children who had 30 hr/week made significantly greater gains in educational and intellectual assessments than children who only had 12 hr/week. Although Reed, Osbourne and Corness used different measures than the present study (Gilliam Autism Rating Scale, Gillaim 1995; Psychoeducational Profile (Revised), Schopler, et al., 1990; British Abilities Scale II, Elliott et al., 1996; Vineland Adaptive Behaviour Scales, Sparrows et al., 1984; and Conners' Rating Scales- Revised, Conners 1997), these measures were all used in order to evaluate educational functioning. The ABLA-R is also an appropriate assessment in this domain, as is demonstrated by its use in St.Amant's test battery for the Pre-Kindergarten Program.

Two-year-olds who received EIBI made greater gains in ABLA-R scores than any other age category. This finding (shown by the modest interaction between age and time) was not statistically significant, but may have clinical significance; this suggests children should start intervention young to make the greatest possible gains. Other research has found similar results using assessments other than the ABLA-R. In a study measuring behavioural objectives, Granpeesheh (2009) found that significantly more time was necessary for older children to make the same gains as their younger counterparts.

An alternative explanation for younger children making the greatest gains is the ceiling effect. Children in all age categories may have had little room for improvement over time due to a high test 1 score. Because the 2 and 4-year-olds started with a mean score that was relatively low, they were not as affected by the ceiling effect as the 5-year-olds, who had much higher test scores in the first assessment.

This study also identified potential issues in the ABLA-R testing procedure that are worthy of further explanation. When students fail Level One of the ABLA-R, it may be due to lack of compliance, and not necessarily due to an inability to discriminate appropriately. This was the case with our case study. At the intake assessment, the child was not reacting favorably to his previously selected reinforcers (smarties, books, favorite toy) and would not sit long enough to complete Level One. At the five-month assessment, the spinning office chair was reinforcing for the child, and they were excited to sit and complete the assessment. The child's mother commented that she did not think the improvement in the five-month period was due to learning gains, but was rather due to comfort with the assessment and reinforcer selection. Although this was only one child, it leads me to believe that it is possible that many factors other than learning of discrimination skills may contribute to ABLA-R improvement.

Limitations

The primary limitation of this study was non-random assignment of children to the ELP and PKP programs, and the retrospective nature of data collection. Because the data was collected retrospectively, there were many questions concerning participant demographics and testing procedure that could not be answered.

Additionally, due to the retrospective data collection, I was not able to control the number of participants in each group. A post hoc power analysis revealed a total of 206 participants would be necessary to meet statistical significance of alpha=.05 between program groups with an effect size of .8.

It is also difficult to know what a score of zero meant in the retrospective service data. Some testers may have marked a zero when a student was unable to comply with the directions, while others marked a N/A. One of the criteria for choosing participants was that an intake score

was recorded, so those with a N/A due to non-compliance were excluded. Directions on how to score non-compliance are vague in the Kerr manual, which may lead to possible misinterpretation of scores. In this case, this may have led to the unnecessary exclusion of participants in both the PKP vs ELP and age-group analyses.

Another shortcoming of the present study was that children in the ELP received service for 1 year, while the PKP received service for 9 months. The unequal time interval makes it more difficult to draw cross-program comparisons. Despite a shorter duration in the program, however, the PKP participants still made comparable gains in ABLA-R scores.

Strengths

Despite this study's limitations, it has made several meaningful contributions to the literature. First, I used a direct assessment outcome measure to compare variations of real-world EIBI programs. It is often difficult for service providers to use the EIBI model set out by Lovaas. Cost and circumstance mean that intensity, setting, and staffing models often deviate from the UCLA model, yet to date the effects of these manipulations are not well understood. This study evaluated differences in program duration, intensity, and curriculum.

To our knowledge, this study was the first to examine the effects of any EIBI program on ABLA-R scores. Our results show that manipulations to program intensity and curriculum do not interfere with ABLA-R progress. This is a valuable finding because, despite several limitations, the ABLA-R is a clinically useful tool. The ABLA-R is based on direct observation, unlike many other assessments, and provides a method for teachers and clinicians to determine the best method of teaching for individual students.

Finally, this study provided further evidence for previous reports in the literature. We were able to show that a) the youngest children made the most ABLA-R gains and b) a greater

number of hours per week led to faster improvement in ABLA-R scores.

Future Research

Researchers conducting future research in the ABLA-R could be advised to test the specific hypothesis, "ABLA-R improvement is due to increased familiarity with DTT." This could be done using a multiple-baseline across participants design, with DTT being introduced to participants after they had completed an intervention that did not use DTT. I expect that a possible source of improvement in ABLA-R scores is familiarization with discrete trials testing. Because children in both the PKP and the ELP are heavily exposed to DTT over the course of their program, they learn and master the compliance skills such as sitting at a table, receiving reinforcement and error correction. These skills are all necessary to complete the ABLA-R and may have greatly contributed to score improvement over time.

This study also raises several questions about the social validity of the ABLA-R. As previously mentioned, the test has high predicative validity, but it remains unclear how the ABLA-R is used in clinical decision making across organizations. Research exploring this question would also be beneficial to the literature and potentially lead to wider and more accurate use of the assessment.

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Appendix A

ABLA-R Level 1 Data Sheet 62

Student : _____ Tester : _____ Observer : _____

Test Date : _____ Start Time : _____ End Time : _____ Result : _____

Instructions : In the Container column, draw in a circle or square representing the can or box (or simply write "can" or "box"), depending on what you're using for that trial. If a response is correct, place a check in the appropriate Results column rectangle and proceed to the next trial. If response is incorrect, shade in the entire box and proceed to the next error correction (if any).

Trial	Container	Results	
		Test Trial	Error Corrections
1		☐	☐☐☐☐☐☐☐
2		☐	☐☐☐☐☐☐☐
3		☐	☐☐☐☐☐☐☐
4		☐	☐☐☐☐☐☐☐
5		☐	☐☐☐☐☐☐☐
6		☐	☐☐☐☐☐☐☐
7		☐	☐☐☐☐☐☐☐
8		☐	☐☐☐☐☐☐☐
9		☐	☐☐☐☐☐☐☐
10		☐	☐☐☐☐☐☐☐
11		☐	☐☐☐☐☐☐☐
12		☐	☐☐☐☐☐☐☐
13		☐	☐☐☐☐☐☐☐
14		☐	☐☐☐☐☐☐☐
15		☐	☐☐☐☐☐☐☐
16		☐	☐☐☐☐☐☐☐
17		☐	☐☐☐☐☐☐☐
18		☐	☐☐☐☐☐☐☐
19		☐	☐☐☐☐☐☐☐
20		☐	☐☐☐☐☐☐☐
21		☐	☐☐☐☐☐☐☐
22		☐	☐☐☐☐☐☐☐
23		☐	☐☐☐☐☐☐☐
24		☐	☐☐☐☐☐☐☐
25		☐	☐☐☐☐☐☐☐
26		☐	☐☐☐☐☐☐☐
27		☐	☐☐☐☐☐☐☐
28		☐	☐☐☐☐☐☐☐
29		☐	☐☐☐☐☐☐☐
30		☐	☐☐☐☐☐☐☐

Trial	Container	Results	
		Test Trial	Error Corrections
31		☐	☐☐☐☐☐☐☐
32		☐	☐☐☐☐☐☐☐
33		☐	☐☐☐☐☐☐☐
34		☐	☐☐☐☐☐☐☐
35		☐	☐☐☐☐☐☐☐
36		☐	☐☐☐☐☐☐☐
37		☐	☐☐☐☐☐☐☐
38		☐	☐☐☐☐☐☐☐
39		☐	☐☐☐☐☐☐☐
40		☐	☐☐☐☐☐☐☐
41		☐	☐☐☐☐☐☐☐
42		☐	☐☐☐☐☐☐☐
43		☐	☐☐☐☐☐☐☐
44		☐	☐☐☐☐☐☐☐
45		☐	☐☐☐☐☐☐☐
46		☐	☐☐☐☐☐☐☐
47		☐	☐☐☐☐☐☐☐
48		☐	☐☐☐☐☐☐☐
49		☐	☐☐☐☐☐☐☐
50		☐	☐☐☐☐☐☐☐
51		☐	☐☐☐☐☐☐☐
52		☐	☐☐☐☐☐☐☐
53		☐	☐☐☐☐☐☐☐
54		☐	☐☐☐☐☐☐☐
55		☐	☐☐☐☐☐☐☐
56		☐	☐☐☐☐☐☐☐
57		☐	☐☐☐☐☐☐☐
58		☐	☐☐☐☐☐☐☐
59		☐	☐☐☐☐☐☐☐
60		☐	☐☐☐☐☐☐☐

Passing criterion: 8 consecutive correct responses on test trials

Failing criterion: 8 cumulative incorrect responses

ABLA-R Level 2 Data Sheet 63

Student : _____ Tester : _____ Observer : _____

Test Date : _____ Start Time : _____ End Time : _____ Result : _____

Instructions : Under "container position", the circle represents the can and the square represents the box. The dot shows the correct destination for the manipulandum. If a response is correct, place a check in the appropriate Results column rectangle and proceed to the next trial. If response is incorrect, shade in the entire box and proceed to the next error correction (if any).

Trial	Container Position	Results		Trial	Container Position	Results	
		Test trial	Error corrections			Test trial	Error Corrections
1	☐ ⊙	☐	☐☐☐☐☐☐☐	31	☐ ⊙	☐	☐☐☐☐☐☐☐
2	☐ ⊙	☐	☐☐☐☐☐☐☐	32	☐ ⊙	☐	☐☐☐☐☐☐☐
3	☐ ⊙	☐	☐☐☐☐☐☐☐	33	☐ ⊙	☐	☐☐☐☐☐☐☐
4	☐ ⊙	☐	☐☐☐☐☐☐☐	34	☐ ⊙	☐	☐☐☐☐☐☐☐
5	☐ ⊙	☐	☐☐☐☐☐☐☐	35	☐ ⊙	☐	☐☐☐☐☐☐☐
6	☐ ⊙	☐	☐☐☐☐☐☐☐	36	☐ ⊙	☐	☐☐☐☐☐☐☐
7	☐ ⊙	☐	☐☐☐☐☐☐☐	37	☐ ⊙	☐	☐☐☐☐☐☐☐
8	☐ ⊙	☐	☐☐☐☐☐☐☐	38	☐ ⊙	☐	☐☐☐☐☐☐☐
9	☐ ⊙	☐	☐☐☐☐☐☐☐	39	☐ ⊙	☐	☐☐☐☐☐☐☐
10	☐ ⊙	☐	☐☐☐☐☐☐☐	40	☐ ⊙	☐	☐☐☐☐☐☐☐
11	☐ ⊙	☐	☐☐☐☐☐☐☐	41	☐ ⊙	☐	☐☐☐☐☐☐☐
12	☐ ⊙	☐	☐☐☐☐☐☐☐	42	☐ ⊙	☐	☐☐☐☐☐☐☐
13	☐ ⊙	☐	☐☐☐☐☐☐☐	43	☐ ⊙	☐	☐☐☐☐☐☐☐
14	☐ ⊙	☐	☐☐☐☐☐☐☐	44	☐ ⊙	☐	☐☐☐☐☐☐☐
15	☐ ⊙	☐	☐☐☐☐☐☐☐	45	☐ ⊙	☐	☐☐☐☐☐☐☐
16	☐ ⊙	☐	☐☐☐☐☐☐☐	46	☐ ⊙	☐	☐☐☐☐☐☐☐
17	☐ ⊙	☐	☐☐☐☐☐☐☐	47	☐ ⊙	☐	☐☐☐☐☐☐☐
18	☐ ⊙	☐	☐☐☐☐☐☐☐	48	☐ ⊙	☐	☐☐☐☐☐☐☐
19	☐ ⊙	☐	☐☐☐☐☐☐☐	49	☐ ⊙	☐	☐☐☐☐☐☐☐
20	☐ ⊙	☐	☐☐☐☐☐☐☐	50	☐ ⊙	☐	☐☐☐☐☐☐☐
21	☐ ⊙	☐	☐☐☐☐☐☐☐	51	☐ ⊙	☐	☐☐☐☐☐☐☐
22	☐ ⊙	☐	☐☐☐☐☐☐☐	52	☐ ⊙	☐	☐☐☐☐☐☐☐
23	☐ ⊙	☐	☐☐☐☐☐☐☐	53	☐ ⊙	☐	☐☐☐☐☐☐☐
24	☐ ⊙	☐	☐☐☐☐☐☐☐	54	☐ ⊙	☐	☐☐☐☐☐☐☐
25	☐ ⊙	☐	☐☐☐☐☐☐☐	55	☐ ⊙	☐	☐☐☐☐☐☐☐
26	☐ ⊙	☐	☐☐☐☐☐☐☐	56	☐ ⊙	☐	☐☐☐☐☐☐☐
27	☐ ⊙	☐	☐☐☐☐☐☐☐	57	☐ ⊙	☐	☐☐☐☐☐☐☐
28	☐ ⊙	☐	☐☐☐☐☐☐☐	58	☐ ⊙	☐	☐☐☐☐☐☐☐
29	☐ ⊙	☐	☐☐☐☐☐☐☐	59	☐ ⊙	☐	☐☐☐☐☐☐☐
30	☐ ⊙	☐	☐☐☐☐☐☐☐	60	☐ ⊙	☐	☐☐☐☐☐☐☐

Passing criterion: 8 consecutive correct responses on test trials

Failing criterion: 8 cumulative incorrect responses

ABLA-R Level 3 Data Sheet 64

Student : _____ Tester : _____ Observer : _____

Test Date : _____ Start Time : _____ End Time : _____ Result : _____

Instructions : Under "container position", the circle represents the can and the square represents the box. The dot shows the correct destination for the manipulandum. If a response is correct, place a check in the appropriate Results column rectangle and proceed to the next trial. If response is incorrect, shade in the entire box and proceed to the next error correction (if any).

Trial	Container Position	Results: Test trial	Results: Error corrections	Trial	Container Position	Results: Test trial	Results: Error corrections
1	⊙ □	☐	☐☐☐☐☐☐☐	31	□ ⊙	☐	☐☐☐☐☐☐☐
2	□ ⊙	☐	☐☐☐☐☐☐☐	32	⊙ □	☐	☐☐☐☐☐☐☐
3	⊙ □	☐	☐☐☐☐☐☐☐	33	⊙ □	☐	☐☐☐☐☐☐☐
4	⊙ □	☐	☐☐☐☐☐☐☐	34	□ ⊙	☐	☐☐☐☐☐☐☐
5	□ ⊙	☐	☐☐☐☐☐☐☐	35	⊙ □	☐	☐☐☐☐☐☐☐
6	⊙ □	☐	☐☐☐☐☐☐☐	36	□ ⊙	☐	☐☐☐☐☐☐☐
7	□ ⊙	☐	☐☐☐☐☐☐☐	37	□ ⊙	☐	☐☐☐☐☐☐☐
8	□ ⊙	☐	☐☐☐☐☐☐☐	38	⊙ □	☐	☐☐☐☐☐☐☐
9	⊙ □	☐	☐☐☐☐☐☐☐	39	⊙ □	☐	☐☐☐☐☐☐☐
10	⊙ □	☐	☐☐☐☐☐☐☐	40	□ ⊙	☐	☐☐☐☐☐☐☐
11	□ ⊙	☐	☐☐☐☐☐☐☐	41	⊙ □	☐	☐☐☐☐☐☐☐
12	□ ⊙	☐	☐☐☐☐☐☐☐	42	⊙ □	☐	☐☐☐☐☐☐☐
13	⊙ □	☐	☐☐☐☐☐☐☐	43	□ ⊙	☐	☐☐☐☐☐☐☐
14	□ ⊙	☐	☐☐☐☐☐☐☐	44	⊙ □	☐	☐☐☐☐☐☐☐
15	⊙ □	☐	☐☐☐☐☐☐☐	45	□ ⊙	☐	☐☐☐☐☐☐☐
16	⊙ □	☐	☐☐☐☐☐☐☐	46	□ ⊙	☐	☐☐☐☐☐☐☐
17	□ ⊙	☐	☐☐☐☐☐☐☐	47	⊙ □	☐	☐☐☐☐☐☐☐
18	⊙ □	☐	☐☐☐☐☐☐☐	48	⊙ □	☐	☐☐☐☐☐☐☐
19	□ ⊙	☐	☐☐☐☐☐☐☐	49	□ ⊙	☐	☐☐☐☐☐☐☐
20	□ ⊙	☐	☐☐☐☐☐☐☐	50	□ ⊙	☐	☐☐☐☐☐☐☐
21	⊙ □	☐	☐☐☐☐☐☐☐	51	⊙ □	☐	☐☐☐☐☐☐☐
22	⊙ □	☐	☐☐☐☐☐☐☐	52	□ ⊙	☐	☐☐☐☐☐☐☐
23	□ ⊙	☐	☐☐☐☐☐☐☐	53	⊙ □	☐	☐☐☐☐☐☐☐
24	□ ⊙	☐	☐☐☐☐☐☐☐	54	⊙ □	☐	☐☐☐☐☐☐☐
25	⊙ □	☐	☐☐☐☐☐☐☐	55	□ ⊙	☐	☐☐☐☐☐☐☐
26	□ ⊙	☐	☐☐☐☐☐☐☐	56	⊙ □	☐	☐☐☐☐☐☐☐
27	⊙ □	☐	☐☐☐☐☐☐☐	57	□ ⊙	☐	☐☐☐☐☐☐☐
28	□ ⊙	☐	☐☐☐☐☐☐☐	58	□ ⊙	☐	☐☐☐☐☐☐☐
29	⊙ □	☐	☐☐☐☐☐☐☐	59	⊙ □	☐	☐☐☐☐☐☐☐
30	□ ⊙	☐	☐☐☐☐☐☐☐	60	⊙ □	☐	☐☐☐☐☐☐☐

Passing criterion: 8 consecutive correct responses on test trials

Failing criterion: 8 cumulative incorrect responses

ABLA-R Level 4 Data Sheet 65

Student : _____ Tester : _____ Observer : _____

Test Date : _____ Start Time : _____ End Time : _____ Result : _____

Instructions : Under "container position", the circle represents the can and the square represents the box. The dot shows the correct destination for the manipulandum (and therefore whether to present the red cube or yellow cylinder). If a response is correct, place a check in the appropriate Results column rectangle and proceed to the next trial. If response is incorrect, shade in the entire box and proceed to the next error correction (if any).

Trial	Container Position	Results: Test Trial	Results: Error Corrections	Trial	Container Position	Results: Test Trial	Results: Error Corrections
1	□ ⊙	☐	☐☐☐☐☐☐☐	31	○ ⊡	☐	☐☐☐☐☐☐☐
2	⊙ □	☐	☐☐☐☐☐☐☐	32	⊙ □	☐	☐☐☐☐☐☐☐
3	⊡ ○	☐	☐☐☐☐☐☐☐	33	□ ⊙	☐	☐☐☐☐☐☐☐
4	○ ⊡	☐	☐☐☐☐☐☐☐	34	⊡ ○	☐	☐☐☐☐☐☐☐
5	□ ⊙	☐	☐☐☐☐☐☐☐	35	□ ⊙	☐	☐☐☐☐☐☐☐
6	⊡ ○	☐	☐☐☐☐☐☐☐	36	○ ⊡	☐	☐☐☐☐☐☐☐
7	⊙ □	☐	☐☐☐☐☐☐☐	37	⊡ ○	☐	☐☐☐☐☐☐☐
8	○ ⊡	☐	☐☐☐☐☐☐☐	38	⊙ □	☐	☐☐☐☐☐☐☐
9	⊡ ○	☐	☐☐☐☐☐☐☐	39	□ ⊙	☐	☐☐☐☐☐☐☐
10	□ ⊙	☐	☐☐☐☐☐☐☐	40	⊙ □	☐	☐☐☐☐☐☐☐
11	○ ⊡	☐	☐☐☐☐☐☐☐	41	⊡ ○	☐	☐☐☐☐☐☐☐
12	⊙ □	☐	☐☐☐☐☐☐☐	42	○ ⊡	☐	☐☐☐☐☐☐☐
13	□ ⊙	☐	☐☐☐☐☐☐☐	43	□ ⊙	☐	☐☐☐☐☐☐☐
14	⊡ ○	☐	☐☐☐☐☐☐☐	44	⊡ ○	☐	☐☐☐☐☐☐☐
15	⊙ □	☐	☐☐☐☐☐☐☐	45	⊙ □	☐	☐☐☐☐☐☐☐
16	○ ⊡	☐	☐☐☐☐☐☐☐	46	○ ⊡	☐	☐☐☐☐☐☐☐
17	⊡ ○	☐	☐☐☐☐☐☐☐	47	⊡ ○	☐	☐☐☐☐☐☐☐
18	○ ⊡	☐	☐☐☐☐☐☐☐	48	□ ⊙	☐	☐☐☐☐☐☐☐
19	□ ⊙	☐	☐☐☐☐☐☐☐	49	○ ⊡	☐	☐☐☐☐☐☐☐
20	⊙ □	☐	☐☐☐☐☐☐☐	50	⊙ □	☐	☐☐☐☐☐☐☐
21	⊡ ○	☐	☐☐☐☐☐☐☐	51	□ ⊙	☐	☐☐☐☐☐☐☐
22	□ ⊙	☐	☐☐☐☐☐☐☐	52	⊡ ○	☐	☐☐☐☐☐☐☐
23	○ ⊡	☐	☐☐☐☐☐☐☐	53	⊙ □	☐	☐☐☐☐☐☐☐
24	⊙ □	☐	☐☐☐☐☐☐☐	54	○ ⊡	☐	☐☐☐☐☐☐☐
25	□ ⊙	☐	☐☐☐☐☐☐☐	55	⊡ ○	☐	☐☐☐☐☐☐☐
26	○ ⊡	☐	☐☐☐☐☐☐☐	56	○ ⊡	☐	☐☐☐☐☐☐☐
27	⊡ ○	☐	☐☐☐☐☐☐☐	57	□ ⊙	☐	☐☐☐☐☐☐☐
28	⊙ □	☐	☐☐☐☐☐☐☐	58	⊙ □	☐	☐☐☐☐☐☐☐
29	○ ⊡	☐	☐☐☐☐☐☐☐	59	⊡ ○	☐	☐☐☐☐☐☐☐
30	□ ⊙	☐	☐☐☐☐☐☐☐	60	□ ⊙	☐	☐☐☐☐☐☐☐

Passing criterion: 8 consecutive correct responses on test trials

Failing criterion: 8 cumulative incorrect responses

ABLA-R Level 5 Data Sheet 66

Student : _____ Tester : _____ Observer : _____

Test Date : _____ Start Time : _____ End Time : _____ Result : _____

Instructions : Under "container position", the circle represents the can and the square represents the box. The dot shows the correct destination for the manipulandum (and therefore whether to present the silver piece of wood that spells *BOX* or the purple piece of wood that spells *Can*). If a response is correct, place a check in the appropriate Results column rectangle and proceed to the next trial. If response is incorrect, shade in the entire box and proceed to the next error correction (if any).

Trial	Container Position	Results: Test Trial	Results: Error Corrections	Trial	Container Position	Results: Test Trial	Results: Error Corrections
1	□ ⊙	☐	☐☐☐☐☐☐☐	31	⊙ □	☐	☐☐☐☐☐☐☐
2	⊡ ○	☐	☐☐☐☐☐☐☐	32	⊡ ○	☐	☐☐☐☐☐☐☐
3	⊙ □	☐	☐☐☐☐☐☐☐	33	○ ⊡	☐	☐☐☐☐☐☐☐
4	○ ⊡	☐	☐☐☐☐☐☐☐	34	□ ⊙	☐	☐☐☐☐☐☐☐
5	⊙ □	☐	☐☐☐☐☐☐☐	35	⊙ □	☐	☐☐☐☐☐☐☐
6	□ ⊙	☐	☐☐☐☐☐☐☐	36	□ ⊙	☐	☐☐☐☐☐☐☐
7	⊡ ○	☐	☐☐☐☐☐☐☐	37	○ ⊡	☐	☐☐☐☐☐☐☐
8	○ ⊡	☐	☐☐☐☐☐☐☐	38	⊡ ○	☐	☐☐☐☐☐☐☐
9	□ ⊙	☐	☐☐☐☐☐☐☐	39	□ ⊙	☐	☐☐☐☐☐☐☐
10	⊙ □	☐	☐☐☐☐☐☐☐	40	⊡ ○	☐	☐☐☐☐☐☐☐
11	⊡ ○	☐	☐☐☐☐☐☐☐	41	⊙ □	☐	☐☐☐☐☐☐☐
12	□ ⊙	☐	☐☐☐☐☐☐☐	42	○ ⊡	☐	☐☐☐☐☐☐☐
13	○ ⊡	☐	☐☐☐☐☐☐☐	43	⊙ □	☐	☐☐☐☐☐☐☐
14	⊡ ○	☐	☐☐☐☐☐☐☐	44	□ ⊙	☐	☐☐☐☐☐☐☐
15	⊙ □	☐	☐☐☐☐☐☐☐	45	⊡ ○	☐	☐☐☐☐☐☐☐
16	⊡ ○	☐	☐☐☐☐☐☐☐	46	○ ⊡	☐	☐☐☐☐☐☐☐
17	○ ⊡	☐	☐☐☐☐☐☐☐	47	□ ⊙	☐	☐☐☐☐☐☐☐
18	⊙ □	☐	☐☐☐☐☐☐☐	48	⊙ □	☐	☐☐☐☐☐☐☐
19	○ ⊡	☐	☐☐☐☐☐☐☐	49	⊡ ○	☐	☐☐☐☐☐☐☐
20	□ ⊙	☐	☐☐☐☐☐☐☐	50	□ ⊙	☐	☐☐☐☐☐☐☐
21	⊙ □	☐	☐☐☐☐☐☐☐	51	○ ⊡	☐	☐☐☐☐☐☐☐
22	⊡ ○	☐	☐☐☐☐☐☐☐	52	⊡ ○	☐	☐☐☐☐☐☐☐
23	○ ⊡	☐	☐☐☐☐☐☐☐	53	⊙ □	☐	☐☐☐☐☐☐☐
24	⊡ ○	☐	☐☐☐☐☐☐☐	54	⊡ ○	☐	☐☐☐☐☐☐☐
25	□ ⊙	☐	☐☐☐☐☐☐☐	55	○ ⊡	☐	☐☐☐☐☐☐☐
26	⊙ □	☐	☐☐☐☐☐☐☐	56	⊙ □	☐	☐☐☐☐☐☐☐
27	○ ⊡	☐	☐☐☐☐☐☐☐	57	○ ⊡	☐	☐☐☐☐☐☐☐
28	□ ⊙	☐	☐☐☐☐☐☐☐	58	□ ⊙	☐	☐☐☐☐☐☐☐
29	⊡ ○	☐	☐☐☐☐☐☐☐	59	⊙ □	☐	☐☐☐☐☐☐☐
30	⊙ □	☐	☐☐☐☐☐☐☐	60	⊡ ○	☐	☐☐☐☐☐☐☐

Passing criterion: 8 consecutive correct responses on test trials

Failing criterion: 8 cumulative incorrect responses

ABLA-R Level 6 Data Sheet 67

Student : _____ Tester : _____ Observer : _____

Test Date : _____ Start Time : _____ End Time : _____ Result : _____

Instructions : Under "container position", the circle represents the can and the square represents the box. The dot shows the correct destination for the manipulandum (and therefore the correct vocal stimulus to present). If a response is correct, place a check in the appropriate Results column rectangle and proceed to the next trial. If response is incorrect, shade in the entire box and proceed to the next error correction (if any).

Trial	Container Position	Results: Test Trial	Results: Error Corrections	Trial	Container Position	Results: Test Trial	Results: Error Corrections
1	□ ⊙	☐	☐☐☐☐☐☐☐	31	⊙ □	☐	☐☐☐☐☐☐☐
2	⊡ ○	☐	☐☐☐☐☐☐☐	32	⊡ ○	☐	☐☐☐☐☐☐☐
3	⊙ □	☐	☐☐☐☐☐☐☐	33	○ ⊡	☐	☐☐☐☐☐☐☐
4	○ ⊡	☐	☐☐☐☐☐☐☐	34	□ ⊙	☐	☐☐☐☐☐☐☐
5	⊙ □	☐	☐☐☐☐☐☐☐	35	⊙ □	☐	☐☐☐☐☐☐☐
6	□ ⊙	☐	☐☐☐☐☐☐☐	36	□ ⊙	☐	☐☐☐☐☐☐☐
7	⊡ ○	☐	☐☐☐☐☐☐☐	37	○ ⊡	☐	☐☐☐☐☐☐☐
8	○ ⊡	☐	☐☐☐☐☐☐☐	38	⊡ ○	☐	☐☐☐☐☐☐☐
9	□ ⊙	☐	☐☐☐☐☐☐☐	39	□ ⊙	☐	☐☐☐☐☐☐☐
10	⊙ □	☐	☐☐☐☐☐☐☐	40	⊡ ○	☐	☐☐☐☐☐☐☐
11	⊡ ○	☐	☐☐☐☐☐☐☐	41	⊙ □	☐	☐☐☐☐☐☐☐
12	□ ⊙	☐	☐☐☐☐☐☐☐	42	○ ⊡	☐	☐☐☐☐☐☐☐
13	○ ⊡	☐	☐☐☐☐☐☐☐	43	⊙ □	☐	☐☐☐☐☐☐☐
14	⊡ ○	☐	☐☐☐☐☐☐☐	44	□ ⊙	☐	☐☐☐☐☐☐☐
15	⊙ □	☐	☐☐☐☐☐☐☐	45	⊡ ○	☐	☐☐☐☐☐☐☐
16	⊡ ○	☐	☐☐☐☐☐☐☐	46	○ ⊡	☐	☐☐☐☐☐☐☐
17	○ ⊡	☐	☐☐☐☐☐☐☐	47	□ ⊙	☐	☐☐☐☐☐☐☐
18	⊙ □	☐	☐☐☐☐☐☐☐	48	⊙ □	☐	☐☐☐☐☐☐☐
19	○ ⊡	☐	☐☐☐☐☐☐☐	49	⊡ ○	☐	☐☐☐☐☐☐☐
20	□ ⊙	☐	☐☐☐☐☐☐☐	50	□ ⊙	☐	☐☐☐☐☐☐☐
21	⊙ □	☐	☐☐☐☐☐☐☐	51	○ ⊡	☐	☐☐☐☐☐☐☐
22	⊡ ○	☐	☐☐☐☐☐☐☐	52	⊡ ○	☐	☐☐☐☐☐☐☐
23	○ ⊡	☐	☐☐☐☐☐☐☐	53	⊙ □	☐	☐☐☐☐☐☐☐
24	⊡ ○	☐	☐☐☐☐☐☐☐	54	⊡ ○	☐	☐☐☐☐☐☐☐
25	□ ⊙	☐	☐☐☐☐☐☐☐	55	○ ⊡	☐	☐☐☐☐☐☐☐
26	⊙ □	☐	☐☐☐☐☐☐☐	56	⊙ □	☐	☐☐☐☐☐☐☐
27	○ ⊡	☐	☐☐☐☐☐☐☐	57	○ ⊡	☐	☐☐☐☐☐☐☐
28	□ ⊙	☐	☐☐☐☐☐☐☐	58	□ ⊙	☐	☐☐☐☐☐☐☐
29	⊡ ○	☐	☐☐☐☐☐☐☐	59	⊙ □	☐	☐☐☐☐☐☐☐
30	⊙ □	☐	☐☐☐☐☐☐☐	60	⊡ ○	☐	☐☐☐☐☐☐☐

Passing criterion: 8 consecutive correct responses on test trials

Failing criterion: 8 cumulative incorrect responses

Appendix B

FORM TO EVALUATE AN ABLA-R TESTER TESTING LEVEL 1

Scoring: For each item on each trial performed correctly, place a ✓. For items performed incorrectly, place an ✗. For items that do not apply, leave blank. (Slight variations in the instructions are acceptable.)

Initial Prompting Sequence	
1. Proper set-up	
2. Initial demonstration: a. "When I say, 'Where does it go?' it goes in [illegible]"	
b. Demo	
3. Initial guided trial: a. "Let's try together", "Where does it go?" +	
b. "Where does it go?" and guidance	
c. Praise	
4. Initial opp. for ind. Res.: a. "Where does it go?" + model	
b. "Where does it go?" + give foam to student	
c. Praise and edible for correct	
d. "No. That's not where it goes" for error	
e. If error: i. Demo	
ii. Guided Trial	
iii. Opp. for Ind. Res.	

Name of Tester: _____

Evaluated By: _____

Client's Initials: _____

Notes:

Test Trials	Trial Number*												
	1	2	3	4	5	6	7	8	9	10	11	12	13
5. Test trials: a. "Where does it go?" + model													
b. "Where does it go?" + give foam to student													
c. Praise and reinforcer for correct													
d. "No. That's not where it goes" for error													
e. If error: i. Demo													
ii. Guided Trial													
iii. Opp. For Ind. Res.													
6. Response recorded immediately/accurately													
7. After 4 correct test trials in a row, switch containers, and repeat starting at Item 5.													
8. Pass criterion was met, or													
Fail criterion was met													

*Items 5a, 5b, 5c and 6 apply to the first attempt at a trial resulting in a correct response. Items 5a, 5b, 5d, 5e, and 6 apply to the first attempt at a trial resulting in an error. If an error is made on subsequent attempts at a trial, only Items 5d, 5e (i, ii, iii) and 6 apply. Scoring for Level 1: Total items scored = ____ Total items scored correctly= ____

FORM TO EVALUATE AN ABLA-R TESTER TESTING LEVEL 2

Scoring: For each item on each trial performed correctly, place a ✓. For items performed incorrectly, place an ✖. For items that do not apply, leave blank. (Slight variations in the instructions are acceptable.)

Initial Prompting Sequence	
1. Proper set-up	Name of Tester: _____
2. Initial demonstration: a. "When I say, 'Where does it go?' it goes in	Evaluated By: _____
b. Demo	Client's Initials: _____
3. Initial guided trial: a. "Let's try together, where does it go?"	Notes:
b. Guidance	
c. Praise	
4. Initial Opp. for Ind. Res.: a. "Where does it go?" + give foam to student	
b. Praise and edible for correct	
c. "No. That's not where it goes" for error	
d. If error: i. Demo	
ii. Guided Trial	
iii. Opp for Ind. Res.	

Test Trials	Trial Number*												
	1	2	3	4	5	6	7	8	9	10	11	12	13
5. Test trials: a. "Where does it go?" + give foam to student													
b. Praise and reinforcer for correct													
c. "No, that's not where it goes" for error													
d. If error: i. Demo													
ii. Guided Trial													
iii. Opp. for Ind. Res.													
6. Response Recorded Immediately/Accurately													
7. Pass criterion was met, or													
Fail criterion was met													

*Items 5a, 5b, and 6 apply to the first attempt at a trial resulting in a correct response. Items 5a, 5c, 5d, and 6 apply to the first attempt at a trial resulting in an error. If an error is made on subsequent attempts at a trial, only Items 5c, 5d (i, ii, iii) and 6 apply.

Scoring for Level 2: Total items scored = ____ Total items scored correctly= ____

FORM TO EVALUATE AN ABLA-R TESTER TESTING LEVEL 3

Scoring: For each item on each trial performed correctly, place a ✓. For items performed incorrectly, place an ✗. For items that do not apply, leave blank. (Slight variations in the instructions are acceptable.)

Name of Tester: _____

Evaluated By: _____

Client's Initials: _____

Notes:

Initial Prompting Sequence		
1. Proper set-up		
2. Initial demonstration:	a. "When I say, 'Where does it go?' it goes in	
	b. Demo	
3. Initial guided trial:	a. "Let's try together. Where does it go?"	
	b. Guidance	
	c. Praise	
4. Initial Opp. for Ind. Res.:	a. "Where does it go?" + give foam to student	
	b. Praise and edible for correct	
	c. "No, that's not where it goes" for error	
	d. If error: i. Demo	
	ii. Guided Trial	
	iii. Opp. for Ind. Res.	

Test Trials		Trial Number*												
		1	2	3	4	5	6	7	8	9	10	11	12	13
5. Test trials:	a. Container position													
	b. "Where does it go?" + give foam to													
	c. Praise and reinforcer for correct													
	d. "No, that's not where it goes" for													
	e. If error: i. Demo													
	ii. Guided Trial													
	iii. Opp. for Ind. Res.													
6. Response Recorded Immediately/Accurately														
7. Pass criterion was met, or														
Fail criterion was met														

*Items 5a, 5b, 5c and 6 apply to the first attempt at a trial resulting in a correct response. Items 5a, 5b, 5d, 5e, and 6 apply to the first attempt at a trial resulting in an error. If an error is made on subsequent attempts at a trial, only Items 5d, 5e (i, ii, iii) and 6 apply.

Scoring for Level 3: Total items scored = ____ Total items scored correctly= ____

FORM TO EVALUATE AN ABLA-R TESTER TESTING LEVEL 4

Scoring: For each item on each trial performed correctly, place a ✓. For items performed incorrectly, place an ✗. For items that do not apply, leave blank. (Slight variations in the instructions are acceptable.)

Initial Prompting Sequence	
1. Proper set-up	Name of Tester: _____
2. Initial demonstration (cylinder): a. "When I say, 'Where does it go?' it goes in	Evaluated By: _____
b. Demo	Client's Initials: _____
3. Initial guided trial (cylinder): a. "Let's try together, where does it go?"	Notes:
b. Guidance	
c. Praise	
4. Initial Opp. for Ind. Res. (cylinder): a. "Where does it go?" + give object to student	
b. Praise for correct	
c. "No. That's not where it goes" for error	
d. If error: i. Demo	
ii. Guided Trial	
iii. Opp. for Ind. Resp.	
5. Initial demo (cube): a. "When I say, 'Where does it go?' it goes in	*Items 8a-8d and 9 apply to the first attempt at a trial resulting in a correct response. Items 8a-8c, 8e, 8f, and 9 apply to the first attempt at a trial resulting in an error. If an error is made on subsequent attempts at a trial, only Items 8e, 8f (i, ii, iii) and 9 apply.
b. Demo	
6. Initial guided trial (cube): a."Let's try together, where does it go?"	
b. Guidance	
c. Praise	
7. Initial Opp. for Ind. Res. (cube): a. "Where does it go?" + give object to student	
b. Praise and edible for correct	
c. "No. That's not where it goes" for error	
d. If error: i. Demo	
ii. Guided Trial	
iii. Opp. for Ind. Resp.	

Test Trials	Trial Number*												
	1	2	3	4	5	6	7	8	9	10	11	12	13
8. Test Trials: a. Container position													
b. Correct manipulandum													
c. "Where does it go?" + give object to student													
d. Praise and reinforcer for correct													
e. "No. That's not where it goes" for error													
f. If error: i. Demo													
ii. Guided Trial													
iii. Opp. for Ind. Resp.													
9. Response recorded immediately/accurately													
10. Pass criterion was met, or Fail criterion was met													

Scoring for Level 4: Total items scored = ____ Total items scored correctly= ____

FORM TO EVALUATE AN ABLA-R TESTER TESTING LEVEL 5

Scoring: For each item on each trial performed correctly, place a ✓. For items performed incorrectly, place an ✖. For items that do not apply, leave blank. (Slight variations in the instructions are acceptable.)

Name of Tester: _____

Evaluated By: _____

Client's Initials: _____

Notes:

Initial Prompting Sequence	
1. Proper set-up	
2. Initial demo (purple *Can*): a. "When I say, 'Where does it go? It goes in here"	
b. Demo	
3. Initial guided trial (purple *Can*): a. "Where does it go?"	
b. Guidance	
c. Praise	
4. Initial Opp. for Ind. Res. (purple *Can*): a. "Where does it go?" + give object to student	
b. Praise and edible for correct	
c. "No. That's not where it goes" for error	
e. If error: i. Demo	
ii. Guided Trial	
iii. Opp. for Ind. Res.	
5. Initial demo (silver *BOX*): a. "When I say, 'Where does it go? It goes in here"	
b. Demo	
6. Initial guided trial (silver *BOX*): a. "Let's try together, where does it go"	
b. Guidance	
c. Praise	
7. Initial Opp. for Ind. Res. (silver *BOX*): a. "Where does it go?" + give object to student	
b. Praise and edible for correct	
c. "No. That's not where it goes" for error	
d. If error: i. Demo	
ii. Guided Trial	
iii. Opp. For Ind. Res.	

Test Trials	Trial Number*												
	1	2	3	4	5	6	7	8	9	10	11	12	13
8. Test trials: a. Container position													
b. Correct manipulandum													
c. "Where does it go?" + give object to student													
d. Praise and reinforcer for correct													
e. "No, that's not where it goes" for error													
f. If error: i. Demo													
ii. Guided Trial													
iii. Opp. for Ind. Res.													
9. Response recorded immediately/accurately													
10. Pass criterion was met, or													
Fail criterion was met													

*Items 8a-8d and 9 apply to the first attempt at a trial resulting in a correct response. Items 8a-8c, 8e-8f, and 9 apply to the first attempt at a trial resulting in an error. If an error is made on subsequent attempts at a trial, only Items 8e, 8f (i, ii, iii) and 9 apply.

Scoring for Level 5: Total items scored = ____ Total items scored correctly= ____

FORM TO EVALUATE AN ABLA-R TESTER TESTING LEVEL 6

Scoring: For each item on each trial performed correctly, place a ✓. For items performed incorrectly, place an ✗. For items that do not apply, leave blank. (Slight variations in the instructions are acceptable, except the words "Yellow can" and "Red box" must be stated as indicated.)

Initial Prompting Sequence	
1. Proper set-up	
2. Initial demo ("Yellow Can"): a. "When I say,'y-e-l-l-o-w…c-a-n,' it goes in here"	
b. Demo	
3. Initial guided trial ("Yellow Can"): a. "Let's try together, 'y-el-l-o-w-…c-a-n"	
b. Guidance	
c. Praise	
4. Initial Opp. for Ind. Res. ("Yellow Can"): a. "'Y-el-l-o-w-…c-a-n" + give foam to student	
b. Praise and edible for correct	
c. "No. That's not where it goes" for error	
d. If error: i. Demo	
ii. Guided Trial	
iii. Opp. for Ind. Res.	
5. Initial demo ("REDBOX"): a. "When I say,'REDBOX,' it goes in here"	
b. Demo	
6. Initial guided trial ("REDBOX"): a. "Let's try together, REDBOX"	
b. Guidance	
c. Praise	
7. Initial Opp. for Ind. Res. ("REDBOX"): a. "REDBOX" + give foam to student	
b. Praise and edible for correct	
c. "No. That's not where it goes" for error	
d. If error: i. Demo	
ii. Guided Trial	
iii. Opp for Ind. Res.	

Name of Tester: _____

Evaluated By: _____

Client's Initials: _____

Notes:

Test Trials	Trial Number*												
	1	2	3	4	5	6	7	8	9	10	11	12	13
8. Test Trials: a. Container Position													
b. Correct manipulandum													
c. "REDBOX/y-e-l-l-o-w…c-a-n" + give foam to													
d. Praise and reinforcer for correct													
e. "No, that's not where it goes" for error													
f. If error: i. Demo													
ii. Guided Trial													
iii. Opp. for Ind. Res.													
9. Response recorded immediately/accurately													
10. Pass criterion was met, or													
Fail criterion was met													

*Items 8a-8d and 9 apply to the first attempt at a trial resulting in a correct response. Items 8a-8c, 8e-8f, and 9 apply to the first attempt at a trial resulting in an error. If an error is made on subsequent attempts at a trial, only Items 8e, 8f (i, ii, iii) and 9 apply.

Scoring for Level 6: Total items scored = ____ Total items scored correctly= ____

Appendix C

Consent Form: Effects of Early Intervention on ABLA-R Scores in Children with ASD

This consent form, a copy of which we will leave for you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

Carly Cressman is conducting this study as her Master's Thesis, under the supervision of Dr. Martin. The purpose of this study is to evaluate the effects of Early Intervention on the Assessment of Basic Learning Abilities (ABLA-R) in children with ASD. To evaluate these effects, we will compare scores of the ABLA-R for children with ASD who have received different interventions across different time points. We are asking for your consent to have your child evaluated according to the ABLA-R, once immediately after consenting to participate, and again six months later. The ABLA-R is a measure of necessary learning abilities that indicate kindergarten readiness. The test, which can between 10 minutes to one hour to complete, consists of six levels: imitation, position discrimination, visual discrimination, visual identity match-to-sample discrimination, visual non-identity match-to-sample discrimination, and auditory-visual discrimination. One trained evaluator will be doing the testing. They will sit at a table with your child and ask them to respond to different tasks. Examples of tasks include imitating the tester when they place a piece of foam in a can or choosing between a yellow can and a red box when instructed to do so. The tester will bring all testing materials.

Your participation in this study is entirely voluntary. There are no risks involved in this study other than those your child may expose themselves to in daily activities. In taking the test, your child may benefit from learning new examples of discriminations that they may then use in their everyday life. The results of this assessment may be informative regarding a child's ease or difficulty doing a variety of tasks in different settings. A report of your child's findings may be prepared for the use of a professional working with your child if you feel it may be beneficial. The results of this study will increase our knowledge of the effects of Early Intervention programs on Basic Learning Abilities and may thereby contribute to the improvement of such programs.

St.Amant will not share this data or information with anyone other than the research team. Once all the data are collected and analyzed for this project, we plan to share this information with the research community through seminars, conferences, presentations, and journal articles. When presenting the results of this research, researchers will not share names or identifying information.

By signing below, you are indicating that you have understood to your satisfaction, the information regarding participation in the research project and agree to participate. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional

responsibilities. You are free to withdraw at any time without prejudice or consequence. There will be no monetary compensation for participating in this study.

The Psychology/Sociology Research Ethics Board has approved this research. If you have any concerns or complaints about this project, you may contact any of the persons mentioned earlier or the Human Ethics Secretary.

Please check one: _____ I do agree to participate in the study described above, and authorize the researchers to receive service assessment data from St.Amant Autism Programs.
_____ I do not agree to participate in the study described above.

Name (please print): _____

Signature: _____ Date: _____

Yes, I wish to receive a summary of the results of this study when the project is complete (Sept 2018) _____

Principal Investigator's Signature: _____ Date: _____

A copy of this consent form will be provided to you. Thank you for your consideration.

Carly Cressman
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Dr. Toby Martin, Advisor
Director, St.Amant Research Center
Assistant Professor, Psychology
University of Manitoba
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Recruitment Letter: Effects of Early Intervention on ABLA-R Scores

In Children with ASD

Dear Parent:

My name is Carly Cressman, and I am a Master's student in Applied Behavior Analysis in the Psychology Department at the University of Manitoba. My advisor is Dr. Toby Martin. I am writing to you because you have a child who is eligible for entry into kindergarten in the coming year and has a diagnosis of ASD. I invite you to consider participating in my research study. The study will look at how children with ASD with different levels of intervention score on a measure of kindergarten readiness, the Assessment of Basic Learning Abilities (ABLA-R) across a six-month time span.

The purpose of this study is to add to the body of research to see if different levels of intervention (none, part-time, or full-time) make a significant difference in how a child scores on the ABLA-R.

Participation is voluntary. Whether you choose to participate, or whether you continue to participate after starting, will have no impact on any services being provided to you by St. Amant or any other organization now or in the future.

Your participation would involve having your child assessed twice this year with the ABLA-R The assessment will be done either at St.Amant or in your home and will take between ten minutes to one hour to complete. The assessment will be done once immediately after consenting to this project, and once again six months later. The results of this evaluation will be used by researchers to compare them to assessment scores of children who have received a different intervention and see how these scores change between the PKP and the end of Kindergarten. We have provided more details about the study and your rights as a research participant in the Project Description and Consent to Participation Form.

If you are interested in participating or if you would like to receive more information about the project, please respond at your earliest convenience. You can contact me by phone, or email me at cressmac@myumanitoba.ca. We have included a consent form for your records.

Carly Cressman
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Dr. Toby Martin, Advisor
Director, St.Amant Research Center
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