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Behavioral Skills Training for Parents of Children with Autism: Teaching Implementation of the Natural Language Paradigm

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BEHAVIORAL SKILLS TRAINING FOR PARTENTS OF CHILDREN WITH AUTISM: TEACHING IMPLEMENTATION OF THE NATURAL LANGUAGE PARADIGM

by

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The effects of the use of behavioral skills training to teach parents of children with autism to implement the Natural Language Paradigm (NLP) were examined. Data were collected on parent implementation and child behavior. Results indicated that parents of children with autism were able to learn to implement the NLP procedures and continued to implement the procedures accurately throughout the study. Child data indicated that parent-implemented NLP resulted in improvements in child play. These improvements consisted of a decrease in intervals with no toy engagement, a decrease in intervals in which inappropriate play occurred, and an increase in intervals in which appropriate play occurred. Parent-implemented NLP also resulted in an increase in the rate of child vocalizations and an increase in the average number of syllables per child vocalization. Results of a social validity questionnaire indicated that parents found participation in the study to be very useful and the NLP procedures to be not at all difficult. Additionally, parents indicated that they would continue to use the NLP procedure at home often. Parents indicated that the NLP procedures helped their child's language skills very much and were at least somewhat helpful for their child's play skills.

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Introduction

Autism is a pervasive developmental disorder characterized by major deficits in three core areas of functioning: qualitative impairments in reciprocal social interaction, deficits in communication and imagination, and stereotyped patterns of behavior, interests, and activities (American Psychiatric Association, 1994). The language deficits of people with autism are typically characterized by immediate or delayed echolalia, limited functional verbalizations, and unintelligible vocalizations (Koegel, O'Dell, & Koegel, 1987). Since language impairments may result in social isolation, an inability to communicate needs, and a deficit in learning, developing language skills has been a main goal of most behavior-analytic early intervention programs (Sundberg & Michael, 2001). The last 25 years has produced a proliferation of applied behavior-analytic research on language acquisition with an emphasis on discrete-trial techniques, emerging naturalistic approaches, and interventions involving family members. This paper will focus on naturalistic approaches and interventions involving family members.

Naturalistic Language Approaches

Naturalistic teaching strategies were developed to facilitate spontaneous speech acquisition and promote generalization to the natural environment (Charlop-Christy & LeBlanc, 1999). These teaching strategies include 3 key elements. The first element is the use of motivation enhancing techniques (Charlop-Christy, & LeBlanc, 1999) such as the use of varied and powerful reinforcers associated with play identified through repeated preference assessments. The second element is the development of functional relationships between spoken words and access to reinforcers. That is, a spoken utterance results in access to a reinforcer related to that utterance rather than an arbitrary preferred stimulus. In other words, when a child says "ba" in the presence of a ball, he/she receives the ball rather than a highly preferred edible. The third element is the use of variables that facilitate generalization including less structured teaching events in natural environments, use of reinforcers that commonly occur in the natural environment, and intermittent schedules of reinforcement. These variables are consistent with the suggestions given by Stokes and Baer (1977) and Stokes and Osnes (1989) designed to promote generalization. Because most learning occurs in the natural setting, there is less of a need for transfer of stimulus control than would be required if learning occurred in a completely analogue setting.

Naturalistic teaching strategies typically involve child-led or child-initiated learning which Hart and Risley (1982) suggest is designed to "…get elaborated language by waiting for (the child) to initiate conversation about a topic and then responding in ways that ask for more language from that person" (Hart & Risley, p.5). Hart and Risley suggest that tutors delay a learning event until the child with autism initiates an interaction by indicating interest in something, which allows the adult to capitalize on motivative operations. In most cases, teaching sessions begin with a preference assessment and those stimuli that are chosen first in the preference assessment are used throughout the teaching session (Charlop-Christy & LeBlanc, 1999) or until the child indicates an interest in different items. These preference assessments allow teachers to take advantage of shifting motivative operations, defined by Michael (2000) as any environmental change that momentarily alters the reinforcing effectiveness of other events and frequency of occurrence of behaviors that have been reinforced by those events. Substantial research indicates that items for which a child is motivated (i.e., highly preferred items) function more effectively as reinforcers than items that are momentarily less preferred (e.g., Carr, Nicolson, & Higbee, 2000; DeLeon, Fisher, Rodriguez-Catter, Maglieri, Herman, & Marhefka, 2001; Fisher, Piazza, Bowman, & Amari, 1996; Higbee, Carr, & Harrison, 2000).

Naturalistic teaching strategies have several benefits. Naturalistic teaching strategies tend to be less labor and resource intensive than discrete-trial learning. Most traditional operant procedures are difficult and time consuming for parents to implement, which may account for the poor generalization of skills and maintenance of parent-training results with discrete-trial training procedures (Laski, Charlop, & Schreibman, 1998). Most naturalistic language interventions are relatively simple and fun because they incorporate play which allows teaching to occur during times that parents typically spend time with their child rather than during additional structured teaching times. Parents generally find naturalistic teaching approaches enjoyable (Laski et al.) and studies have shown that programs designed to fit into the daily lives of families, referred to as ecological interventions, decrease family stress while producing gains in child communication (e.g., Koegel, 2000; Koegel, Bimbela, & Schreibman, 1996; Schreibman, Kaneko, & Koegal, 1991). In this way, naturalistic strategies may be an especially good option for those parents without the resources to have a full-time early intervention program for their children.

Several different naturalistic techniques have empirical support including incidental teaching developed by Hart and Risley (1968) for use with economically disadvantaged preschoolers. This procedure has since been frequently used with children with autism using the following procedures (Fenske, Krantz, & McClannahan, 2001). First, a natural environment setting is arranged that includes materials of interest to the child that are visible but not accessible for the child with autism. Second, the adult waits for the child to initiate interaction about an object of interest in the form of a gesture or a vocalization. Third, the adults requires a more elaborate language response or attempt before finally providing the desired object contingent on the elaborated language or approximations to speech. Incidental teaching has been used to teach multiple skills for children with autism (e.g., Brackenbury & Fey, 2003; Farmer-Dougan, 1994; ; Lennox & Brune, 1993; McGee, Almeida, Sluzer-Azaroff, & Feldman, 1992; McGee, Morrier, & Daly, 1999; Miranda-Linne & Melin, 1992) and has evolved over the 35 years since its initial description with the most recent version referred to as modified incidental teaching sessions (MITS; Charlop-Christy & Carpenter, 2000). MITS follows the typical procedures for incidental teaching but follows the initial child-initiated learning event with subsequent practice trials to increase the number of learning opportunities. Other popular procedures with empirical support include milieu teaching (Peterson, Carta, & Greenwood, 2005, Yoder & Warren, 2002; Hancock & Kaiser, 2002; Peterson, 2001; Kaiser, Hancock, & Nietfeld, 2000; Hemmeter & Kaiser, 1994, Alpert & Kaiser, 1992), the mand-model procedure (e.g., Mobayed, Collins, Stangis, Schuster, & Hemmeter, 2000; Hemmeter, Ault, Collins, & Meyer, 1996) and the natural language paradigm (NLP) which will be the focus of the remainder of this paper.

Natural Language Paradigm Principles and Procedures

Koegel, O'Dell, and Koegel (1987) developed the natural language paradigm (NLP) as an alternative to discrete-trial based instruction for non-verbal children with autism. NLP involves several steps described in the initial studies and further delineated by Charlop-Christy, LeBlanc, and Carpenter (1999). NLP begins with the presentation of a small (2-4) array of items in a preference assessment. The child selects a stimulus and access to that stimulus is prevented to capitalize on motivative operations as described above. Yoder, Kaiser, Alpert, and Fischer (1993) found that making use of the motivation of the child resulted in greater noun acquisition than when the teacher recruited the child's attention for teaching. Evidence indicates that children with autism learn initial words more quickly and engage in longer periods of sustained conversation if their interests are considered by incorporating preferred items and varying stimuli from trial to trial depending on the child's interest (Koegel & Koegel, 1995; Koegel et al., 1987; Koegel, Dyer, & Bell, 1987).

The therapist then models an appropriate, play-based action with the stimulus and a corresponding descriptive vocalization about that stimulus (e.g. "The frog is hopping") until the child attempts imitation. The occurrence of a vocalization, even an attempt that does not closely approximate the desired sound, results in immediate contingent access to the selected item. Reinforcement of verbal attempts using a loose shaping criterion rather than a strict one increases the chance that the child will come into contact with reinforcement. For nonverbal children, reinforcing each attempt is especially important in order to make the acquisition of their first expressive words more rapid and consistent (Koegel & Koegel, 1995). Children with severe communication delays achieve higher percentages of correct speech production and have more positive affect when they receive reinforcers for each attempt rather that being rewarded only for responses equal to or better than previous responding (Koegel & Koegel).

After a reasonable period of access to the item, the therapist states that it is "my turn" and retrieves the item to initiate a new trial and model a new vocalization or action with that toy (e.g., "Green frog"). This process continues several times and then the child is allowed to select a new stimulus for learning trials. Turn-taking increases the similarity between NLP sessions and natural play interactions and adds a game-like atmosphere to the sessions, which may facilitate engagement in learning (Charlop-Christy & LeBlanc, 1999). The same toy is used to model several phrases and the same phrase is used for multiple toys to increase generalization (Stokes & Baer, 1977) and reduce stimulus overselectivity (Weisberg & Thiesfeldt, 1996). For example, training with multiple exemplars may prevent the word "red" from becoming associated with only a ball or the word "jump" being associated with only a frog. In addition, by frequently changing the stimuli being used, the probability of satiation is decreased.

Koegel et al. (1987) conducted the first study using NLP to incorporate aspects of natural language teaching into traditional discrete-trial teaching techniques and increase verbal language acquisition for nonverbal children with autism. They used a multiple baseline design to compare NLP as an intervention to an analogue, discrete-trial baseline condition. The baseline discrete-trial condition consisted of the therapist holding up a stimulus and prompting the child to "Say______," followed by shaping using social and edible reinforcers. The authors found notable increases in both imitative utterances (correct child responses or approximations of the target word occurring within 5 s of the clinician's model) and deferred imitative utterances (correct responses or approximations that did not immediately follow a clinician model), after implementation of the NLP as well as an increase in spontaneous utterances (correct child responding or approximations with no direct clinician model of the target word within the last five clinician utterances) and an increase in new words produced. It was also observed that both children, who had been nonverbal prior to the beginning of the study, produced a number of utterances outside of the clinic.

Laski et al. (1988) extended this work on NLP by teaching parents to implement the procedure with their nonverbal children with autism and comparing parent- implemented NLP to a free play baseline using a multiple baseline design. The researchers trained the parents by discussing the NLP procedures with them, having them observe a therapist doing NLP for two sessions, and conducting *in vivo* training with the child with autism with initial immediate feedback while the parent conducted NLP sessions and subsequent delayed feedback. All parents received between 5 and 9 training sessions depending on the time required to reach the mastery criteria of a) reinforcing 85% or more of communicative attempts, b) passing control of the stimuli between themselves and the child in at least 50% of the intervals, c) changing stimulus materials and/or the words modeled in at least 50% of the intervals, and d) demonstrating shared control at least five times during the session. After being trained in NLP, parents were instructed to gather some toys and play with their children. All parents demonstrated an increase in the number of intervals during which they presented a discriminative stimulus to which the child could respond vocally while children displayed an increase in the number of intervals in which they produced vocalizations.

One final study has evaluated the effects of NLP on spontaneous language and play (Hawkins, 1997) using a modified version of NLP in which specific play sequences were taught by the parents of children with either autism or Down Syndrome. Each step of the sequence contained both a language component (e.g., “airplane”, “look”) and a nonverbal component (e.g., moving a toy airplane through the air). Session began with selection of toys followed by a 5 s delay. If no play was initiated during that 5 s, the parent said, “Let’s play ______.” If the child then did not imitate the play sequence, the parent verbally cued the child through the sequence one time and then terminated play. If the child imitated a part of the sequence, the parent continued modeling the sequence until the child stopped responding and then terminated play. The procedure was then conducted with a sibling in the room as well. All three participants displayed an increase in spontaneous responding when their mother implemented NLP in a 1:1 setting. However, in a generalization probe with both parent and sibling present, none of the children displayed an increase in spontaneous responding. Additionally, 2 of the 3 children displayed an increase in imitation with the parent and when the sibling was present. Interestingly, the one child who did not display an increase with the parent alone did display an increase with the sibling present.

Parents are the natural choice as implementers of NLP but only two studies have been conducted to investigate parent training with this procedure. These studies varied in terms of the specificity of the description of their training procedures and the presentation of the degree to which parents could accurately implement all aspects of NLP (i.e., procedural integrity). Recent studies suggest that behavioral skills training (BST) might prove beneficial as a structured procedure for conducting parent training to teach parents of children with autism to implement NLP. The following section briefly reviews the procedures and empirical support for BST.

Behavioral Skills Training

Behavioral skills training consists of four procedures: instructions, modeling, rehearsal, and feedback. Instructions are meant to describe the appropriate behavior to the learner while modeling involves demonstration of the accurate target behavior by a competent performer. Rehearsal provides the opportunity for the learner to practice the behavior and feedback involves differential reinforcement for accurate performance and supportive corrective feedback to address in errors in performance.

Miltenberger (2001) described five important tactics for increasing the effectiveness of instructions. First, only provide instructions when the learner is effectively attending. Second, provide the instructions at a level understandable to the learner. Third, have a credible person provide the instructions. Fourth allow the learner to repeat the instructions so the teacher can be sure the learner heard the instructions correctly and to rehearse the instructions immediately after they are given. Finally, instructions should be paired with modeling or demonstration of the appropriate behavior.

Miltenberger (2001) also describes eight important tactics for increasing the effectiveness of modeling. First, provide reinforcement for correctly modeled behavior. Second, use models similar to the learner or with high status. Third, model behavior that is developmentally appropriate for the learner. Forth, model the behavior in the appropriate context. Fifth, repeat the modeled behavior until the learner is able to imitate it. Sixth, model the behavior in a variety of ways. Seventh, only model the behavior when the learner is paying attention. Finally, immediately follow modeling with rehearsal opportunities.

There are six important tactics for increasing the effectiveness of rehearsal and feedback (Miltenberger, 2001). First, rehearse the behavior in the proper context. Second, practice easy behaviors first in order to ensure success. Third, provide immediate reinforcers for correct rehearsal and immediate corrective feedback for incorrect rehearsal. Fourth, always provide praise for some aspect of the behavior and provide descriptive feedback positively. Fifth, provide corrective feedback on one aspect of the behavior at a time. Finally, continue rehearsal and feedback until the behavior is correctly demonstrated at least a few times.

BST training has been used to teach children and individuals with developmental disabilities several types of behavior including fire safety skills, gun safety skills, assertiveness, abduction prevention, and social skills (e.g., Bakken, Miltenberger, and Schauss, 1993; Elder, Edelstein, & Narick, 1979; Johnson, Miltenberger, Egemo-Helm, Hostad, Flessner, & Gatheridge, 2005; Jones & Kazdin, 1980; Miltenberger, Flessner, Gatheridge, Johnson, Satterlund, & Egemo, 2004; Olsen-Woods, Miltenberger, & Formman, 1998; Poche, Brouwer, & Swearingen, 1981; Poche, Yoder, & Miltenberger, 1988). BST has also been used to train parents to interact with their children. For example, Forehand et al (1979) used BST to teach parents of typically developing noncompliant children to provide reinforcement, make appropriate requests, and implement time-out procedures. Additionally, Bakken et al. (1993) taught parents of children with mental retardation to provide praise and appropriate attention to their children. The current study extends the literature on behavioral skills training by using it to teach parents of children with autism to implement NLP.

Purpose of Current Study

Research on NLP has shown it to be an effective way to teach language to children with autism. However, due to the limited number of research studies that have been conducted in the area, there is need for further empirical support. Two studies have investigated the effects of parent implemented NLP (Laski et al., 1988; Hawkins, 1997) with good to limited information presented about the specifics of their training procedures and the procedural integrity achieved by the parents during intervention. While BST has been used to teach a wide variety of behaviors, there have been relatively few studies on the use of BST to teach parents of children with disabilities to interact with their children. The current study is a systematic replication of the previous two parent training studies using BST as a specific parent training procedure and providing a more detailed examination of accuracy and error patterns of parents during training and implementation of NLP to determine if specific steps are consistently more difficult than others. In the present study, the parents of children with autism were trained using BST to implement NLP with their children with autism. After reaching training criterion, the parents implemented NLP with their child with autism and data were collected on procedural integrity as well as child's vocalizations and play.

Method

Participants

The participants in this study were three children with autism aged 4-5 with little to no spontaneous vocal-verbal behavior who have an appropriate parent. Vocal-verbal behavior involves those verbal operants described by Skinner (1957) (e.g. mand, tact, intraverbal, echoic). Additional participants in the study were the mothers of the children with autism. The only requirement the mother was required to meet was a willingness to undergo training to learn NLP to use with the child with autism. Participants were recruited from local agencies including schools, local organizations for parents of children with autism, and community mental health care providers.

Marcus was a 4-year-old African-American boy. He had a mode score 2 on the BLAF. He had vocal play consisting of frequent babbling with varied intonation and a few words (BLAF score of 4), no spontaneous mands (BLAF score of 1), was able to imitate a few specific sounds or words (BLAF score of 2), was able to tact 1 to 5 items (BLAF score of 2), and did not have any intraverbals (BLAF score of 1). Marcus was untestable on the PPVT. His GARS score was 103. To summarize, Marcus was able to imitate one-word phrases but produced almost no spontaneous language. His mother was a 35-year-old, married, elementary school teacher with some graduate level education. Marcus had three brothers ranging from 15 to 7 years of age.

Garrett was a 4-year-old Asian-American boy. He scored an average of 3.4 on the BLAF. He had vocal play consisting of frequent babbling with varied intonation and a few words (BLAF score of 4), was able to imitate many different words (BLAF score of 4), was able to spontaneously request 5 to 10 items (BLAF score of 4), was able to tact 6 to 15 items or actions (BLAF score of 3), and was able to fill-in a few missing words (BLAF score of 2). Garrett was untestable on the PPVT. His GARS score was 106. In summary, Garrett was able to imitate one to two word phrases and exhibited less than five spontaneous mands. Garrett's mother was a 38-year-old, married, university professor with a Ph.D. Garrett was an only child.

Caleb was a 5-year-old Caucasian boy. He averaged a 4 on the BLAF. Caleb's vocal play consisted of frequent babbling and many clearly understandable words (BLAF score of 5), was able to clearly imitate any word or simple phrase (BLAF score of 5), used 5 to 10 words to ask for reinforcers (BLAF score of 3), was able to tact over 100 items or actions (BLAF score of 5), and could fill-in 10 phrases or answer 10 questions (BLAF score of 3). Caleb had an age equivalent score of 4 years 11 months on the PPVT. His GARS score was 95. He had significant spontaneous language. However, this language was almost exclusively about trains and often was delayed echolalia. In his case, NLP was used to expand his play and verbal repertoire to toys other than trains. When trains were removed from the play room, Caleb's vocalizations dramatically decreased. Caleb's mother was a 34-year-old, married, stay at home mom with a high school education. There were two other children in Caleb's family. He had a brother who was one year-and-a-half, and a sister who was 4.

Preliminary Assessment Measures and Selection Criteria

Confirmatory support for the diagnosis was obtained by having the parent of each child complete the Gilliam Autism Rating Scale (GARS; Gilliam, 1995), a 56-item rating scale which estimates the severity of autism and has acceptable psychometric properties (i.e., coefficients of reliability for all subtests are in the .80s and .90s). The GARS is normed on a sample of children with autism so, an Autism Quotient of 90-110 indicates typical presentation of autism. Children with an autism quotient of 90 or higher qualified for this study. The verbal operants were assessed using the Behavior Language Assessment Form (Sundberg & Partington, 1998). This short multiple-choice style assessment provides a brief screen of numerous functional categories of verbal behavior including cooperation, mands, imitation, matching, receptive skills, tacts, intraverbals, letters and numbers, and social interaction. For each category, parents select an answer (between one and five) that best describes the skills of their child. A score of one is indicative of fewer skills while a five indicates a high level of skills. For this study, children with some vocal imitation but little to no spontaneous vocalizations were selected. The participant's verbal behavior was also assessed with the Peabody Picture Vocabulary Test III (PPVT-III; Dunn & Dunn, 1997), a measure of receptive labeling. The PPVT-III consists of four training items and 204 test items divided into sets of 12. The sets are progressively more difficult. Each item consists of 4 black-and-white drawings and the child is to select the picture that is a best fit for the word presented by the examiner. Scores are presented in terms of age-equivalence. The PPVT-III has a test-retest reliability score ranging from .91 to .94. The data provided by the PPVT-III were used to further determine the language level of the participant, but were not used as exclusionary criteria.

Setting and Sessions

A portable video camera was placed in the room to record each session. Sessions for Marcus were conducted at Western Michigan University in an 11' by 12'4" playroom containing a child-sized table, a puppet theater, a trampoline, and shelves filled with toys and books. Sessions for Garrett were conducted in a playroom in his home containing a couch, a television, a computer, bookshelves, and toys. Sessions for Caleb were conducted in a clinic room at Utah State University. The room contained a computer, a child-sized table, bookshelves, and bins full of toys. Generalization sessions were also conducted in a playroom at Caleb's home. The playroom contained a couch, a bed, a basketball hoop, and bins full of toys. Between three and six 10-min sessions were run per visit. Visits were conducted up to two times a week.

Experimental Design

Experimental control was demonstrated using a non-concurrent multiple baseline design across participants. That is, the duration of the baseline condition was successively longer across participants and the initiation of intervention was staggered. By varying baseline lengths, the multiple baseline design controls for maturation and provides multiple demonstrations of behavior change when and only when the intervention is implemented. Visual inspection of the data was used to determine when phase changes were necessary. Phase changes occurred when the data levels and trends were stable.

Experimental Procedure

Phase 1: Naturalistic Play Baseline. A baseline condition was conducted as a comparison for later phases of NLP, similar to Laski et al. (1988) and Hawkins (1997). During this condition, the parent was asked to play with the child with autism and try to get him to talk. No further explanation as to how to get the child with autism to talk was given.

Phase 2: Parent Training. Parents were trained to implement the version of NLP procedures outlined in Koegel et al. (1987) and Laski et al. (1988) and as described by Charlop-Christy et al. (1999). The NLP procedure used for this study is diagramed in Appendix B. The parent sat facing the child and provided an assortment of toys, books, and functional items. The parent conducted a brief preference assessment by placing an array of three toys/objects in front of the child and asking him to choose one. The parent then removed all items and prevented access to the chosen item while modeling an appropriate action with the item (e.g., rolling a ball) for approximately 5-s to allow the opportunity for an unprompted/spontaneous vocalization. If no vocalization occurred, the parent provided a model vocalization that described the action of the object (e.g. "ball rolls"). The parent waited for an additional 5-s for the child to imitate the appropriate vocalization. If the child did not make a vocalization, the parent continued to model the phrase up to three times. If a vocalization occurred either before or after the vocal model, the parent immediately provided access to the item for approximately 30-s. The parent continued to repeat the relevant phrase several times while the child played with the object. After about 30-s, the parent said, “my turn” and removed the toy. The parent then repeated the procedure using a different relevant vocalization (e.g., “red ball”). After a few exchanges with the selected toy, or when the child stopped responding, the parent presented a new array and allowed the child to select a new toy. If the parent modeled the phrase three times and the child still did not make a vocalization, the parent conducted a second preference assessment and began the procedure again with a new stimulus.

Parents were trained to implement these NLP procedures using BST with a videotape of implementation for modeling. During training, parents watched a video of a psychology professor implementing NLP with a child with autism and the experimenter reviewed the components of NLP observed in the video (i.e., instructions and modeling). Next, the parent practiced each individual component with the experimenter while immediate feedback was provided until she performed that component correctly on 9 of 10 NLP trials (i.e., rehearsal and feedback). When the parent could perform each component fluently, she conducted full-length NLP sessions with a confederate with feedback provided on overall performance at the end of session (i.e., additional rehearsal and feedback). These sessions continued until the parent completed three sets of 10 NLP trials with at least 90% of trials with all components of every trial implemented accurately. Each parent was trained in a simplified data collection procedure so that she could collect data on NLP at home following completion of the study. Parents were taught to score the video initially used in training until they could score two consecutive 10 trial blocks at 90% accuracy or higher (See Appendix C for sample data sheet).

Phase 3: Parent Implemented Natural Language Paradigm. Parents were instructed to play with their child again and use NLP to try to get them to talk. If implemented accurately, the parent completed all steps of NLP as described above. Throughout the NLP phase, the experimenter provided praise and feedback as necessary at the end of a session. Prior to the study, a criterion was set for retraining such that any parent implementing less than 85% of learning opportunities incorrectly would be retrained. However, no parent fell below that criterion and no retraining was necessary.

Response Measurement and Interobserver Agreement

Child Behaviors: Vocalizations and Play. The primary dependent variable was vocalizations operationally defined as any word or word approximation. Individual operational definitions and examples were developed for each child based on observations of their interactions with family members (See Appendix A). For example, for Caleb, a vocalization was any recognizable word that was related to the object(s) in front of him. As was mentioned earlier, Caleb had a very strong vocal repertoire relating to trains. As a result, he initially made vocalizations about trains in the presence of other toys such as marbles. Therefore, we required that his vocalizations were relevant to the toys in front of him. Data were collected on the frequency of spontaneous and prompted vocalizations as the primary measure used to make phase changes. A spontaneous vocalization was defined as any vocalization that occurred before the parent provided a question or modeled an appropriate vocalization. Items were present and actions may have been occurring with those items but no vocal prompts preceded the child's response. A prompted vocalization was defined as any vocalization that occurred after the parent's question or modeled vocalization about an item. A multiword vocalization was scored as only one vocalization rather than scoring each individual word as a separate vocalization. These data included the vocalizations emitted at the beginning of the trial and the vocalizations emitted while the child had access to the toy (See Appendix D for sample data sheet). Mean length of utterance (MLU) information was also collected for each vocalization and was calculated by computing the mean number of syllables produced per vocalization (See Appendix D for sample data sheet).

Additionally, data was collected on the occurrence and nonoccurrence of inappropriate and appropriate play within each trial (See Appendix E for sample data sheet). Inappropriate play was defined as any aggressive use of the object, throwing the object, or using the toy in a repetitive or stereotyped way. Appropriate play was defined as using the toy in the manner in which it was intended.

Parent Behavior: Procedural Integrity for NLP. The experimenter coded parent implementation of NLP during the final phase to determine the accuracy of procedural integrity. For each trial, the experimenter coded the following behaviors: a) providing an assortment of stimuli for the child to select from, b) preventing access to items, c) providing a model of an appropriate vocalization after a delay of 5-s, d) properly reinforcing relevant responses, e) presenting the same item with a new model prompt and f) continuing to model during the play interval (See Appendix F for sample data sheet). Each behavior was coded independently in order to provide information as to whether a specific step of the procedure was more difficult to complete and all behaviors had to be scored as correct for a trial to be considered correct, a conservative measure of overall integrity. Overall integrity was calculated for the percentage of trials implemented correctly by dividing the number of correctly implemented trials by the total number of trials conducted. A similar formula was used to determine the accuracy for each individual behavior.

Interobserver Agreement (IOA). A second independent trained observer scored parent and child behavior in the appropriate phases for at least 25% of all sessions, distributed evenly across each of the three phases as relevant (i.e., no child data in parent training). IOA was assessed using the point-by-point agreement method for vocalization type, play data, and parent behavior. In calculating IOA for parent behavior, a trial was scored as an agreement if both observers agreed on whether or not the parent completed each step. In other words, the observers had to agree on each step in order for that trial to be scored as an agreement. The formula used to calculate the agreement was the number of agreements divided by the number of agreements plus disagreements multiplied by 100%. For the frequency of vocalizations, a frequency ratio was used to calculate IOA. That is, the smaller number of vocalizations was divided by the larger number multiplied by 100%. IOA for parent behavior averaged 96% (range 80% to 100%). This IOA calculation is conservative because the two observers had to agree on every step of the trial in order for that trial to be considered an agreement. In other words, the observers could agree on 5 of the 6 steps but that trial would still be considered a disagreement. IOA on play data averaged 98% (range 90-100%) and IOA on vocalization data was 100% across all sessions.

A social validity questionnaire was given to parents who participated in this study (see Appendix G for a sample questionnaire) to complete and return anonymously. The questionnaire consisted of 6 questions with likert-scale answers. Questions related to parents opinions on the difficulty and usefulness of NLP and opinions on the effects of NLP on their children's language and play skills. The final question asked the parents to list the most difficult step in the NLP procedure.

Results

All three parents were able to learn the NLP procedure rapidly when trained using behavioral skills training (see Figure 1). Each of the three parents reached the training criterion of three consecutive sessions at 90% accuracy or higher in three rehearsal sessions indicating very few errors during training. Marcus's mother required one additional rehearsal session before she reported that she was comfortable enough to implement the procedure with Marcus. After the parents reached the training criterion and expressed comfort, they implemented the procedure with their children. All three parents' accuracy remained above 90% for the duration of the study. As a result, no retraining was necessary. Figure 2 depicts procedural integrity on each of the steps within the NLP procedure. The blue bars depict the percentage of trials in which a given step was implemented correctly demonstrating that integrity was high for all steps (range 78-100%). However, 73% of errors occurred during the delay step as indicated by the purple bars, which depict the percentage of all errors accounted for by each step. These data are representative of the patterns of all 3 parents. That is, parents had the most difficulty providing a delay during which the child was able to spontaneously emit a vocalization, though they still did this step accurately for most trials. In the social validity questionnaire, parents reported that they did not have trouble with any particular step. The parents were accurate in their reports. While 73.3% of errors did occur in the delay step, the parents still correctly implemented this step nearly 80% of the time.

Figure 3 depicts the play data for the three participants. Caleb exhibited appropriate play during nearly 100% of intervals during baseline. As a result, NLP did not produce significant changes in the percentage of intervals with appropriate and inappropriate play. During baseline, Garrett played appropriately during between 40 and 57.5% (average of 50.5%) of intervals, inappropriate play occurred during between 2.5 and 12.5% (average of 10%) of intervals. Garrett did not play at all during 32.5 to 55% (average of 45%) of intervals. Once NLP was implemented, his appropriate play increased immediately. Garrett exhibited appropriate play during an average of 84.1% of intervals throughout the NLP sessions and an average of 92% of intervals during the last three treatment sessions. During NLP, Garrett's percent of intervals with inappropriate play remained relatively stable (7.3% of intervals overall, 11.5% of intervals in last three sessions). Garrett's percentage of intervals without any play decreased during intervention (10.4% of intervals overall, 6.5% of intervals in last three sessions).

During baseline, Marcus exhibited appropriate play during 51.2% of intervals. This average was slightly lower during the last three sessions of baseline, 40% of intervals. He exhibited inappropriate play during 10.9% of intervals (11.6% of intervals for the last three sessions). Marcus did not exhibit any play during 40.6% of intervals throughout baseline. This was slightly higher during the last three sessions of baseline, 51.7% of intervals. Following implementation of NLP, Marcus exhibited appropriate play during an average of 71.8% of intervals (80.7% of intervals in the last three treatment sessions). The intervals in which Marcus exhibited inappropriate play decreased to an average of 2.51% (.83% in the last three treatment sessions). Additionally, the percentage of intervals in which Marcus did not play at all decreased to 27.9% (19.5% of intervals for the last three treatment sessions). Thus, play improved for two of the three participants and a ceiling effect was observed for the other participant.

Language was examined in several different ways. First, the rate of vocalizations was tracked for each child. Second, the proportion of spontaneous versus prompted language was tracked. Next, the MLU and the percentage of vocalizations that were multiword versus one word were tracked.

Figures 4 and 5 depict prompted and spontaneous language in two different ways. Figure 4 depicts the rate of each type of vocalizations for each participant. Thus, total vocalizations during the session, including any that occurred during access to the toy, was divided by the number of minutes for that session. During baseline, Caleb emitted low rates of both spontaneous and prompted vocalizations with a slightly higher rate of spontaneous vocalizations. Once NLP was implemented, Caleb's rate of spontaneous vocalizations increased from the baseline rate of slightly less than 1 vocalization per min. to approximately 3.1 vocalizations per min. The rate of prompted vocalizations remained low and dropped to zero in the last three NLP sessions.

During baseline, Garrett's average rate of spontaneous vocalizations was .35 vocalizations per minute while his average prompted rate was 2.6 vocalizations per minute. In the NLP phase, his spontaneous rate steadily increased, with the rate in his final session being 8.5 vocalizations per minute. As Garrett's spontaneous vocalizations increased, his prompted vocalizations decreased to near zero levels.

Marcus emitted near zero rates of both spontaneous and prompted vocalizations during baseline. The last three data points in baseline averaged a spontaneous rate of zero vocalizations per minutes and .17 vocalizations per minute. During NLP sessions, his rate of prompted vocalizations increased to an average of 1.16 vocalizations per minute with the last three sessions averaging 1.67 vocalizations per minute. His spontaneous vocalizations increased slightly to an average of .13 vocalizations per minute with the last three sessions averaging .2 vocalizations per minute. Thus, excellent effects were observed for two participants and modest effects were observed for the third on this dependent variable.

Figure 5 depicted the percentage of NLP trials with spontaneous and prompted vocalizations. This measure does not include any vocalizations occurring between trials or while the child had access to the item but illustrates the child responses that were controlling parent delivery of the toy to the child. Thus, these graphs show only treatment sessions and depict the percentage of trials during which the participants received access to the toys due to a spontaneous or a prompted vocalization. Caleb and Garrett's data followed similar patterns. For the first session, the majority of trials consisted of prompted vocalizations. However, by the second session, the majority of trials consisted of spontaneous vocalizations. During the first few sessions for Marcus, he did not gain access to the toy during 20-30% of trials because he did not produce any vocalizations. By the third NLP session, he received access to the toys for 100% of trials through prompted vocalizations. Finally, in the last two sessions, he received access to the toys through spontaneous vocalizations 10-20% of the time.

Figure 6 shows the mean length of utterance data for each participant. During baseline, Caleb emitted an average of 2.47 syllables per vocalization. Caleb's average MLU during NLP sessions increased to 3.55 syllables per vocalization. During the last three treatment sessions, Caleb's average MLU was 3.99 syllables per vocalization. Garrett's average MLU during baseline was 1.39 syllables per vocalization. This increased slightly to 1.68 syllables per vocalization during NLP sessions. Marcus's average NLP during baseline was 2.13 syllables per vocalization. This remained relatively stable during treatment sessions, 2.02 syllables per vocalization. Thus an increase in MLU was observed for one participant only.

A social validity questionnaire was distributed to all three parents in order to assess the acceptability of the NLP treatment. Two of the three parents returned the questionnaire and both ranked the NLP treatment very highly in all categories (see Table 1). Both parents rated their participation in the study as "very useful." Both parents rated the procedure to be "very easy." Both parents stated they would continue the procedure at home "often." Both parents stated that the intervention helped their child's language skills "very much." One parent rated the helpfulness of the intervention in terms of their child's play skills as "very helpful" and one parent ranked it as "somewhat helpful."

Discussion

The results of this study demonstrate that all three parents were able to acquire the skills necessary to accurately implement NLP as a result of behavioral skills training. Additionally, as a result of parent-implemented NLP, all three children demonstrated increases in rate of prompted vocalizations and unprompted vocalizations. Two of the three children demonstrated an increase in mean length of utterance, appropriate play, a decrease in inappropriate play, and a decrease of intervals in which the child was not engaged in any play.

Results of this study are consistent with the findings of Laski et al. (1988) that parents are able to learn to accurately implement NLP. In the Laski study, parent training consisted off (a) a discussion of the NLP procedures, (b) two observations of therapists conducting NLP with the child, and (c) in vivo training. For the first few in vivo training sessions, the experimenter remained in the room and provided immediate feedback to the parents. After the first few in vivo sessions, the experimenter observed the parent through a two-way mirror. Parents met training criterion within nine, 15-minute sessions. The parent-training procedures utilized in the present study were similar to those used by Laski et al.. However, one additional component was utilized in the present study, rehearsal with a research assistant. After three rehearsal sessions, parents were able to generalize implementation with their child at a minimum of 90% accuracy. A potential benefit of adding a rehearsal component is that parents may be more skilled in the procedures of NLP prior to implementation with their children. Future research is needed in order to determine if this would have a differential effect on child behavior. It is possible that more accurate parent implementation may lead to more rapid and profound changes in child behavior. The ability of parents to accurately implement NLP after behavioral skills training is consistent with previous research on behavioral skills training.

The results of this study are consistent with the results of Koegel et al (1988) in terms of prompted and spontaneous vocalizations. In this study, all three children made immediate gains in language. They continued to make gains throughout treatment. Two of the three children made the most significant gains in spontaneous vocalizations. These two children had the most language during baseline. The third child made gains primarily in prompted vocalizations with slight increases in spontaneous vocalizations during the last few treatment sessions.

The present experiment also produced similar results as the Hawkins (1997) study in which a modified NLP procedure was found to result in increased spontaneous responding in terms of play actions and vocalizations. The Hawkins study taught specific play sequences to children with autism. The present study used traditional NLP procedures and still demonstrated an increase in appropriate play and a decrease in both intervals with inappropriate play and intervals without any play. This suggests that varied modeling alone may be sufficient to produce changes in children's play repertoires. Parents do not have to model specific play sequences with the children.

This study also presents information on NLP which has not been presented in previous studies. For example, the present study indicates that NLP procedures produce an increase in the mean length of utterance for some children with autism. Additionally, as was stated earlier, results of this study are consistent with those of Laski (1988). That is, parents are able to accurately implement NLP procedures. An analysis of the errors made by parents indicates that the most difficult component for parents to implement is the delay, although they implement this step accurately most of the time. Incorrect implementation typically consisted of parents providing an immediate vocal prompt rather than waiting 5-s to provide the opportunity for spontaneous responding. Additionally, a social validity questionnaire indicated that parents generally enjoyed the procedure, thought it was easy to implement, and felt it had a beneficial impact on their children's play and language skills. Parents also indicated that they would likely use the procedure often in the future.

One potential limitation of the research study is the use of partial interval recording to measure play behavior, which may have overestimated the occurrence of behavior. However, partial interval recording was used during both baseline and treatment phases and so any overestimation should be consistent across phases. Also, partial interval recording was used for both appropriate and inappropriate play so any overestimation would be reflected in both appropriate and inappropriate behavior. Additionally, this study did not measure vocalizations outside of the NLP sessions. Therefore, we do not know how lasting the effects of NLP are.

Future research on NLP could further emphasize generalization. That is, future studies could directly examine whether training produces better results if it is conducted in a home setting rather than in a clinical setting. In the present study, two parents received training in a clinic setting and one received training in a home setting, but no direct experimental comparison was made and the participant numbers are too small to draw any conclusions.

Another area of future research for NLP is the area of sibling-mediated intervention. There is a substantial literature suggesting that the use of nonhandicapped peers as tutors for children with autism is effective in teaching a number of behaviors including social skills, self-help skills, and academic skills (e.g. Halle, Garbler-Halle, & Bemben, 1989; Kamps, Royer, Dugan, & Kravitz, 2002; Mangus, Henderson, & French, 1986). Celiberti and Harris (1993) suggest that the use of siblings as tutors flows naturally out of this literature: "The use of sibling resources is consistent with the belief that children with autism could benefit from intensive and varied exposure to appropriate models of language, play, and social behaviors beyond those present in the school setting" (p. 574). They also suggest that siblings may, when available, serve as better tutors than classroom peers in that the sibling has increased intrinsic motivation to interact with the child. This is due to the fact that classroom peers have many potential sources of playmates or social reinforcement whereas the sibling of a child with autism may have only that child with autism who could potentially serve as a playmate in the home setting.

Related to sibling implemented NLP, it might be valuable to examine the effects of pyramidal training in which parents trained in NLP then train their children to conduct NLP with their impaired sibling. The current study has replicated the findings of Laski et al. (1988) demonstrating that parents can be taught to accurately implement NLP. It ought to now be determined whether parents can serve as trainers for other family members, such as their spouses and/or other children. Curricula designed to improve skills or decrease problem behavior in children with autism require correct and consistent implementation by everyone that comes in contact with the child on a regular basis, and NLP is no different. Unfortunately, due to cost and time constraints, training typically centers only on the primary caregiver (Allen & Warzak, 2000; Laski et al., 1988; Neef, 1995). A more effective way to ensure consistent application of treatment may be to utilize pyramidal training.

In summary, this study provides additional empirical support for the beneficial effects of NLP when implemented by parents of children with autism. Each of three children experienced beneficial effects in the areas of frequency, length, and spontaneity of utterances or appropriate play. Parents accurately implemented all steps of the intervention and found the procedure easy and beneficial. Thus, the naturalistic teaching strategy NLP appears beneficial for families of children with autism when parent training is conducted using BST.

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Figure 1. Percent of Trials With Correct Parent Behavior During Training and Treatment

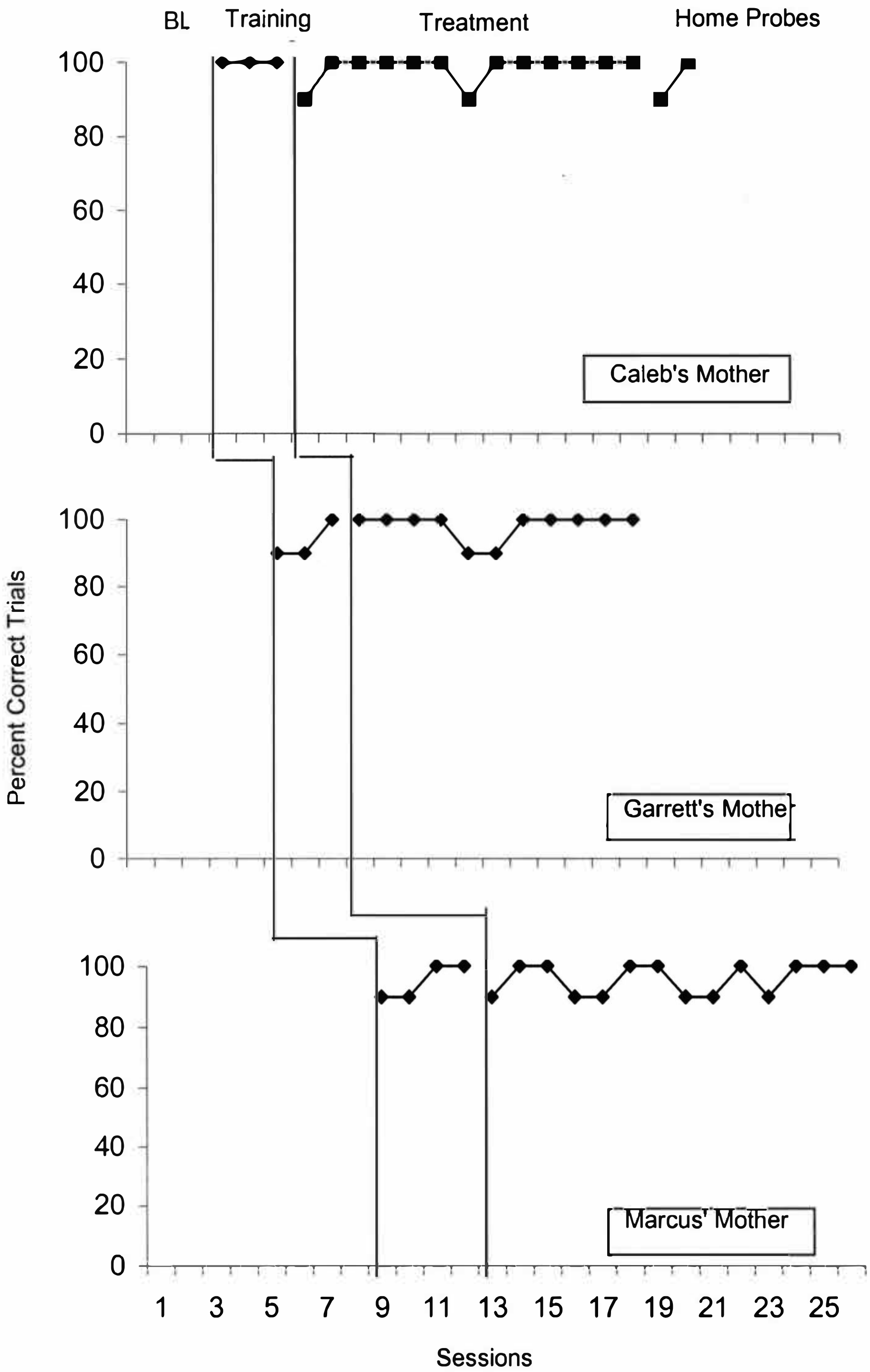


Figure 2. Percent of Trials With Correct Implementation of Each Step of NLP. Percent of Total Errors that Were Made on a Particular Step of NLP.

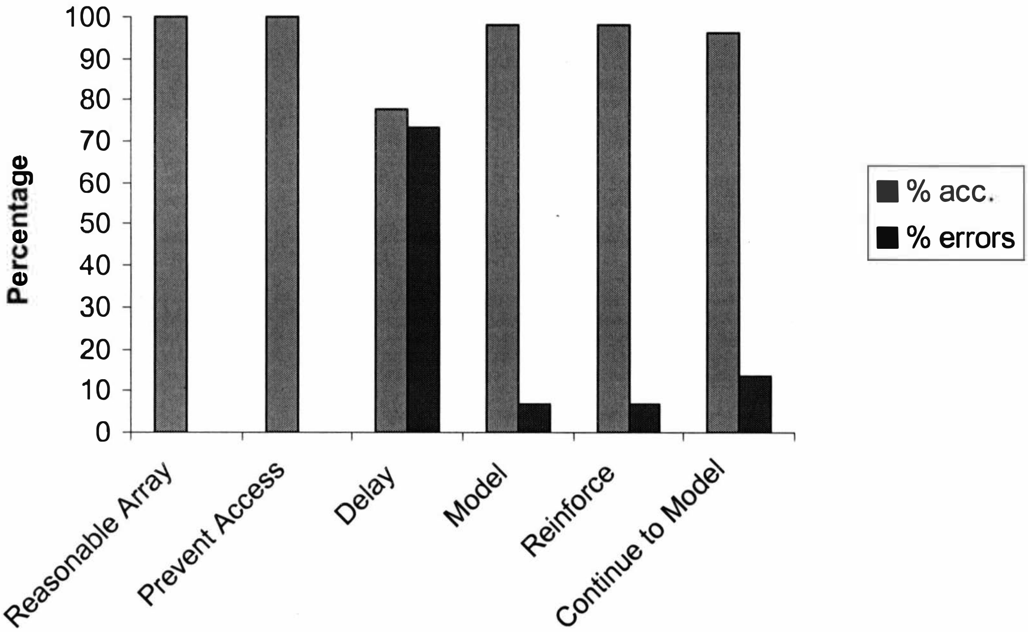


Figure 3. Intervals With Appropriate, Inappropriate, or No Play for Caleb, Garrett, And Marcus During a Naturalistic Play Baseline and NLP Sessions.

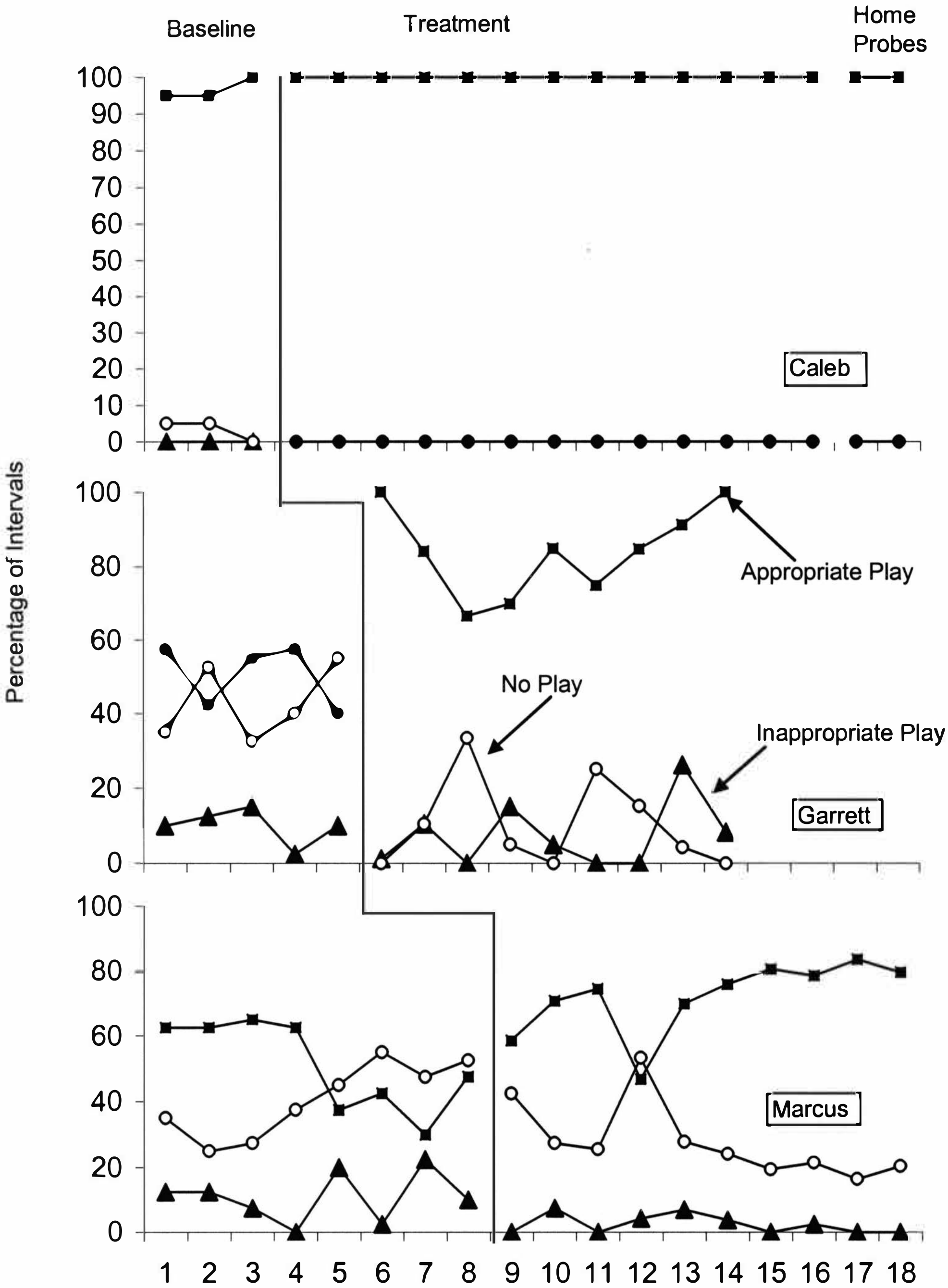


Figure 4. Responses Per Minute Emitted by Caleb, Garrett, and Marcus During a Naturalistic Plan Baseline and NLP Sessions.

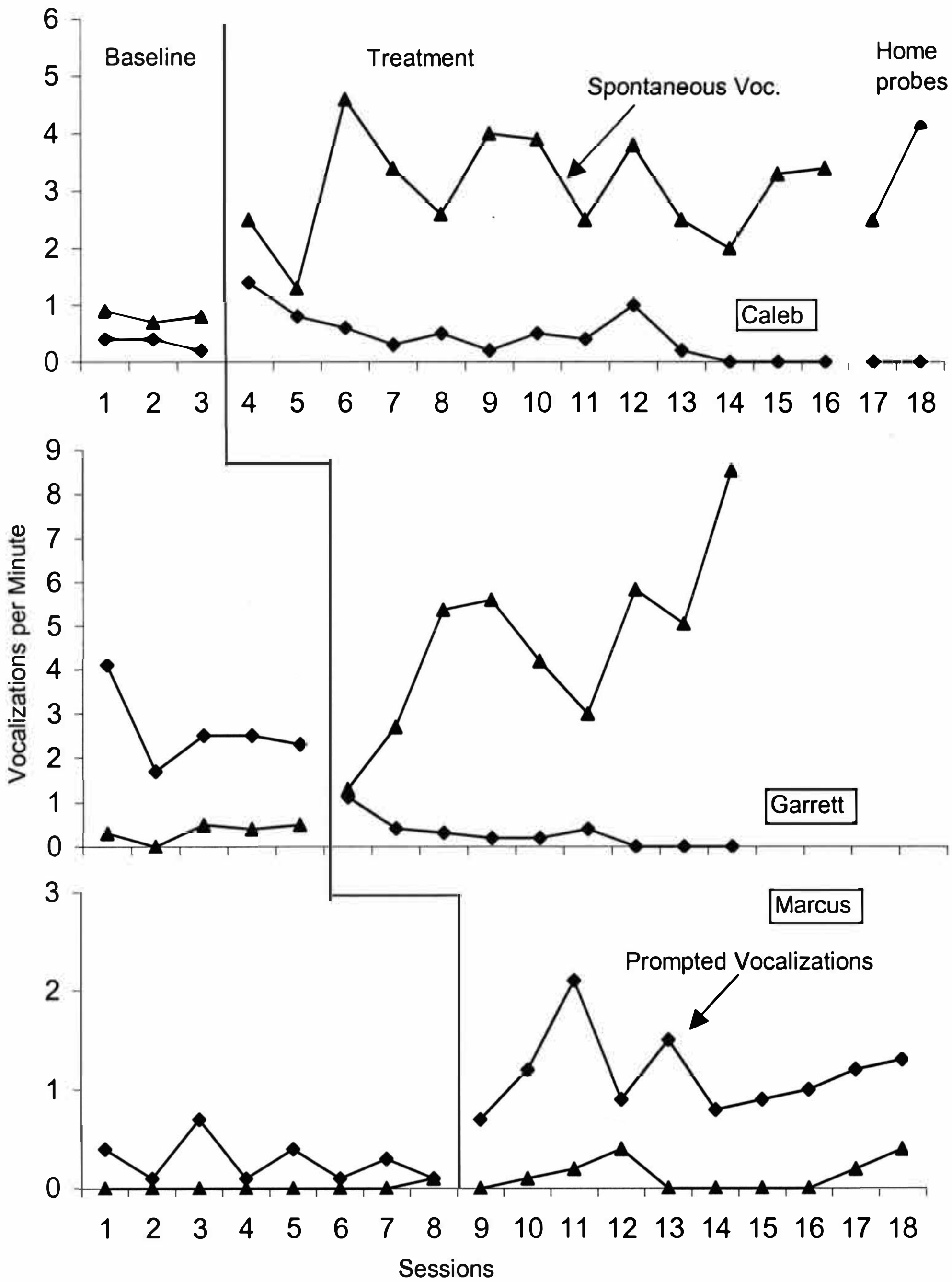


Figure 5. Percentage of Trials in Which Caleb, Garrett, and Marcus Received Access to Preferred Item as a Result of a Spontaneous or a Prompted Vocalization.

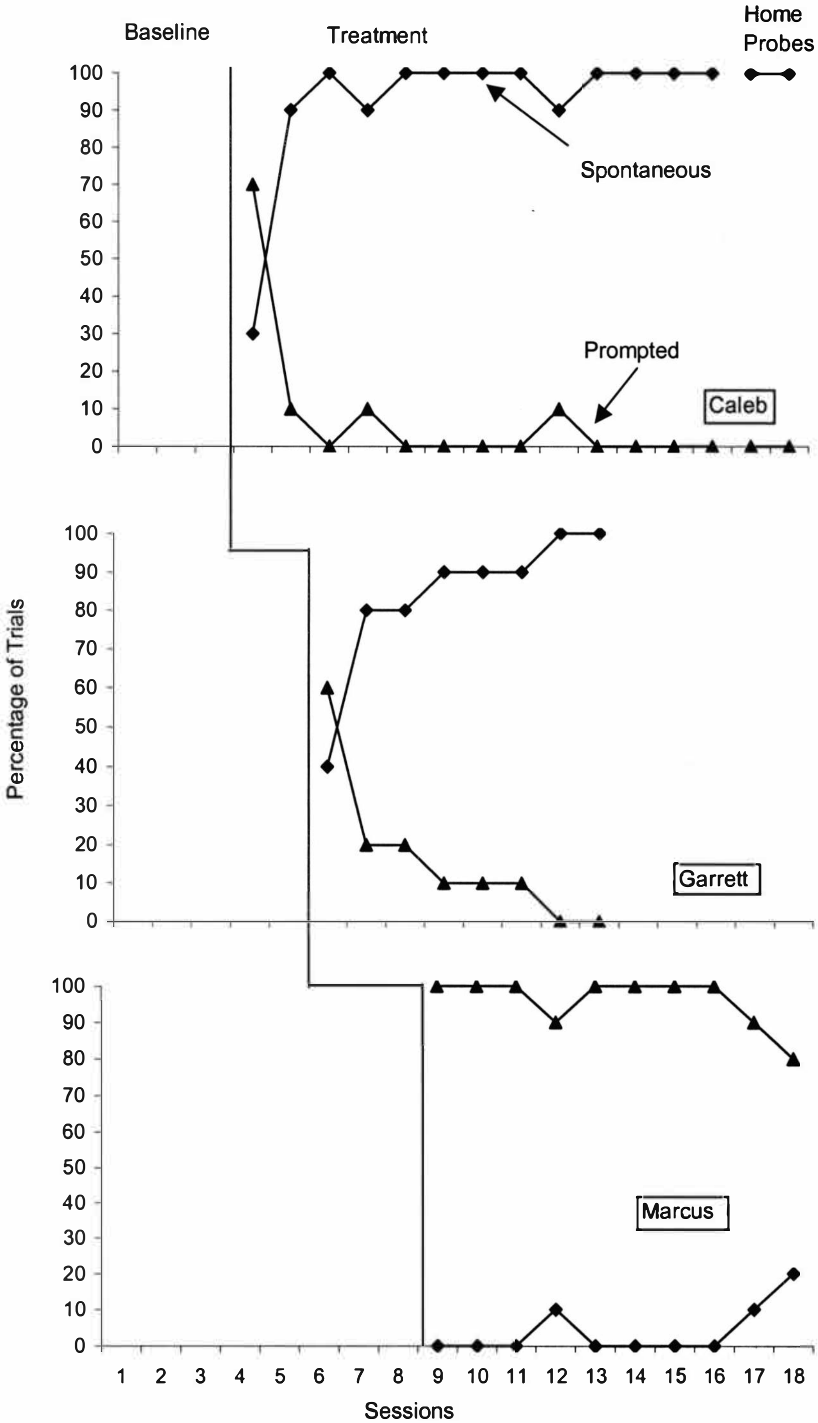
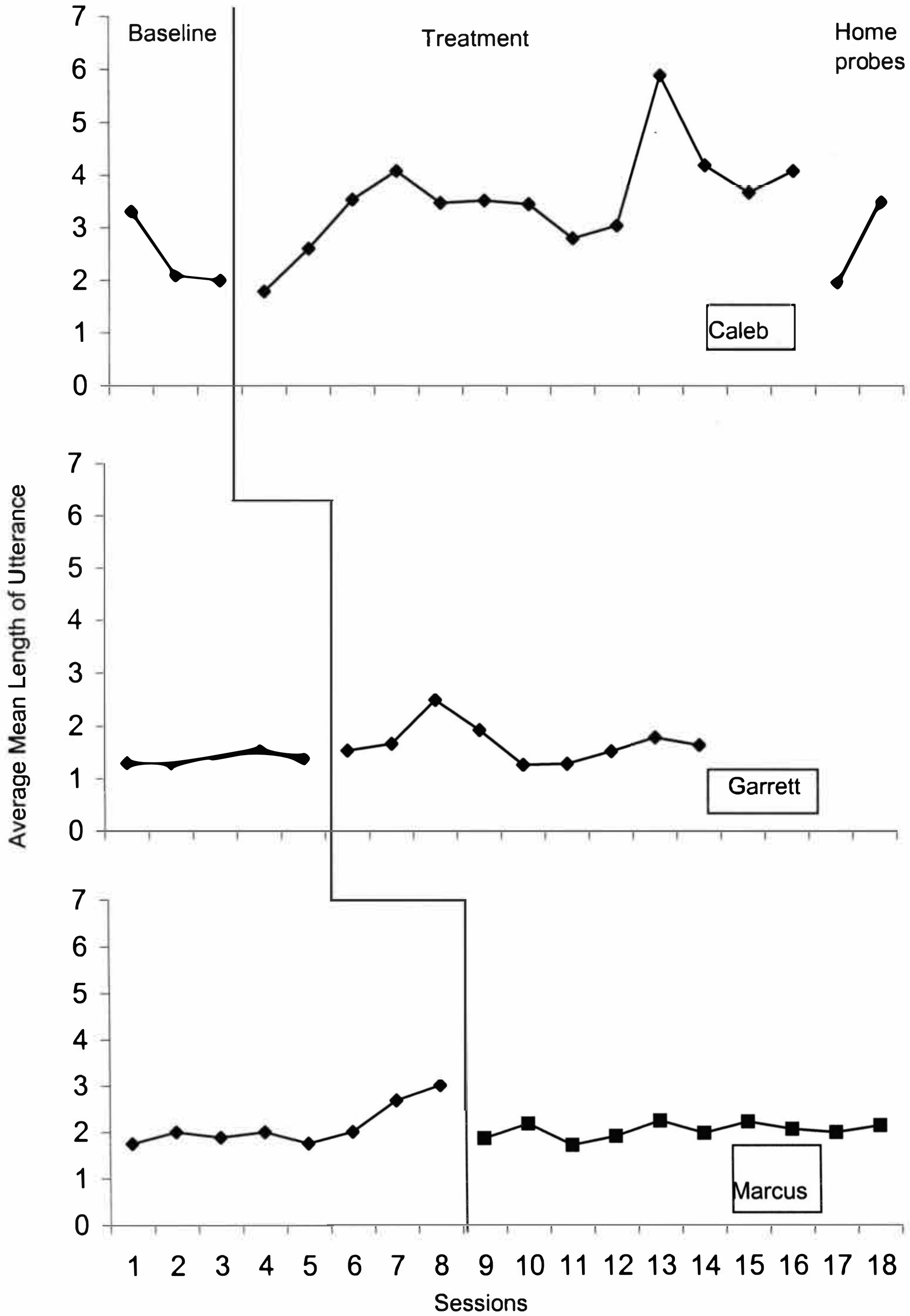


Figure 6. Mean Length of Utterance for Caleb, Garrett, and Marcus During a Naturalistic Play Baseline and NLP Session



Appendix A

Operational Definitions for Vocalizations

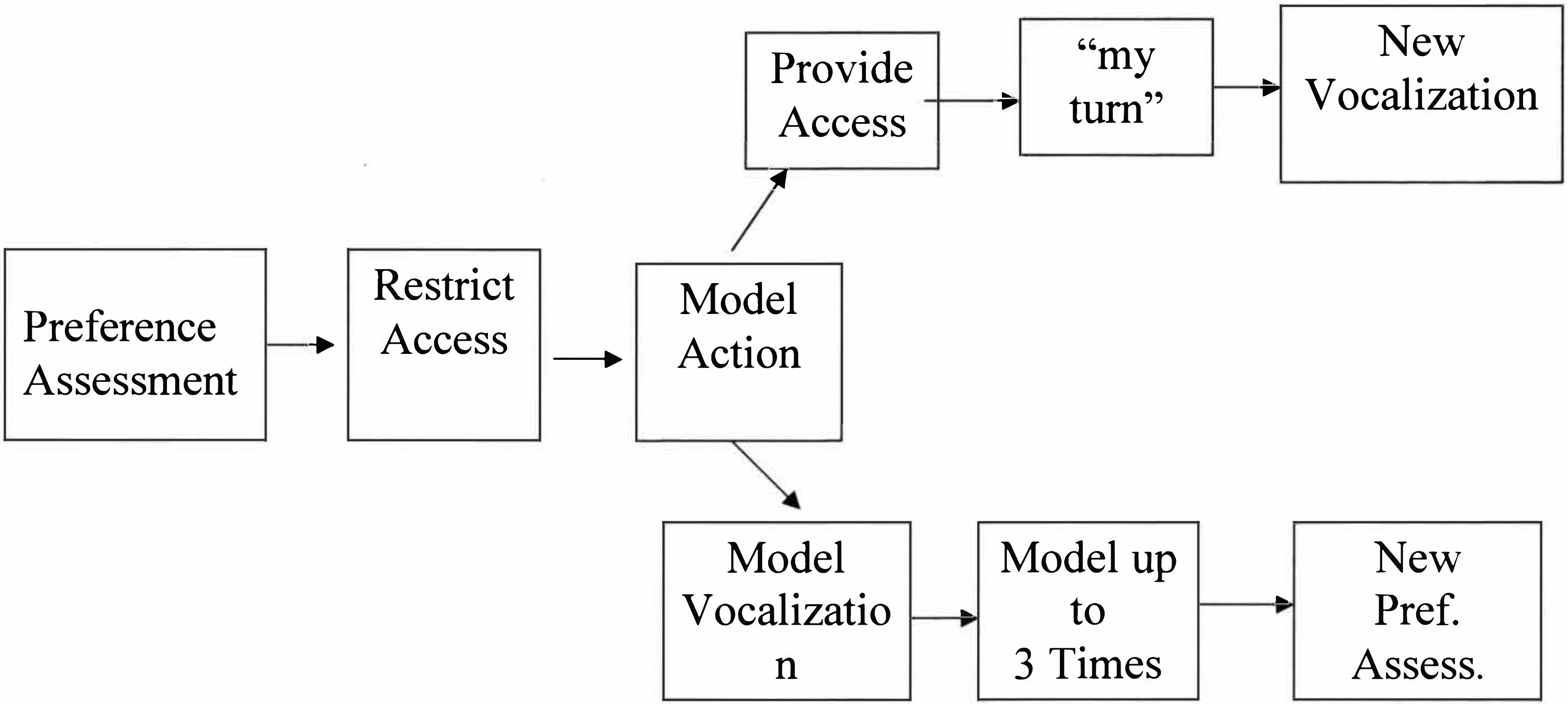
Caleb: Any recognizable and audible phrase that is related to the toys/objects in front of him. Caleb often whispered. A vocalization was only scored if it was audible not if one was able to read his lips. Additionally, Caleb often talks about trains when trains are not present. His vocalizations had to directly relate to the toy in front of him. For example, if the toy in front of him was a car and Caleb emitted a vocalization about Thomas, this was not counted as a vocalization and his mom did not provide Caleb with access to the toy.

Garrett: Any recognizable word or phrase.

Marcus: Any recognizable word or phrase. Marcus frequently engaged in vocal self-stimulatory behavior consisting of a loud humming sound. This was not scored as a vocalization.

Appendix B

Natural Language Paradigm Procedures


Preference Assessment
Restrict Access
Model Action
Provide Access
"my turn"
New Vocalization
Model Vocalizatio n
Model up to 3 Times
New Pref. Assess.

Appendix C

Sample Parent Data Sheet

Parent Data Sheet

Participant #:______________________

Date and Session #:_________________

Trial	Toy	Vocalization
1		Sp Im N
2		Sp Im N
3		Sp Im N
4		Sp Im N
5		Sp Im N
6		Sp Im N
7		Sp Im N
8		Sp Im N
9		Sp Im N
10		Sp Im N
Total		

Trial	Toy	Vocalization
1		Sp Im N
2		Sp Im N
3		Sp Im N
4		Sp Im N
5		Sp Im N
6		Sp Im N
7		Sp Im N
8		Sp Im N
9		Sp Im N
10		Sp Im N
Total		

Appendix D

Sample Vocalization Data Sheet

Trial	Initial Vocalization	Play Vocalizations	Vocalization Types
1			
2			
3			
4			
5			
6			
7			
8			
9			

Appendix E

Sample Play Data Sheet

Interval	Appropriate Play	Inappropriate Play	No Play
1	Y N	Y N	Y N
2	Y N	Y N	Y N
3	Y N	Y N	Y N
4	Y N	Y N	Y N
5	Y N	Y N	Y N
6	Y N	Y N	Y N
7	Y N	Y N	Y N
8	Y N	Y N	Y N
9	Y N	Y N	Y N
10	Y N	Y N	Y N
11	Y N	Y N	Y N
12	Y N	Y N	Y N
13	Y N	Y N	Y N
14	Y N	Y N	Y N
15	Y N	Y N	Y N
16	Y N	Y N	Y N
17	Y N	Y N	Y N
18	Y N	Y N	Y N
19	Y N	Y N	Y N
20	Y N	Y N	Y N
21	Y N	Y N	Y N
22	Y N	Y N	Y N
23	Y N	Y N	Y N
24	Y N	Y N	Y N
25	Y N	Y N	Y N
26	Y N	Y N	Y N
27	Y N	Y N	Y N
28	Y N	Y N	Y N
29	Y N	Y N	Y N
30	Y N	Y N	Y N
31	Y N	Y N	Y N
32	Y N	Y N	Y N
33	Y N	Y N	Y N
34	Y N	Y N	Y N
35	Y N	Y N	Y N
36	Y N	Y N	Y N
37	Y N	Y N	Y N
38	Y N	Y N	Y N
39	Y N	Y N	Y N
40	Y N	Y N	Y N

Appendix F

Sample Procedural Integrity Data Sheet

Participant #:_______________________________________

Session Date and Number:______________________________

Data Collector:_______________________________________

Primary or Secondary:_________________________________

Live or Videotape_____________________________________

Trial	Reasonable Array	Prevent Access	Delay	Model	Reinforce	Continue to Model
1	Y N	Y N	Y N	Y N NA	Y N NA	Y N NA
2	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
3	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
4	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
5	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
6	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
7	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
8	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
9	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
10	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
Total						

Trial	Reasonable Array	Prevent Access	Delay	Model	Reinforce	Continue to Model
1	Y N	Y N	Y N	Y N NA	Y N NA	Y N NA
2	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
3	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
4	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
5	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
6	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
7	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
8	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
9	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
10	Y N NA	Y N	Y N	Y N NA	Y N NA	Y N NA
Total						

Appendix G

Social Validity Questionnaire for Research Study on the Natural Language Paradigm

Social Validity Questionnaire for Research Study on the Natural Language Paradigm

1. How useful did you find participation in the study to be?

Not at all Useful				Very Useful
1	2	3	4	5

2. How difficult did you find this procedure to be?

Not at all Difficult				Very Difficult
1	2	3	4	5

3. Will you continue to use this procedure at home?

Not at all				Yes, very often
1	2	3	4	5

4. Did this study help your child's language skills?

Not at all				Yes, very much
1	2	3	4	5

5. Did this study help your child's play skills?

Not at all				Yes, very much
1	2	3	4	5

6. Was there any particular part of the procedure you found to be difficult? If yes, please list.

Appendix H

Research Protocol Approval from Western Michigan University

Human Subjects Institutional Review Board

Kalamazoo, Michigan 49008-5456
616 387-8293

WESTERN MICHIGAN UNIVERSITY

Date: November 12, 2004

To: Linda LeBlanc, Principal Investigator
Jill Gillett, Student Investigator for thesis
Brian Feeney, Student Investigator

From: Amy Naugle, Interim Chair

Re: HSIRB Project Number: 03-11-08

This letter will serve as confirmation that the change to your research project "Pyramidal Training for Families of Children with Autism: Teaching Implementation of the Natural Language Paradigm" requested in your memo dated November 11, 2004 (maximum session length: 3 hours, maximum sessions per day: 2) has been approved by the Human Subjects Institutional Review Board.

The conditions and the duration of this approval are specified in the Policies of Western Michigan University.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: December 17, 2004

Appendix I

Research Protocol Approval from Utah State University

Utah State UNIVERSITY

INSTITUTIONAL REVIEW BOARD OFFICE
9530 Old Main Hill, Suite 216
Logan UT 84322-9530
Telephone: (435) 797-1821
FAX: (435) 797-3769

USU Assurance: FWA#0003308

Protocol # 1194

2/18/2005

MEMORANDUM

TO: Thomas Higbee
Jill Gillett

FROM: True Rubal, IRB Administrator

SUBJECT: Behavioral Skills Training for Parents of Children with Autism: Teaching Implementation of the Natural Language Paradigm

Your proposal has been reviewed by the Institutional Review Board and is approved under expedite procedure #7.

X There is no more than minimal risk to the subjects.
There is greater than minimal risk to the subjects.

This approval applies only to the proposal currently on file for the period of one year. If your study extends beyond this approval period, you must contact this office to request an annual review of this research. Any change affecting human subjects must be approved by the Board prior to implementation. Injuries or any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Institutional Review Board.

Prior to involving human subjects, properly executed informed consent must be obtained from each subject or from an authorized representative, and documentation of informed consent must be kept on file for at least three years after the project ends. Each subject must be furnished with a copy of the informed consent document for their personal records.

The research activities listed below are expedited from IRB review based on the Department of Health and Human Services (DHHS) regulations for the protection of human research subjects, 45 CFR Part 46, as amended to include provisions of the Federal Policy for the Protection of Human Subjects, November 9, 1998.

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Utah State UNIVERSITY

DEPARTMENT OF SPECIAL EDUCATION
AND REHABILITATION
College of Education
2865 Old Main Hill
Logan UT 84322-2865

USU IRB Approved

FEB 1 8 2005

INFORMED CONSENT

BEHAVIORAL SKILLS TRAINING FOR FAMILIES OF CHILDREN WITH AUTISM:TEACHING IMPLEMENTATION OF THE NATURAL LANGUAGE PARADIGM

Introduction: Professor Thomas S. Higbee in the Department of Special Education and Rehabilitation at Utah State University is conducting a research study designed to determine whether parents of children with autism can implement a simple play-based language training procedure. You and your child are being asked to participate because you meet the criteria to be involved in the study. There will be approximately 2 participants at this site. The study will last approximately 2 months.

Purpose of the study: You and your child are being asked to participate in a research study. There are two purposes for doing this study. The main purpose is to figure out if you, as a parent, can be taught to implement a play-based intervention designed to teach language to young children. The second purpose is to see what effect the intervention will have on your child's language skills and play skills.

Procedures: If you choose to participate as well as allow your child to participate, you will be involved in 6 different phases taking no longer than two months to complete. Sessions will be conducted either at home or at the ASSERT preschool. You will be videotaped throughout this study by the researcher.

Phase 1 (assessment): The researcher will conduct a brief language assessment with your child, the Peabody Picture Vocabulary Test III (PPVT). This assessment will last approximately 10 minutes and involves the researcher asking your child to point to different items. Additionally, you will be asked to fill out two brief questionnaires about your child, the Gilliam Autism Rating Scale and the Behavioral Language Assessment Form.

Phase 2 (baseline): You are your child will be observed in order to gather information on your child's current language and play skills. Each session will last 10 minutes. There will be between 3 and 10 baseline sessions.

Phase 3 (training): You will be taught how to conduct a play-based language training procedure, called the Natural Language Paradigm, by being provided with instruction, modeling (we will show you how to do the procedure), role-playing (you will practice with us while we pretend to be your child), and feedback until you demonstrate that you are able to do the procedure.

Phase 4 (evaluation): You will conduct the play-based language training procedure with your child while the researcher watches and collects data on your child's

Telephone: (435) 797-3243 • Facsimile: (435) 797-3572

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INFORMED CONSENT

BEHAVIORAL SKILLS TRAINING FOR FAMILIES OF CHILDREN WITH AUTISM:TEACHING IMPLEMENTATION OF THE NATURAL LANGUAGE PARADIGM

New Findings: During the study, you will be informed of any significant new findings (either good or bad), such as changes in the risks or benefits resulting from participation in the research, or new alternatives to participation that might cause you to change your mind about continuing in the study. If new information is obtained that is relevant or useful to you, or if the procedures and/or methods change at any time throughout this study, your consent to continue participating in this study will be obtained again.

Risks: There are minimal risks to participation in the study. The primary risk associated with this study is the possible frustration that might occur when asked to play with or share a toy with you, his/her parent. To minimize this risk, sessions will be kept short (no longer than 10-minutes). The time commitment required for this study may also be an inconvenience and/or potential risk. Additionally, sessions will be terminated if my child's verbal or physical behavior leads to a serious disruption of the sessions (e.g., kicking, screaming, throwing objects, hitting, etc.). If 5 sessions in a row are terminated due to this behavior, my child's participation in the study will be reevaluated and there will be a possibility that his/her participation will end.

Unforeseeable Risks: As in all research, there may unforeseen risks to my child. However, these risks should be no different from those associated with a typical play environment. To minimize the effects of unforeseeable risks, your child will be under supervision and in correspondence with the researcher.

Benefits: There may be some benefits to my child with autism for participation in this study. His/Her language skills may improve as a result of the implementation of the Natural Language Paradigm. In addition, the literature on language training for children with autism may be benefited. Also, you may benefit by learning a new way to play with your child.

Explanation & Offer to answer questions: Dr. Thomas S. Higbee and/or Jill N. Gillett has explained this study to you and answered your questions. If you have other questions or research related questions, you may reach Professor Higbee at 797-1933.

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INFORMED CONSENT

BEHAVIORAL SKILLS TRAINING FOR FAMILIES OF CHILDREN WITH AUTISM:TEACHING IMPLEMENTATION OF THE NATURAL LANGUAGE PARADIGM

Voluntary nature of participation and right to withdraw without consequence: Participation in research is entirely voluntary, you or your child may refuse to participate or withdraw at any time without consequence or loss of benefits. You or your child may be withdrawn from this study by the investigator if you move away from the district, are frequently absent, or chose not to participate while in session.

Confidentiality: Research records (including videotapes) will be kept confidential, consistent with federal and state regulations. Only the investigators will have access to the data and any videotapes, and they will be kept in a locked filing cabinet in a locked room. The data and any videotapes will be kept for a period not to exceed 3 years, and will then be destroyed (shredded). If the results of this study are published, no names will be used that will reveal the identity of the participants.

IRB Approval Statement: The Institutional Review Board (IRB) for the protection of human subjects at Utah State University has reviewed and approved this research project. If you have any questions or concerns about this research, please call the IRB Office at 435-797-1821.

Copy of Consent: You have been given 2 copies of this Informed Consent. Please sign both copies and retain one copy for your files.

Investigator Statement: "I certify that the research study has been explained to the individual, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions that have been raised have been answered."

Signature of Principle Investigator & student:

Thomas S. Higbee

Dr. Thomas S. Higbee
Principal Investigator
(435) 797-1933

Jill N. Gillett

Jill N. Gillett
Student Researcher
(435) 797-3217

Utah State UNIVERSITY

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INFORMED CONSENT

BEHAVIORAL SKILLS TRAINING FOR FAMILIES OF CHILDREN WITH AUTISM:TEACHING IMPLEMENTATION OF THE NATURAL LANGUAGE PARADIGM

Signature of Parent(s) Guardians(s):

______________________	______________________
Parent/guardian	Date
______________________	______________________
Parent/guardian	Date