THE EFFECTS OF WORKSHOP TRAINING AND COACHING ON THE ACQUISITION AND GENERALIZATION OF TEACHING SKILLS

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Thesis Prepared for the Degree of

MASTER OF SCIENCE

UNIVERSITY OF NORTH TEXAS

December 2003

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Almon, Holly C., The Effects of Workshop Training and Coaching on the Acquisition and Generalization of Teaching Skills. Master of Science (Behavior Analysis), December 2003, 104 pp., 6 illustrations, reference list, 33 titles.

The purpose of this study was threefold: (a) to examine the separate effects of increased accuracy on multiple-choice/rank-order written tests and coaching on the teaching performance of participants; (b) to compare generalization across tasks produced by the workshop and coaching; and (c) to assess maintenance of teaching performance. Following baseline, two adults received a lecture on discrete trial teaching procedures. A written test measured verbal performance on workshop material periodically throughout this phase. During the next phase, each adult then experienced further training via *in-situ* coaching. A multiple baseline design across tasks was used during the coaching phase. Results of the workshop training package revealed an inverse relationship between the strongest verbal performance and strongest teaching performance skill areas. In addition, only with the introduction of the *in-situ* coaching package did teacher performance improve significantly across all behaviors. Child responding remained relatively constant throughout the study, regardless of teacher performance. Some generalization of teacher behavior was observed across tasks, but was extremely variable across both workshop and coaching conditions. After the cessation of coaching, teacher performance remained stable across maintenance phases and at a 6-week follow-up.

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INTRODUCTION

Numerous methods derived from behavior analysis have been documented to be effective in teaching children with autism (Anderson & Romanczyk, 1999). These techniques, although quite successful at changing behavior across many settings and client populations, must be implemented correctly to achieve the desired results. In turn, the effective training of persons implementing behavioral techniques is crucial for the success of the behavior analytic programs (see Ala'i-Rosales, Thorisdottir, & Etzel, 2003; Demchak, 1987).

Several studies have focused on evaluating staff and parent training procedures in a variety of settings, behaviors, and populations. The studies have investigated the efficacy of various training packages to improve teachers' or parents' teaching skills. These packages consist of written materials, videotapes, modeling, roleplay, and feedback (e.g., Moran & Whitman, 1991); workshops and feedback (e.g., Harchik, Sherman, Sheldon, & Strouse, 1992); instructions, in-service training and feedback (e.g., Sigafoos, Kerr, Roberts, & Couzens, 1994); modeling, training meetings, instructional manuals, written tests, and written feedback (e.g., Kaiser, Hester, Alpert, & Whitman, 1995); lectures and coaching (e.g., Parsons, & Reid, 1995); pyramidal staff training with in-service training, instructions, videotapes, and feedback (e.g., Shore, Iwata, Vollmer, Lerman, & Zarcone, 1995); modeling, roleplay, coaching, and feedback (e.g., Schepis, Ownbey, Parsons & Reid, 2000); quasi-pyramidal staff training, modeling,

roleplay, and feedback (e.g., Ducharme, 2001); instructions, verbal feedback, and written feedback (e.g., Kohler, Anthony, Steighner, & Hoyson, 2001); classroom-based training, modeling, roleplay, feedback, and coaching (e.g., Schepis, Reid, Ownbey, & Parsons, 2001); and video modeling, instructions, and coaching (e.g., Lavie & Sturmey, 2002).

These techniques can be classified into antecedent and consequence based interventions (Alai-Rosales et al., 2003; Balcazar, Hopkins, & Suarez, 1986; Bernstein, 1982; Demchak, 1987; Harchik, Sherman, Hopkins, Strouse, & Sheldon, 1989; Reid & Whitman, 1983). Antecedent manipulations usually involve instructions, demonstrations, and/or role-play. Consequence manipulations involve feedback and/or reinforcement systems. Multi-faceted training consists of combinations of antecedent and consequence procedures and has often proven to be more effective than either antecedent- or consequence-based training procedures alone (see Ala'i-Rosales et al., 2003; Balcazar, et al., 1986; Demchak, 1987).

"Workshop"-style training is a common (antecedent-based) method for training staff, and often consists of lectures (Gardner, 1972; Parsons & Reid, 1995; Quilitch, 1975), rationales (Ivancic, Reid, Iwata, Faw, & Page, 1981; Quilitch, 1975), descriptions (Ivancic et al., 1981; Shore et al., 1995), and/or examples (Ivancic et al., 1981; Quilitch, 1975; Schepis et al., 2001). This modality of training often occurs in a group setting (Shore et al., 1995) or "classroom-style format" (Parsons et al., 1995), and less often in an

individualized fashion (Schepis et al., 2001; Sigafoos et al., 1994). This makes workshop training a potentially efficient way to provide training, due to the fact that many persons can be trained at once and delivery is not dependent on learner responding. Its effectiveness, however, has been shown to be highly variable. Researchers have found that although workshop-style teaching can improve teaching performances, the improvement typically does not approach criterion performance goals. Consequently, supplemental procedures, most often consisting of some type of consequence manipulation (Quilitch, 1975; Shore et al., 1995; Ivancic et al., 1981; Parsons & Reid, 1995; Schepis et al., 2001; Sigafoos et al., 1994), are usually required.

For example, Quilitch (1975) conducted a series of training interventions consisting of memos, workshop, and public posting of feedback on staff behavior, and found that the workshop was not effective in increasing staff implementation of programs with residents in an institutional setting. Public posting of feedback was effective in increasing the desired staff behavior; however, it is not clear if the preceding workshop training contributed to the success of public posting of feedback. Shore et al. (1995) also found little change in appropriate staff teaching behaviors after their supervisors received in-service training, but noticeable improvement in these behaviors after on-the-job training involving immediate assistance and feedback. A pyramidal staff training procedure was implemented, in which supervisors received training and they, in turn, trained their staff to implement these procedures. Again, the impact of the in-service

training on the success of the hands-on pyramidal staff-training phase is not clear.

One difficulty in evaluating the effects of workshop training is that studies seldom measure the effects of the workshop on the specific amount of knowledge gained by its participants, and no study has systematically examined the contribution of increased knowledge to the application of teaching skills in the natural environment. It may be the case that the lack of effects on teachers' teaching behavior is due to the lack of effects of the workshop training on the participants' ability to discriminate correct from incorrect teaching behavior.

Greer (1991) stressed the importance of teachers serving a role of "teacher/scientist" when addressing the behavior of their students. To serve this function, he mentions that teachers must attain skills with respect to three different repertoires: (a) contingency-shaped behaviors of teaching; (b) verbal behavior about the science; and (c) verbally-mediated behaviors of teaching. However, there are few studies that systematically assess the correspondence between what teachers may "know" and what teachers "do" (cf., Risley & Hart, 1968). Gardner (1972) measured the effects of workshop-style training on both teachers' verbal skills and performance skills. He tested the effects of a workshop by means of a standardized true/false test following a lecture. However, teaching performance was not directly measured in this study. Posttest scores of the group receiving a lecture demonstrated a mean score of 163.7 on the Behavior Modification Test (an increase in accuracy of 17%) from the mean

pretest score of 139.1, but their teaching performances did not improve as measured by the Training Proficiency Scale (Gardner, 1970), a 30-item, five-point rating scale that measures proficiency in applying behavior modification techniques. However, this study was conducted using an A-B group design, so the results should be interpreted with caution. Although “knowledge” was assessed through the test following the lecture, no relationship between “knowledge” and “performance” was evaluated. Kaiser et al. (1995) assessed knowledge of milieu teaching content and procedures of three parent participants through a written test, consisting of fill-in-the-blank, error analysis, sentence completion, and multiple-choice questions. This study reported that trainers gained significant “conceptual knowledge” after reading conceptual material related to their targeted teaching behaviors; however, they were only able to implement these procedures at criterion levels following practice with feedback.

Another common training procedure involves hands-on training/coaching methods. This type of training most often involves a package of various techniques, including combinations of modeling, instructions, roleplay, and immediate feedback delivery. Some examples from the literature include the use of modeling, roleplay, and feedback (Ducharme, 2001; Moran & Whitman, 1991; Schepis et al., 2000; and Schepis et al., 2001); and modeling, instructions, and feedback (Kaiser et al., 1995). Whereas numerous teachers can be trained at one time using workshop training, coaching usually involves more of a one-to-one format, allowing for a higher number of teacher-trainer interactions. Direct

training/coaching techniques have been documented as effective in the previous literature (Ducharme, 2001; Joyce & Showers, 1988; Kaiser et al., 1995; Lavie & Sturmey, 2002; Moran & Whitman, 1991; Schepis et al., 2000; Schepis et al., 2001; Shore et al., 1995). Even with studies involving coaching procedures, there is no analysis of what behavior change is produced by workshops and what behavior change requires coaching.

Even though acquisition of teaching skills has been demonstrated repeatedly in the literature, results of effective generalization of these teaching skills still remain mixed. Whereas some studies have shown generalization of teaching skills across tasks (Ducharme, 2001; Ducharme & Feldman, 1992; Ivancic et al., 1981; Koegel, Russo, & Rincover, 1977; Kohler et al., 2001; O'Reilly et al., 1995; Sawyer, R.J., 2000; Shore et al., 1995), settings (Ducharme & Feldman, 1992; Kaiser et al., 1995; Kohler et al., 2001), and clients (Ducharme & Feldman, 1992; Koegel et al., 1977; Shore et al., 1995), others have not (Ducharme & Feldman, 1992; Ducharme, et al., 2001; Kaiser, et al., 1995; Koegel, et al., 1978; O'Reilly, et al., 1994). Several of the above studies actively programmed for generalization, as discussed by Stokes & Baer (1977), using strategies including train and hope (Ivancic et al., 1981; Kaiser, et al., 1995; O'Reilly, et al., 1995, Shore, et al., 1995); general case training (Ducharme & Feldman, 1992; Ducharme et al., 2001); and training loosely (Koegel et al., 1977; Koegel et al., 1978). For example, Koegel et al. (1978) taught mothers of children with autism and found that trainer demonstrations of correct teaching behavior

(with respect to specific child targeted skills) were effective in increasing parents' ability to facilitate their child's target acquisition; however, no generalization to new untrained targets was observed. Generalization to new untrained child behaviors occurred only when parents were taught the proper use of general behavior modification procedures (Sd presentation, prompting, shaping, consequence delivery, and discrete trial instruction), rather than any one particular child behavior. In addition, Moran & Whitman (1991) taught mothers of children with autism general behavior modification procedures (prompting, reinforcement, and shaping) through the use of written instructions, videotaped modeling, coaching, and feedback and found that extensive generalization occurred to untrained tasks. However, with a second group of mothers, a generalization training package was introduced (consisting of supplementary booklets, videotapes, and generalization rationales), and the authors found that generalization to untrained tasks did not occur. In addition, when this separate generalization training package was introduced to the original group of mothers, no further generalized parenting behavior was observed. Therefore, it appears that the generalization training component served no useful purpose. The high variance in generalization results warrants further assessment and investigation.

Maintenance of acquired skills is another essential component of staff and teacher training, in that teachers should be able to maintain previous levels of performance both immediately after the cessation of training and for an extended period of time. Only five of the 26 studies mentioned above measured

maintenance teacher skill levels. Kohler et al. (2001) demonstrated immediate maintenance of various teaching skills after daily feedback and technical assistance and Parsons et al. (1995) showed maintenance following on-the-job training. In addition, three more studies demonstrated longer-term follow-up maintenance: after a period of 1-5 weeks following the cessation of immediate supervisory feedback (O'Reilly et al., 1995); after 23-40 weeks following the cessation of on-the-job feedback (Parsons et al., 1995); after a period of 3 weeks following modeling, rehearsal, and feedback (Harchik et al., 2001); and after a time frame of one month following consultation and immediate performance feedback (Sigafoos et al., 1994).

Because teachers so commonly receive in-service training, and because evidence suggests that more direct, hands-on training may produce better outcomes, these two training modalities should be explored further. The purposes of this study were: (a) to examine the separate effects of increased knowledge of workshop subject matter and coaching on the teaching performance of participants; (b) to compare the generalization across tasks produced by the workshop and coaching; and (c) to assess the maintenance of teaching performance across time.

CHAPTER 2

METHOD

Participants

Three participants were involved in the study. Two participants were adults that had no prior training in behavior analysis. One was the mother of the child participant, and the other was a director of the preschool program where the study was conducted. Teacher 1 had completed two years of college courses, and Teacher 2 had completed a Bachelor's degree, both in unrelated fields. Both participants expressed an interest in receiving training in the application of behavior analysis to the treatment of autism.

The third participant was a 4.5 year old male diagnosed with autism. He was highly skilled, and able to master most skills rather quickly. He was able to use 2-3 word vocal requests, and also had numerous expressive and receptive labels in his language repertoire, along some emerging beginning social and play skills. He attended an inclusive preschool program for 20 hours per week and the goals for his school program at the start of the study included increasing social language and sharing, working on "wh-" questions and sequencing of actions.

Setting

All sessions took place in a room at a preschool. The room was approximately 6 m by 6 m, and contained some pieces of furniture located against three of the walls: a changing bed, two plastic slides, several small chairs stacked against the wall, two rocking chairs, and a plastic toy kitchen set. There

was a single door on the corner of one wall, and there were no windows in the room. No one except for the experimenter and participants were present in the room at the times in which the study was conducted. The child participant was not present in the room when any testing or workshop training sessions occurred. All sessions took place in the early afternoon, and the number of sessions varied from one to three per week, sometimes skipping weeks due to illnesses or school holidays.

Materials

Testing. During all testing conditions, a table and a chair were set up in the middle of the room for the participant to use while testing. The teacher was given a six-page written test and a writing utensil. A digital timer was used to record the duration of test taking.

Workshop training. Materials used during the workshop included a large table and two chairs which were located in the middle of the room, and a laptop computer (located on the table), which the experimenter used to present material in a PowerPoint format to the teacher (see Appendix A for detailed presentation.)

Teaching sessions. Equipment used during all teaching sessions included a small child-sized table with two child-size chairs (occupied by the child and the teacher), a larger table and chair which the experimenter used, a VHS-C video camera, and all materials necessary for data collection (data sheets, clipboard, timer, and writing utensils).

Teaching tasks. Materials used during the teaching tasks were picture flashcards (Task 1), various small play materials (e.g., figurines, toy cars, blocks, and action sets) (Task 3), and red, yellow, green, and blue Legos™ of varying heights and widths (Task 4). No materials were needed for Task 2 (auditory direction following). Other tangible items were used as consequences for correct child performance during all tasks (e.g., books, edibles, small toys).

Coaching. Materials used during the coaching phase were identical to those used in the teaching sessions, except for the addition of one chair occupied by the experimenter during coaching. A coaching checklist was also used during this phase, on which the experimenter tracked progress of the teacher's teaching skills before conducting each teaching session (see Appendix B for details.)

Dependent Variables

There were three categories of behavior recorded during the study: The teacher's behavior during teaching sessions, the teacher's behavior during written tests, and the child's behavior during teaching sessions.

Teacher's behavior during teaching sessions. Three primary skill areas of teacher performance were evaluated: (a) stimulus presentation, (b) consequence delivery, and (c) error correction strategies. Within these three areas, a total of 35 behaviors were measured across four tasks (receptive labeling, direction following, object imitation, and sequencing). Many of these teaching behaviors

were adapted from definitions and a checklist developed by Fabrizio & Moors (2002).

Stimulus presentation consisted of eleven outcomes: (1) only necessary stimuli are placed on the table, (2) needed materials are easily accessible, (3) instructor seated within reach of child, (4) clear cue that session is starting is provided, (5) instructor gains child's attention before cue presentation, (6) correct instructional cue is given, (7) cue is delivered immediately, (8) cue is stated in sentence form, (9) cue is delivered only once before some type of consequence occurs, (10) instructor refrains from using inappropriate cues, and (11) appropriate instructional pace is maintained (see Appendix C for observation code and protocols).

Consequence delivery included fourteen outcomes: (1) identifies potential reinforcers at least once per 3 min sample, (2) prepares reinforcers prior to the start of the trial, (3) utilizes spatial control over all reinforcers, (4) delivers behavior-specific praise at a rate of 3 per min, (5) delivers verbal praise enthusiastically (with varied voice tone), (6) varies wording of verbal praise (uses at least 4 different types of praise statements per min), (7) rotates exposure to reinforcers (at least 4 different types of reinforcers per min), (8) delivers worthwhile amount of tangible reinforcer, (9) engages in social interaction during delivery of tangible reinforcers, (10) waits until reinforcer is consumed before delivering next cue, (11) delivers reinforcer immediately, (12) delivers tangible reinforcer only following correct, unprompted child responses, (13) utilizes dense

reinforcement schedule (at least 5 per min), and (14) uses differential reinforcement.

Error correction consisted of ten outcomes: (1) delivers prompt after incorrect or non-responses at all times, (2) delivers prompt immediately (3-5 s after incorrect/non-response for the first incorrect/non-response of that particular target), (3) provides opportunities for reinforcement by means of presenting simpler tasks when rate of responding is low (4 incorrect responses in a row on that target), (4) delivers only praise as a consequence for a prompted response, (5) gives child an immediate opportunity to respond without a prompt (after a prompt is delivered) on that same target, (6) allows child a sufficient amount of time (3-5 s) to respond before prompting (after the second-plus incorrect response of that particular target), (7) delivers the appropriate (least intrusive) prompt at all times, (8) uses the correct stimulus materials when using an instructor model as a prompt, (9) properly goes through the appropriate (ascending) prompting hierarchy when needed, and (10) fades all prompts appropriately (follows the opposite of the prompt hierarchy when needed). The least-to-most prompting procedure was selected for this particular child because he often only required slight assistance before learning a particular response.

The above responses were recorded as present or absent by viewing the videotapes from each session. Responses with a rate per minute measure were counted within one-min intervals. All teacher performance data were scored via videotape after the sessions due to the large number of measures.

Teacher's responses during written tests. Teacher responses on a written test were defined as either "correct" or "incorrect". The response topographies consisted of ordering of items and selection of multiple-choice items. A duration measure was also taken during all testing sessions. There were 65 opportunities to respond on the written test, and the same test was repeated throughout the entire study. (See Appendix D for a copy of the written test).

Child's behavior during sessions. Although data on the child's performance were recorded throughout the study, these data were not used to make any phase change decisions in the study. The number of student teaching targets introduced and mastered across all four tasks was recorded. A target was considered to be "mastered" when the child responded correctly and independently during the first given opportunity across two consecutive sessions.

Observer Training and Data Collection

Prior to any experimental data collection, video examples and non-examples of the target teaching behaviors were viewed by the experimenter and the research assistant and discussed. The experimenter and research assistant practiced scoring data simultaneously, and observation code definitions were changed as needed to ensure reliable scoring of both teacher and child behavior. The 12-min observation sessions were divided into 1-min intervals for data collection purposes. After each min of videotape, the tape was paused and the data were scored. The experimenter and research assistant compared the obtained scores after each minute and discussed disagreements.

After the experimental baseline data collection began, the experimenter and research assistant continued to score data simultaneously. After the beginning of the first intervention phase, the research assistant subsequently scored sessions without the experimenter. The experimenter and research assistant then met weekly to check reliability and discuss disagreements in scoring. The experimenter's data was always used as the primary measure.

At the beginning of the workshop phase, another data collection system was added to promote more accurate data collection. The use of a scoring sheet allowed the experimenter and research assistant to track (*verbatim*) both the vocal and non-vocal behaviors of the participants for all 12 min of data collection. This sheet had 3 columns: one for antecedents, one for behaviors, and one for consequences. Observers scored all antecedent, behavior, and consequent events in temporal order in their corresponding columns. The data from this scoring sheet were used as a permanent product and transcript of both teacher and child behavior, so after that sheet was completed, the data were transferred onto the primary teacher data sheets (see Appendix E).

Interobserver Agreement

Observer agreement data were collected on 25% of all experimental sessions and between 25% to 33% of sessions during each condition of the study. Data were collected only on the teacher's performance during the teaching sessions. Occurrences and non-occurrences of behavior were recorded within each 1 min interval. If the opportunity for the behavior to occur was not present,

the interval was scored as “not applicable”. Interobserver agreement was calculated by dividing the number of agreements by the total number of agreements plus disagreements and multiplying the result by 100. Overall, agreement averaged 86% across the entire experiment with all participants. See Appendix F for all reliability data.)

Independent Variables

The independent variable during the first experimental phase was the workshop training. The workshop training consisted of a one-on-one lecture that included concept definitions, explanations, examples, and models of how to conduct a receptive labeling task in a discrete trial format. Material covered during this condition was the correct identification of 35 teaching behaviors. The teachers were taught the subject matter at various points of the experiment until they achieved a score of at least 95% on the written test.

The independent variable in the second phase of the experiment was an *in situ* coaching package, consisting of rehearsal, prompting, and immediate delivery of feedback regarding the performance of 35 teaching skills while conducting a session with the child.

Experimental Design and Sequence

During the first phase of the experiment, a multiple-probe design was used to study the effects of the workshop on teacher performance across four tasks (receptive labeling, direction following, object imitation, and sequencing). The teacher’s progression through the conditions of the study was contingent on a

combination of increased accuracy on the workshop test and stability of teaching performance with the child in his natural environment.

After an initial baseline consisting of a written test and samples of teacher performance with the child, the sequence of conditions included a rotation of workshop training (based on error analyses of previous written test results), a written test, and probes of the teacher performance working with the child. The three conditions continued to rotate (workshop-test-probes) until the teacher's score on the written test reached at least 95% accuracy and teaching performance data were stable.

During the second phase of the experiment, a multiple-baseline design was used to study the effects of coaching across four tasks (receptive labeling, direction following, object imitation, and sequencing). Coaching was initially applied during the receptive labeling task only. To prevent from overburdening the participants with 35 new behaviors, skills related to the content area of stimulus presentation were coached during the first session. Skills related to the consequence delivery content area were coached during the second session, and skills related to the error correction content area were coached during the third session. From the fourth session onward, all three skill areas were addressed during all coaching sessions. When the appropriate criteria were met for that condition (at least 90 percent correct teaching episodes across either the single primary skill area initially, or later, each of the three primary skill areas), coaching was applied to direction following, then object imitation, and finally sequencing.

After the teacher performance reached a mastery criterion during a given task, the teacher continued to teach that task, but did not receive any specific instruction or feedback on teaching performance. After mastery criteria were met on all four tasks, conditions were maintained for 3 days until the performance stabilized. A follow up session was conducted 6 weeks after the last maintenance session.

Skill generalization across tasks was assessed by coaching only one task at a time while collecting generalization data across the remaining tasks. Both of the above designs were also replicated with a second teacher simultaneously.

Experimental Conditions

Written tests. The teacher was given a test consisting of 30 questions, with a total of 65 opportunities to respond. The written test covered all 35 component skills of teacher performance that were evaluated. The test was in a multiple choice and rank-order format, and was timed. No feedback on test performance was delivered to the teachers during testing. The teacher was first tested prior to the initial workshop, and then was tested again after completing each workshop.

Performance probes. The teacher was asked to conduct four 3 min teaching tasks with the child participant. The teacher was given a simple data sheet with the listed daily child targets (see Appendix G) and was asked to take data (correct vs. incorrect child responses) during all trial presentations. These data, however, were not scored for experimental purposes. Before assessing the

teacher's performance in a given task, the teacher was instructed to train three to five targets, and was told how to present the stimuli, the correct instruction to use for each task, and what would be accepted as a "correct" vs. "incorrect" target response on the part of the child. No other instructions were given to the teacher at this time. For example, during the receptive labeling tasks the teacher was told what targets to teach, how to appropriately present the material, and the appropriate cue to use during this task (e.g., "point to [something that's sharp].") No feedback about teaching performance was delivered to the teacher after the performance probes.

Workshop training. The workshop was designed to simulate a lecture conducted in a classroom or larger workshop setting. The experimenter covered topics including conducting proper teaching episodes, and gave examples of these episodes using the task area of receptive labeling (Task 1) to control for possible generalization to the other tasks. The workshop began with PowerPoint slides covering some basic behavior analytic terminology, and addressed all 35 targeted teaching behaviors. Explanations of all behaviors were given, and when applicable, the experimenter provided a model of the skill (but without the use of the appropriate materials.) The teacher was free to ask questions or request clarification at any time. Workshops lasted for one hour, 45 min, and 30 min, respectively, and the time allowance for all workshops was held constant across teachers.

Upon completion of the workshop, the teacher was given a written test (identical to the original test). Following the test, the teacher returned to baseline conditions so that the effects of the workshop training on the teachers' performance with the child could be assessed. Workshops continued until the teacher achieved a score of at least 95% on the written test. After this occurred and the teacher's performance with the child became stable, this phase of the study was considered complete. Until this criterion was met and teacher performance was stable below 100 percent accuracy, the performance probes were continued and another workshop was conducted. Repetitions of the workshop included only content areas in which the teacher required more instruction (based on the written test scores and error analyses.)

Coaching. The *in situ* coaching package involved rehearsal of teaching skills and immediate delivery of feedback regarding teaching performance in the child's natural learning environment. During this condition, the experimenter reviewed the component skills necessary to meet performance criteria for each skill, and their particular application to the task that was being taught. The skills were modeled by the experimenter, and then the teacher and the experimenter engaged in roleplay exercises covering the targeted skills, using the actual materials that were to be later used with the child.

The experimenter then instructed the teacher to work with the child on that task (see Appendix H for coaching task sequence). Feedback covering all skill areas was delivered *in situ*, in the form of instructions/prompts and as

consequences for teaching behavior. The coaching checklist was used in order to facilitate fidelity in coaching procedures within and across teachers. This checklist was a shortened form of the data collection system that was used to score teacher performance during all performance probes, and contained all 35 teacher behaviors that were evaluated throughout the study. The teachers continued to receive coaching on teaching performance until each behavior on the checklist was demonstrated and checked off once. After each coaching session, the teacher conducted a 12 min performance probe, covering all four tasks (identical to those in the first phase of the experiment). No feedback of any kind was delivered during these performance probes. The sequence of tasks remained constant throughout the entire study; the order always consisted of receptive labeling, direction following, object imitation, and sequencing, respectively.

All sessions were timed and lasted between 20-30 min, but time was not held constant across teachers, due to varying test results and skill measures. The criterion for advancement into the next task was at least 90% correct teaching episodes across each of the three primary skill areas. When the teacher reached the above criterion across all four tasks, a maintenance phase was conducted for at least three sessions until performance stabilized, and one six-week follow up session was completed.

Social Validity

A social validity survey was administered at the end of the study to gather data from the teachers regarding their impressions of the most/least beneficial phases of the study and the importance of the various phases of the study, and to gather additional comments and feedback about their participation and involvement throughout the experiment (see Appendix I for details.)

CHAPTER 3

RESULTS

Figure 1 shows an error analysis of Teacher 1's performance across the three skill areas for written tests 1 through 4. Each cell on the grid represents 1 of 35 teaching behaviors that were assessed throughout the study. Shaded cells denote questions answered correctly and white cells denote questions answered incorrectly on the written tests. The percentage of correct responding for each test is shown at the bottom of the table.

Teacher 1 scored 66% on the first test. There were seven errors for stimulus presentation (only necessary stimuli are on table, needed materials are easily accessible, instructor proximity to the child during instruction, correct instructional cues, cue stated in sentence form, identification of inappropriate cues/hints, and appropriate instructional pace), seven errors for consequence delivery (identification of potential reinforcers prior to the start of session, delivery of behavior-specific praise, rotating exposure to reinforcers, delivering a worthwhile amount of the reinforcer, immediacy of reinforcer delivery, child receives tangible reinforcer only for correct, unprompted responses, and utilization of differential reinforcement), and two errors for error correction (delivery of the least intrusive prompt at all appropriate times, and usage of correct stimulus materials when using an instructor model as a prompt). Teacher 1 scored 74% on the second test. There were four errors for stimulus presentation (instructor proximity to the child during instruction, clear cue

provided that the session is about to begin, instructor gains child's attention before presenting cue, and identification of inappropriate cues/hints), five errors for consequence delivery (identification of potential reinforcers prior to the start of the session, delivery of behavior-specific praise, rotating exposure to reinforcers, child receives tangible reinforcer only for correct, unprompted responses, and utilization of differential reinforcement), and three errors for error correction (providing opportunities for reinforcement by means of presenting simpler tasks when child's rate of correct responding is low, delivery of only praise as a consequence for a prompted response, and proper fading of prompts). Results of the third test showed an increase in the accuracy of responding to 83%. There were five errors for stimulus presentation (only necessary stimuli are on table, clear cue provided that the session is about to begin, instructor gains child's attention before presenting the cue, correct instructional cues is given, and cue stated in sentence form), three errors for consequence delivery (identification of potential reinforcers prior to the start of the session, utilization of a dense reinforcement schedule, and utilization of differential reinforcement), and no errors for error correction. Accuracy of responding on the fourth test reached 95%. There was one error for stimulus presentation (identification of inappropriate cues/hints), two errors for consequence delivery (rotation of exposure to reinforcers and utilization of differential reinforcement), and no errors for error correction.

Figure 2 shows the overall percentage of correct teaching behaviors across all 4 tasks during each session for Teacher 1. The black bars represent the overall percentage of correct responses on the written tests and striped bars represent the same results but indicate that the material on the test did not directly address the teaching of those skills. Closed circles represent the percentage of correct stimulus presentation teaching behaviors, open squares represent the percentage of correct consequence delivery behaviors, and shaded triangles represent the percentage of correct error correction. Ranges are noted below only when lowest to highest scores ranged over 20%.

Prior to training, a written test score of 66% accuracy was attained. During baseline, correct teaching behaviors in the area of stimulus presentation averaged 61% for receptive labeling, 51% for direction following, 57% for object imitation, and 53% for sequencing. Correct consequence delivery behaviors averaged 51% during receptive labeling, 48% during direction following, 38% during object imitation, and 40% during sequencing. Error correction behaviors were properly emitted at a mean of 23% (range, 0%-34%) during receptive labeling, 23% (range, 0%-33%) during direction following, 8% during object imitation, and 32% during sequencing.

Following the initial workshop (“PW1”), the accuracy of the written test score increased to 74%. Teacher 1’s percentage of correct teaching behaviors improved significantly for stimulus presentation across all 4 tasks. The average score was 77% (range, 61%-92%) during receptive labeling, 76% during direction

following, 72% during object imitation, and 68% (range, 57%-78%) during sequencing. Teaching performance also improved for consequence delivery across all 4 tasks. The average score was 72% (range, 59%-81%) during receptive labeling, 75% (range, 65%-88%) during direction following, 56% during object imitation (range, 42%-71%), and 58% (range, 32%-79%) during sequencing. After the initial workshop phase, the percentage of accurate error corrections varied, averaging 9% (range, 0%-29%) during receptive labeling, 42% (range, 0%-83%) during direction following, 28% (range, 0%-50%) during object imitation, and 9% (range, 0%-32%) during sequencing.

Following the second workshop phase, the percentage of correct stimulus presentation behaviors for Teacher 1 increased to means of 89% for receptive labeling and 92% for direction following, remained stable at a mean of 74% for object imitation, and increased to a mean of 87% for sequencing. Correct consequence delivery also improved in three of four task areas, averaging 83% for receptive labeling, falling to 67% (range, 56%-78%) for direction following, and increasing to means of 68% for object imitation and 63% for sequencing. The accuracy of error correction increased in two tasks, to means of 48% in receptive labeling, and 52% for direction following. However, performance fell to means of 17% (range, 0%-33%) during object imitation, and 0% during sequencing.

After the completion of the third workshop phase, Teacher 1's accuracy of stimulus presentation dropped to means of 84% for receptive labeling, 78%

(range, 65%-95%) for direction following, increased to a mean of 80% for object imitation, and dropped to a mean of 82% (range, 68%-89%) for sequencing. The accuracy of consequence delivery averaged 67% (range, 56%-78%) for receptive labeling, 73% (range, 61%-86%) for direction following, 64% for object imitation (range, 43%-86%), and 70% for sequencing (range, 41%-83%). The accuracy of error correction averaged 55% (range, 31%-80%) for receptive labeling, 41% (range, 25%-71%) for direction following, 15% for object imitation (range, 0%-63%), and 34% for sequencing (range, 0%-81%).

Following the introduction of coaching, the accuracy of teaching performance increased to means of 94% for correct stimulus presentation episodes in receptive labeling, 94% for direction following, 90% for object imitation, and 93% for sequencing. The accuracy of consequence delivery averaged 85% for receptive labeling, 80% for direction following, 92% for object imitation, and 81% for sequencing. The accuracy of error correction increased to an average of 88% (range, 79%-100%) for receptive labeling, 88% for direction following, 100% for object imitation, and 75% (range, 57%-100%) for sequencing.

Maintenance data shows that Teacher 1 maintained her previous performance (and actually improved on three tasks), with an average accuracy of 96% for stimulus presentation during receptive labeling, 94% during direction following, 92% during object imitation, and 96% during sequencing. Teacher 1's consequence delivery also improved to a mean accuracy of 92% (range, 72%-100%) during receptive labeling and 92% during direction following. Accuracy

dropped to a mean of 77% during object imitation, and maintained at a mean of 81% during sequencing. Teacher 1's accuracy of error correction maintained at an average of 88% (range, 57%-100%) during receptive labeling, increased to a mean of 95% during direction following, fell to a mean of 29% (range, 0%-79%) during object imitation, and dropped slightly to a mean of 69% during sequencing.

Follow-up data showed that Teacher 1's accuracy of stimulus presentation was at 94% for receptive labeling, 100% for direction following, 94% for object imitation, and 89% for sequencing. Accuracy of consequence delivery was maintained in one task only. Accuracy of consequence delivery increased to 100% for receptive labeling, and decreased to 81% for direction following, 66% for object imitation, and 77% for sequencing. Accuracy of error correction improved in three of the four tasks, with scores of 100% for receptive labeling, 80% for direction following, 69% for object imitation, and 83% for sequencing.

When coaching was implemented for receptive labeling, some generalization of teaching skills in two of the other tasks was observed. Error correction skills generalized gradually in direction following tasks and to a greater degree in sequencing tasks. In addition, some gradual generalization of consequence delivery skills was observed in the object imitation task.

Figure 3 shows the number of teaching targets mastered by the child participant with Teacher 1 throughout all phases of the study. Results show that the child's rate of learning (indicated by target mastery) was 2.75 tasks per

session during baseline, 3.8 tasks per session during PW1, 8 tasks per session during PW2, 6 tasks per session during PW3, 5.6 tasks per session during coaching, and 8 tasks per session during maintenance and follow-up.

Figure 4 represents an error analysis of Teacher 2's performance across three skill areas for written tests 1 through 4. Each cell on the grid represents 1 of 35 teaching behaviors that were assessed throughout the study. Shaded cells denote questions answered correctly and white cells denote questions answered incorrectly on the written tests. The percentage of correct responding for each test is shown at the bottom of the table.

Teacher 2 scored 58% on the first written test. There were six errors for stimulus presentation (only necessary stimuli are on table, needed materials are easily accessible, instructor proximity to the child during instruction, clear cue provided that session is about to start, instructor gains child's attention before presenting the cue, and identification of inappropriate cues/hints), five errors for consequence delivery (identification of potential reinforcers prior to the start of session, rotating exposure to reinforcers, child receives tangible reinforcer only for correct, unprompted responses, utilization of a dense reinforcement schedule, and utilization of differential reinforcement), and four errors for error correction (appropriate timing of prompt delivery, providing opportunities for reinforcement by means of presenting simpler tasks when child's rate of correct responding is low, delivery of only praise as a consequence for a prompted response, and allocation of "thinking time" to the child before prompt delivery). Teacher 2 scored

78% on the second test. There were three errors in stimulus presentation (only necessary stimuli are on the table, needed materials are easily accessible, and identification of inappropriate cues/hints), four errors for consequence delivery (identification of potential reinforcers prior to the start of the session, delivery of behavior-specific praise, rotating exposure to reinforcers, and utilization of differential reinforcement), and three errors for error correction (appropriate timing of prompt delivery, providing opportunities for reinforcement by means of presenting simpler tasks when child's rate of correct responding is low, and delivery of only praise as a consequence for a prompted response). Results of the third test showed a decrease in the accuracy of responding to 77%. There were three errors for stimulus presentation (only necessary stimuli are on table, clear cue provided that session is about to start, and identification of inappropriate cues/hints), four errors for consequence delivery (delivery of behavior-specific praise, immediacy of reinforcer delivery, utilization of a dense reinforcement schedule, and utilization of differential reinforcement), and two errors for error correction (providing opportunities for reinforcement by means of presenting simpler tasks when child's rate of correct responding is low, and appropriate fading of prompts). Accuracy of responding reached 98% on the fourth test. There were no content behaviors missed in the content area of stimulus presentation, one error in consequence delivery (therapist waits until the reinforcer is consumed before delivering the next cue), and no errors were present in the content area of error correction.

Figure 5 represents the overall percentage of correct teaching behaviors across all 4 tasks during each session for Teacher 2. The black bars represent the overall percentage of correct responses on the written tests and striped bars represent the same results but indicate that the material on the test did not directly address the teaching of those skills. Closed circles represent the percentage of correct stimulus presentation teaching behaviors, open squares represent the percentage of correct consequence delivery behaviors, and shaded triangles represent the percentage of correct error correction.

Prior to training, a written test score of 58% was attained. During baseline, correct teaching behaviors in the area of stimulus presentation averaged 53% (range, 39%-62%) for receptive labeling, 46% (range, 21%-61%) for direction following, 48% for object imitation, and 59% (range, 50%-75%) for sequencing. Correct consequence delivery behaviors averaged 66% (range, 48%-78%) during receptive labeling, 52% during direction following, 48% (range, 35%-59%) during object imitation, and 51% during sequencing. Error correction behaviors were properly emitted at a mean of 21% (range, 0%-42%) during receptive labeling, 27% (range, 0%-62%) during direction following, 24% during object imitation, and 11% (range, 0%-25%) during sequencing.

Following the initial workshop the accuracy of the written test score increased to 78%. Teacher 2's percentage of correct teaching behaviors improved significantly in the skill area of stimulus presentation in three of the four tasks, to means of 59% during receptive labeling, 69% (range, 61%-87%) during

direction following, fell slightly to a mean of 53% during object imitation, and a mean of 55% during sequencing. Teaching performance was variable in the skill area of consequence delivery, falling to a mean of 56% (range, 39%-69%) during receptive labeling, rising to a mean of 62% (range, 46%-72%) during direction following, dropping slightly to a mean of 46% during object imitation (range, 37%-58%), and rising to a mean of 56% during sequencing. After the initial workshop phase, the percentage of accurate error correction behaviors varied, falling to averages of 6% (range, 0%-25%) during receptive labeling, 22% (range, 0%-36%) during direction following, 22% during object imitation, and rising to an average of 18% (range, 0%-35%) during sequencing.

Following the second workshop phase, percentages of correct stimulus presentation for Teacher 2 increased in all tasks to means of 75% for receptive labeling, 80% for direction following, 63% for object imitation, and 68% (range, 57%-79%) for sequencing. Correct consequence delivery for Teacher 2 also improved in two of four task areas, but dropped to averages of 53% for receptive labeling and 57% for direction following. Performance improved slightly to an average of 54% (range, 38%-70%) for object imitation, and 62% for sequencing. Following the second workshop phase, correct error correction behaviors for Teacher 2 increased in three of the four tasks, to means of 10% (range, 0%-20%) in receptive labeling, 51% for direction following, and 45% (range, 33%-57%) during object imitation, but dropped to a mean of 11% (range, 0%-22%) during sequencing.

After the completion of the third workshop phase, Teacher 2's percentage of correct stimulus presentation increased to means of 78% for receptive labeling, 82% (range, 57%-93%) for direction following, 72% for object imitation (range, 61%-81%), and 73% (range, 42%-82%) for sequencing. Teacher 2's percentage of correct consequence delivery also improved across all tasks, averaging 58% (range, 46%-71%) for receptive labeling, 64% (range, 56%-85%) for direction following, 68% for object imitation (range, 48%-94%), and 68% (range, 50%-84%) for sequencing. Following the third workshop, Teacher 2's percentage of correct error correction was quite variable, averaging 30% (range, 0%-57%) for receptive labeling, 57% (range, 31%-80%) for direction following, falling to an average of 18% for object imitation (range, 0%-71%), and rising to an average of 35% for sequencing (range, 0%-100%).

Following the introduction of coaching, Teacher 2's teaching performance improved to means of 92% correct stimulus presentation episodes in receptive labeling, 96% in direction following, 89% in object imitation, and 93% in sequencing. Teacher 2 averaged 90% (range, 71%-97%) correct consequence delivery behaviors in receptive labeling, 78% (range, 64%-88%) in direction following, 87% in object imitation, and 86% in sequencing. In addition, error correction improved to means of 95% correct error correction behaviors in receptive labeling, 89% in direction following, 81% (range, 50%-100%) in object imitation, and 91% in sequencing.

During the maintenance phase, Teacher 2 averaged 96% correct stimulus presentation during receptive labeling, 94% during direction following, 84% during object imitation, and 89% during sequencing. Teacher 2's consequence delivery improved to means of 95% correct teaching behaviors in receptive labeling and 91% during direction following, but dropped slightly to 83% during object imitation, and to 81% during sequencing. Maintenance data showed that Teacher 2 averaged 80% (range, 64%-100%) correct error correction behaviors during receptive labeling, 93% during direction following, 87% (range, 73%-100%) during object imitation, and 70% (range, 56%-80%) during sequencing.

Follow-up data showed that accuracy of stimulus presentation maintained at 94% for receptive labeling, 93% for direction following, and rose to 94% for object imitation and 93% for sequencing. The accuracy of consequence delivery maintained in three of four tasks, with accuracy scores of 98% for receptive labeling, 95% for direction following, 84% for object imitation, and 72% for sequencing. The accuracy of error correction maintained at 80% for receptive labeling, 92% for direction following, and 70% for sequencing. Performance accuracy was 100% for object imitation.

Upon implementation of coaching in receptive labeling, some generalization of teaching skills was observed in two of the other tasks. Consequence delivery skills generalized to the direction following task, and error correction skills also generalized to direction following and sequencing tasks. In addition, when coaching was initiated for direction following, some generalization

of consequence delivery skills was observed with object imitation and sequencing. Also, error correction skills were observed to generalize to the object imitation task.

Figure 6 shows the number of teaching targets mastered by the child participant with Teacher 2 throughout all phases of the study. Results show that the child's rate of learning (indicated by target mastery) was 5.25 tasks per session during baseline, 2.75 tasks per session during PW1, 4.5 tasks per session during PW2, 5.75 tasks per session during PW3, 7.8 tasks per session during coaching, and 5 tasks per session during maintenance and follow-up.

CHAPTER 4

DISCUSSION

The results of this study show that the workshop training had different effects on the participants' test performances and the target skills. Overall, improvements in the accuracy of the test scores were associated with improvements on teaching skills. However, the accuracy of test results pertaining to particular skills (i.e., stimulus presentation, consequence delivery or error correction) was not associated with improvements in the application of those skills. For example, participants scored well on test questions about error correction but they implemented the error procedures with the least amount of accuracy. The effects of coaching were faster and larger than those produced by the workshop, especially with the skills for which the workshop was unsuccessful. After reaching criterion, these skills maintained under baseline conditions and after 6 weeks without practice. With respect to generalization, the workshop training not only affected the target task (receptive labeling), but affected all tasks in particular skill areas as well. The implementation of coaching during the receptive labeling task also promoted skill generalization to other tasks, even though effects were variable across skills, tasks, and participants. In both cases the generalization tasks required direct training to reach close to 100% criteria.

The effects of improved teacher performance on the child's performance varied across conditions and participants but in general it can be said that the learning improved from baseline conditions or was stabilized at the highest levels

of baseline conditions. These results add to the existing literature on teacher training and have some implications for further research.

The effects of workshops on the teaching skills may have depended on the effects the workshop had in the accuracy of written test performances. During the first application of the workshop, the accuracy of the written test scores and the application of the teaching skills improved for Teacher 1. For Teacher 2, neither the accuracy of the written test scores nor the teaching performance improved. This suggests that there is a relationship between written test performance and teaching performance. This is further supported by the improvements seen in teaching after the second application of the workshop. The third application of the workshop, however, produced few and mixed changes. Perhaps the variability of results often found in previous research (Gardner, 1972; Ivancic, Reid, Iwata, Faw, & Page, 1981; Parsons & Reid, 1995; Quilitch, 1975; Schepis, Ownbey, Parsons, & Reid, 2000; Shore, Iwata, Vollmer, Lerman, & Zarcone, 1981; Sigafoos, Kerr, Roberts, & Couzens, 1994) is due to the varying effects that workshops have on participants' teaching behavior due to differences in their prerequisite behaviors. In this study, Teacher 1 may have had an added benefit to learn new skills over Teacher 2, in that Teacher 1 frequently observed and assisted at the preschool where the study took place. This experience might have provided extra models beyond what was offered in the procedures of this experiment. Interestingly, Teacher 1's initial teaching performance was only slightly better than Teacher 2's. Also, the participant

performances became more similar with continued exposure to the workshops. During teaching sessions, Teacher 1 usually completed fewer teaching trials than Teacher 2, although this was not a direct measure of teacher performance during this study. This may have been due to the fact that Teacher 1's previous relationship with the child (as his mother) did not consist of this intense teaching style, therefore possibly creating more instances of child non-compliance, whereas Teacher 2 had no previous relationship with the child. Other differences between Teacher 1 ("parent") and Teacher 2 ("non-parent") participants were minimal.

The effects of each workshop were small, and even when the content of the workshop was learned to levels close to 100% accuracy, the accuracy of performance was only moderate. This is consistent with other findings in the staff training literature (Shore, et al., 1995; Quilitch, 1975; Gardner, 1972; Parsons & Reid, 1995). Interestingly, in the present study the workshop did not affect the three measured skill areas (stimulus presentation, consequence delivery, and error correction) equally. Clearest improvements were seen in the content area of stimulus presentation, some were seen in consequence delivery, but none were observed in error correction. Thus, an inverse relationship existed between test performance and actual teaching performance. The content area of stimulus presentation contained the least accurate responses on the written tests, but the most accurate teaching responses. The content area of error correction contained the most accurate responses on written tests but the least accurate

responding with respect to teaching performance. Perhaps there were more opportunities for practice of stimulus presentation and consequence delivery skills than error correction skills, due to the fact that the child often did not make many errors. Also, the instructions about stimulus presentation may have been easier to follow. That is, stimulus presentation procedures had fewer decision points than consequence delivery, and error correction procedures were even more complex than consequence delivery procedures. It might also be that the participants' repertoires on the written and application tests were independent. The phenomenon is similar to the correspondence of saying and doing; often feedback about the "doing" is needed before the correspondence between "saying" and "doing" is achieved (c.f., Risley & Hart, 1968). There is also the possibility that better instruction would have facilitated the skill application. It is also important to note that written tests administered in this study focused primarily on listener behavior (i.e., multiple-choice questions) rather than speaker-writer behavior (i.e., essay questions). Perhaps if the written test had taken the form of speaker-writer behavior, then the repertoires of teachers' verbal behavior about the science and contingency-shaped teaching behavior would have converged into verbally-mediated teaching repertoires (Greer, 1991.) These issues warrant future research.

In contrast to workshop training, coaching immediately changed the teaching behavior, and this behavior rapidly increased to criterion levels. The effects were most clearly seen in error correction procedures. However, it is

difficult to evaluate the effects on stimulus presentation and consequence delivery due to a ceiling effect. At the beginning of the study, skills in these areas were more accurate than in error correction, therefore leaving error correction procedures much more room for improvement. The improvements are consistent with previous research showing that coaching is an effective procedure to train teachers (Ducharme, 2001; Harchik, Sherman, Sheldon, & Strouse, 1992; Joyce & Showers, 1988; Kaiser, Hester, Alpert, & Whiteman, 1995; Lavie & Sturmey, 2002; Moran & Whitman, 1991; Schepis, et al., 2000; Schepis, Reid, Ownbey, & Parsons, 2001; Shore, et al., 1995).

Interestingly, in two instances (one for each participant), performance criteria were reached after the first coaching session; therefore maintenance procedures began on the next session. Teacher performance of these tasks did not maintain as well as the others during the maintenance phase. This suggests that possibly the most appropriate performance criterion was not used. Perhaps adding one or two or more sessions to the criterion would have produced better maintenance. Further research is needed in this area.

In this study, the effects of coaching were not evaluated independently of workshop training. Coaching may be less effective without the workshop training, or it might be that the workshop is not even needed. It would be interesting to change the sequence of conditions to evaluate the effects of coaching before the workshop, thus the effects of coaching on verbal performance could be analyzed, using on a “do-know” relationship instead of a “know-do” relationship.

The research literature in the area of generalization has reported varying results in the past across studies in addition to within studies. The results of this study are consistent with previous research. In this study, the effects of coaching in one task generalized to other tasks to different extents. Teacher performance in the generalization tasks, however, never reached performance criteria and coaching was still required. On the other hand, the teaching skills taught during the workshops were almost always applied during teaching of all of the tasks. Coaching seemed to have a less general effect on teaching skills in other task areas, even though generalization improved over time in all tasks. It is not clear what is responsible for this difference of generalization patterns. Further research is required in this particular issue and generalization in general.

For the most part, child performance appeared to be unrelated to the teachers' skill acquisition, especially with Teacher 1, in which the highest rate of child target acquisition (per phase) occurred following the second workshop. However, all rates of target child acquisition were higher following baseline conditions, although no specific patterns were recognized across consecutive phases. With Teacher 2, the highest rate of child target acquisition occurred during the coaching phase, aligning more closely with more accurate teacher performance. The differences between child performance with Teacher 1 vs. Teacher 2 cannot be directly contributed to teacher skill levels due to the fact that both teachers shared specific child targets. For example, one teacher may have introduced and taught a new target (e.g., a sequence pattern), but the child may

have mastered this pattern during the other teacher's session. Exact mastery of child teaching targets between the two teacher participants remains unclear due to this arrangement.

Social validity results generated positive comments about all aspects of the study, with the most favorable comments pertaining to the coaching phase. Both participants viewed the coaching phase as the most valuable to their skill acquisition, and although they felt that the workshop helped them learn some basic concepts and techniques, they did not feel comfortable with their teaching performance until coaching occurred. Additionally, both participants rated the one-on-one training as "very important" (the highest possible ranking) when working with children with autism, and stated that their learning experience was worth the amount of training provided (see Appendix I for completed forms.)

Because of the time spent in workshop training and the slower growth of teaching performance during this phase, perhaps an ideal method of training may be to provide brief workshop-style training (to cover definitions and general teaching techniques), and then move directly into hands-on coaching. Following success of teaching performance after coaching several tasks (which will, of course, vary due to programming differences), a schedule of coaching maintenance would need to be implemented to ensure that effective teaching remains in place. Verbal behavior about the service should also be assessed, not only to measure its effect on teaching performance, but also to establish more

effective communication across treatment teams and the behavior analytic verbal community as a whole.

Teacher 1

Skill Area	Behaviors	T1	T2	T3	T4
Stimulus Presentation	1		■		■
	2		■	■	■
	3			■	■
	4	■			■
	5	■			■
	6		■		■
	7	■	■	■	■
	8		■		■
	9	■	■	■	■
	10			■	
	11		■	■	■
Consequence Delivery	12				■
	13	■	■	■	■
	14	■	■	■	■
	15			■	■
	16	■	■	■	■
	17	■	■	■	■
	18			■	
	19		■	■	■
	20	■	■	■	■
	21	■	■	■	■
	22		■	■	■
	23			■	■
	24	■	■		■
	25				
Error Correction	26	■	■	■	■
	27	■	■	■	■
	28	■		■	■
	29	■		■	■
	30	■	■	■	■
	31	■	■	■	■
	32		■	■	■
	33		■	■	■
	34	■	■	■	■
	35	■		■	■
Score in %		**66**	**74**	**83**	**95**

■ correctly answered

□ incorrectly answered

Figure 1. Correct and incorrect test answers on each teaching behavior across all three skill areas and all four tests.

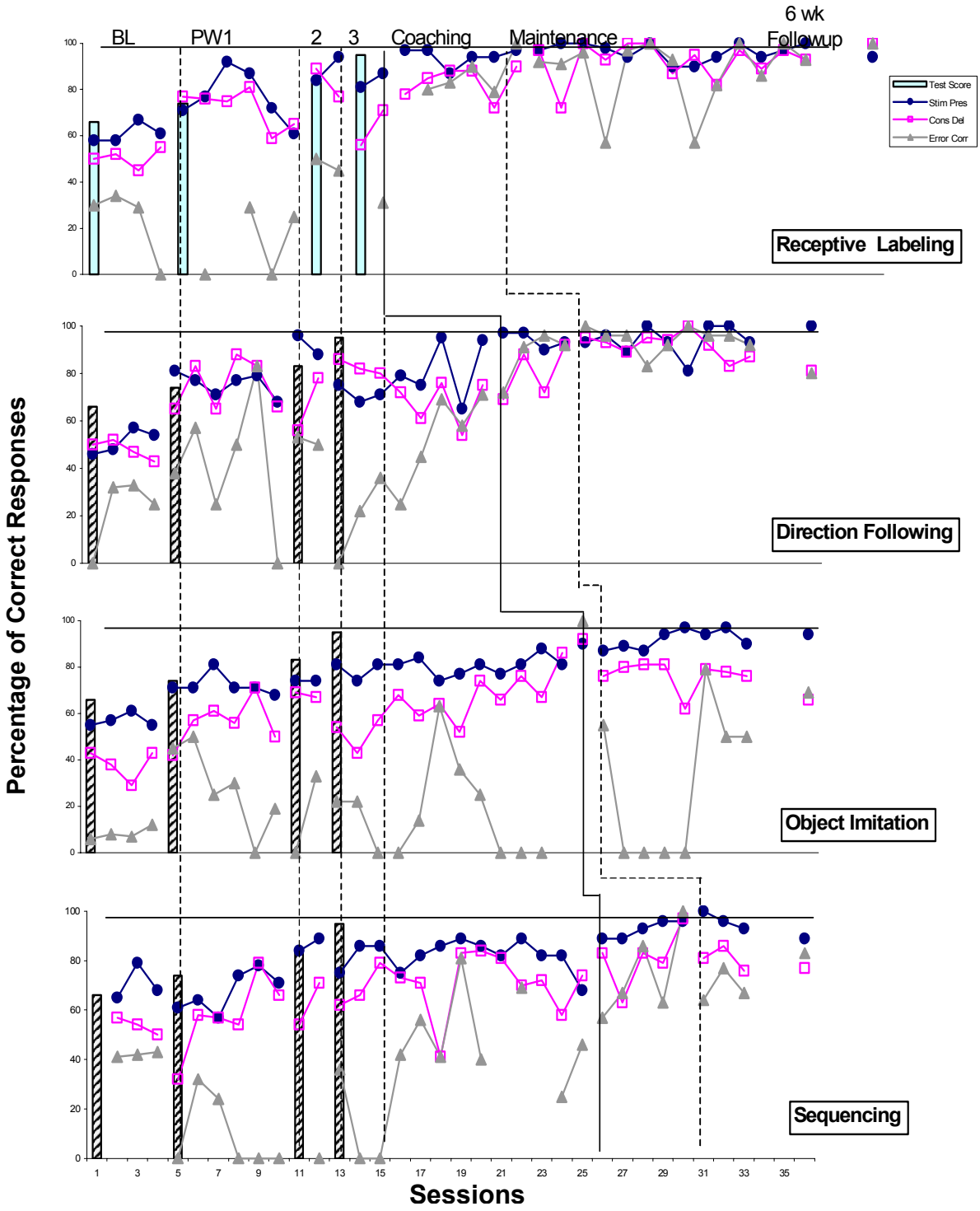


Figure 2. Percentage of correct teaching behaviors across all four tasks during each session for Teacher 1.

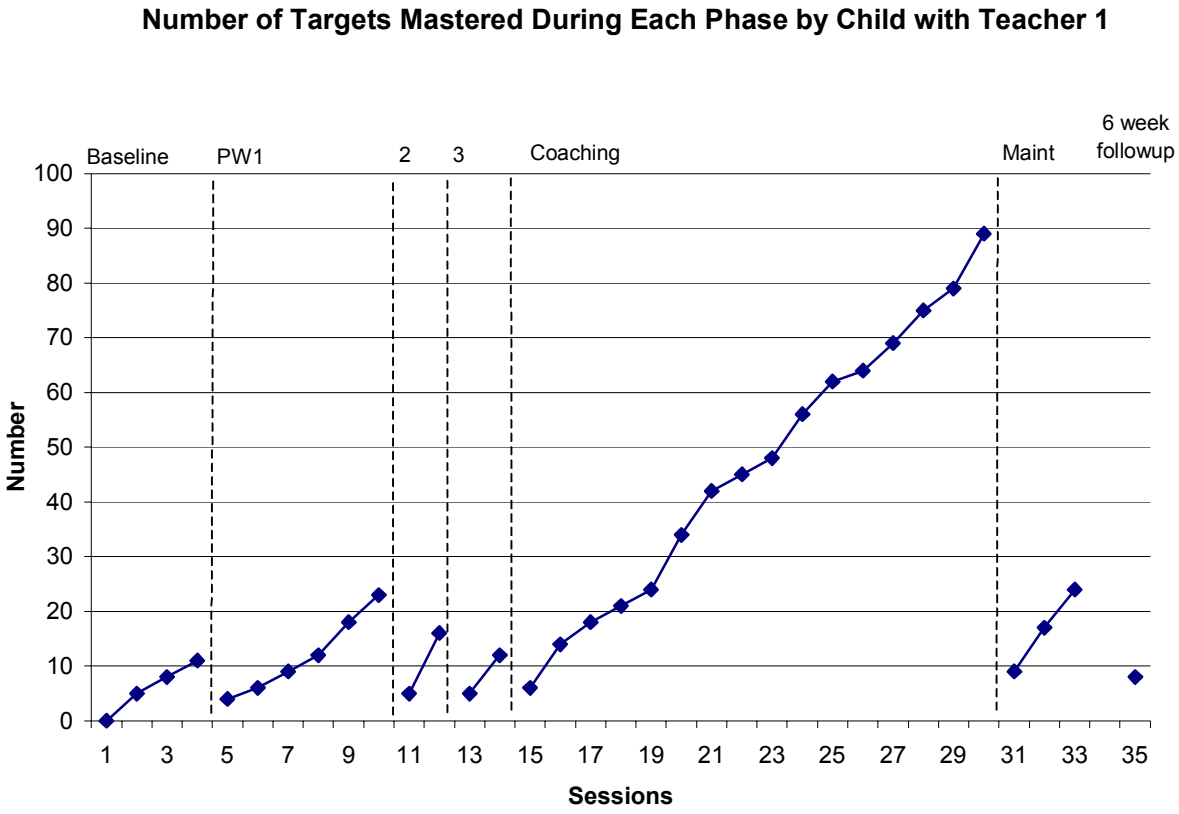


Figure 3. Number of targets mastered by child 1 with Teacher 1 throughout all phases of the study.

Figure 3. Number of targets mastered by child 1 with Teacher 1 throughout all phases of the study.

Teacher 2

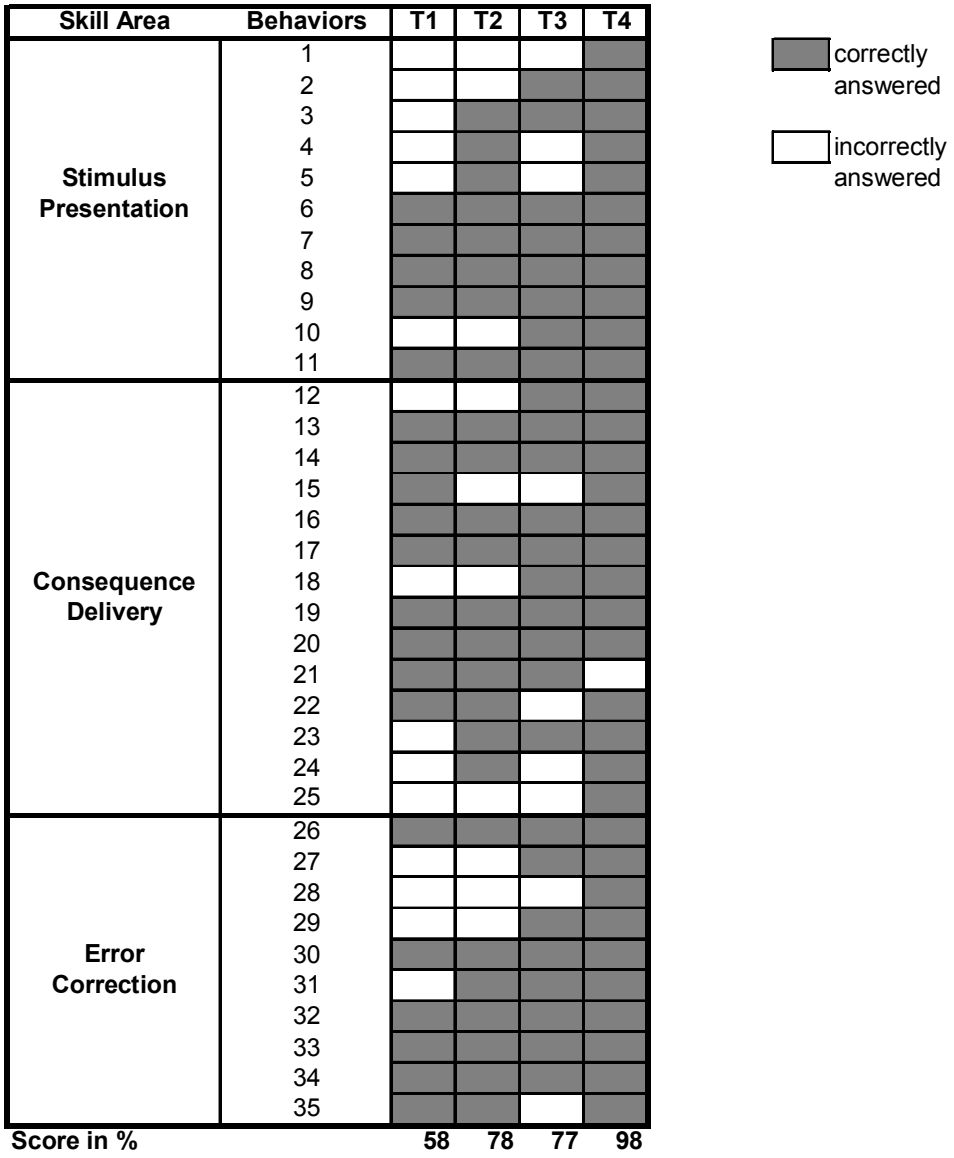


Figure 4. Correct and incorrect test answers on each teaching behavior across all three tasks and all four tests.

Figure 4. Correct and incorrect test answers on each teaching behavior across a

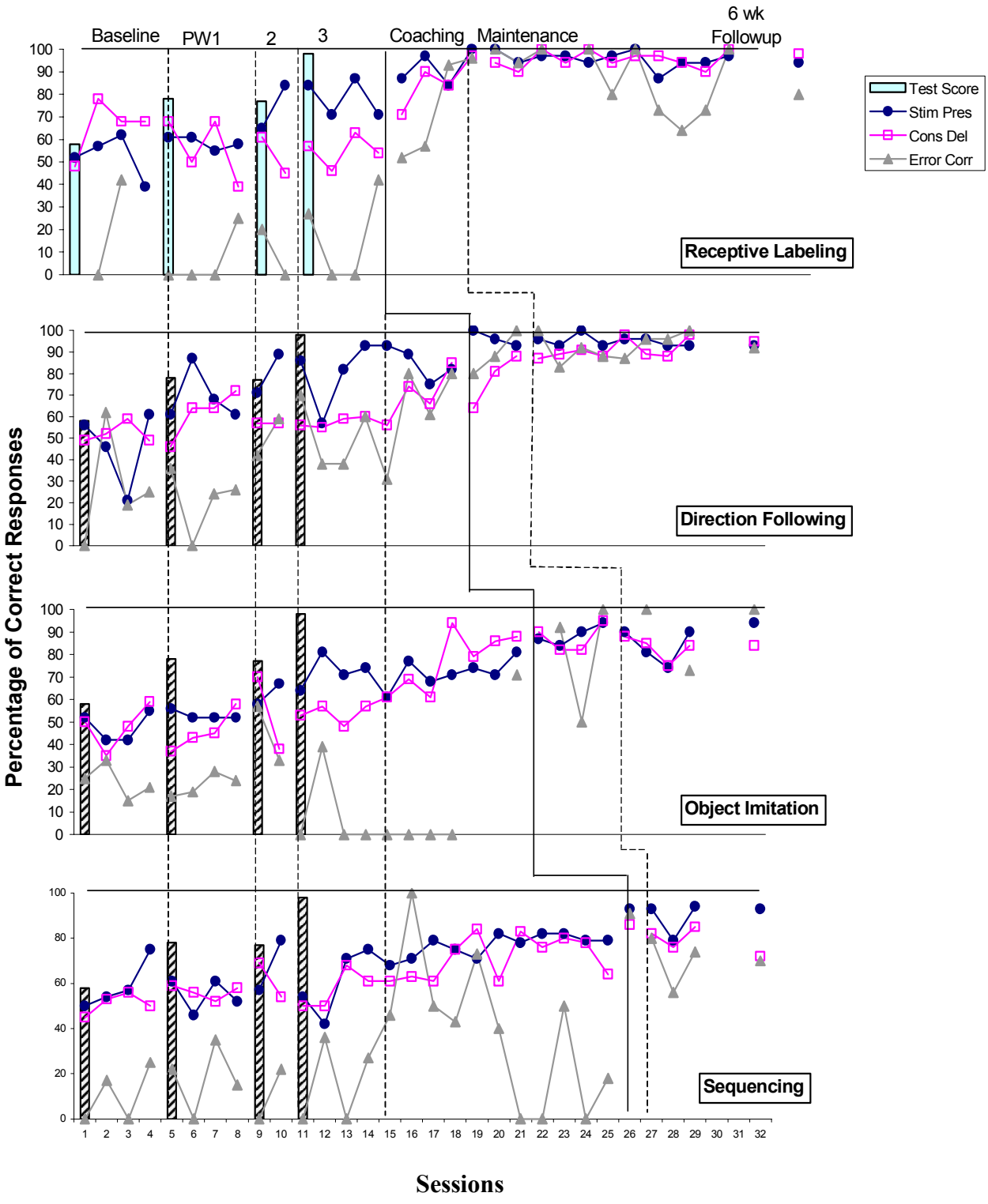


Figure 5. Percentage of correct teaching behaviors across all four tasks during each session for Teacher 2.

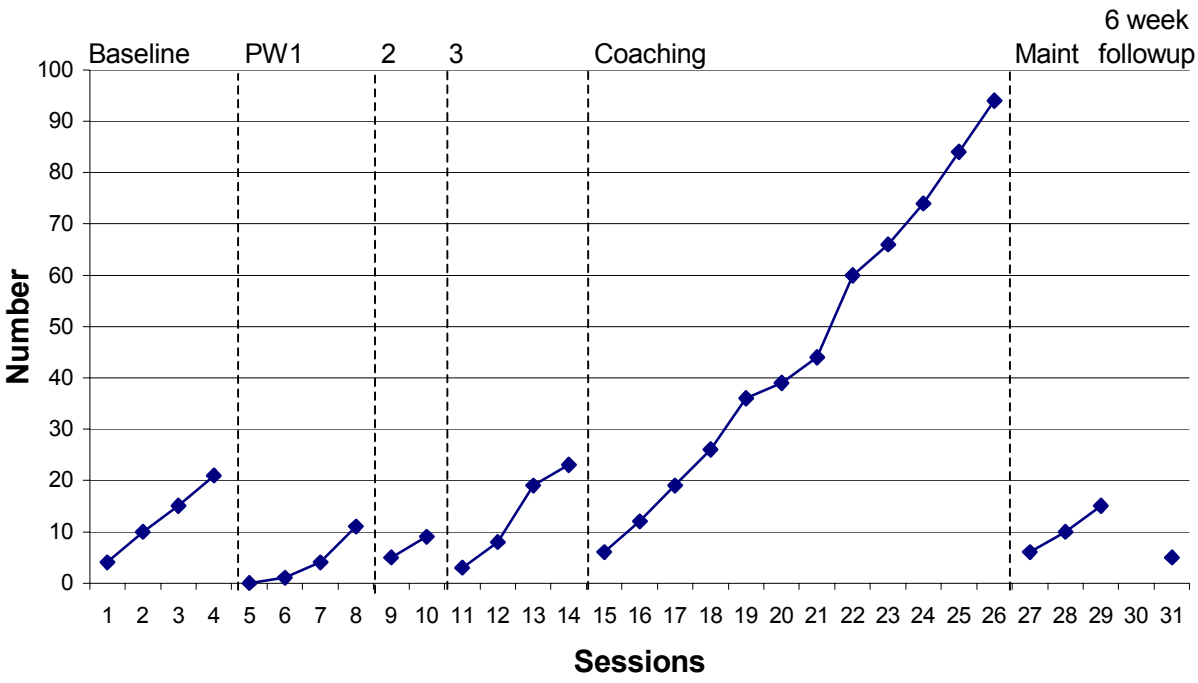
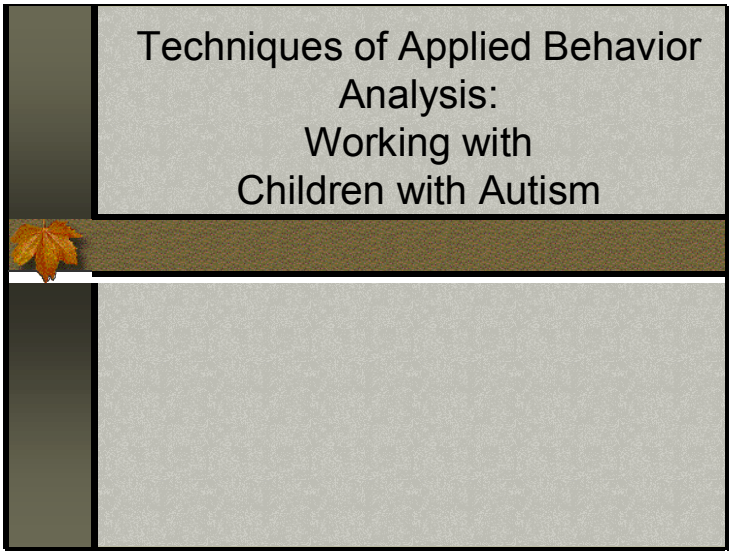


Figure 6. Number of targets mastered by Child 1 with Teacher 2 throughout all phases of the study.

APPENDIX A

ORIGINAL WORKSHOP SLIDES

Slide 1



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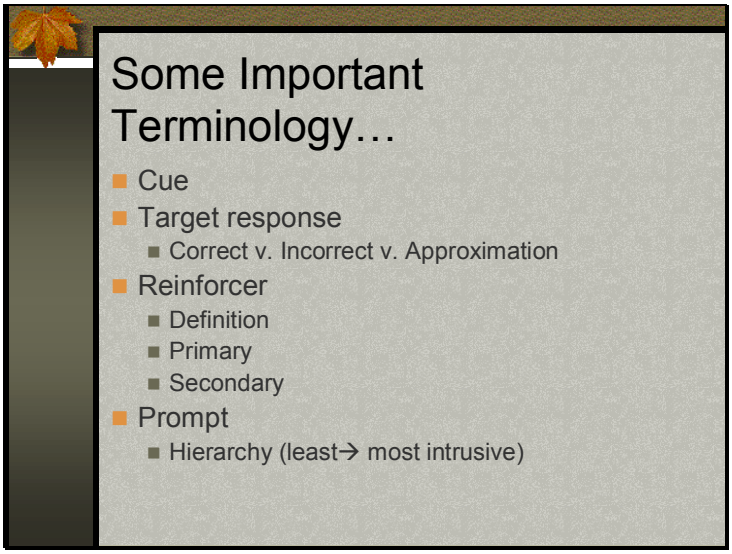

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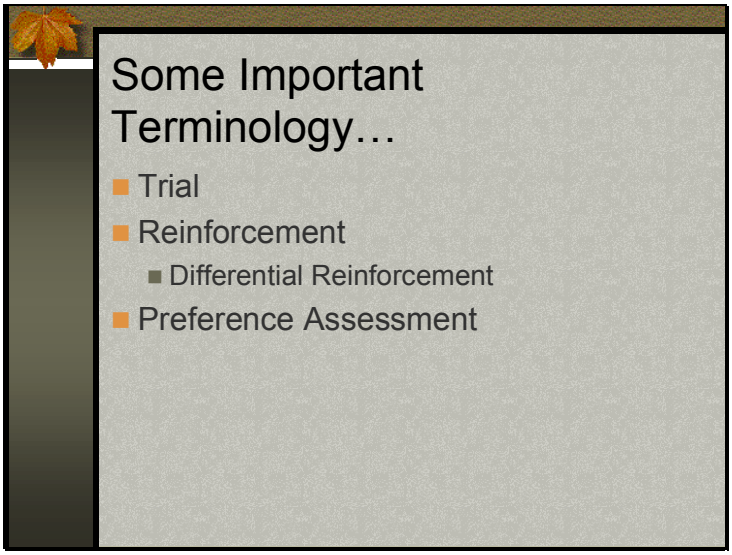

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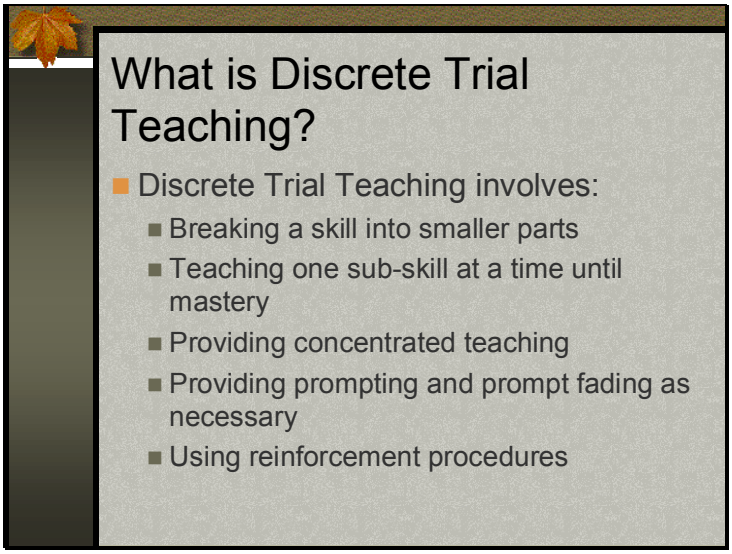

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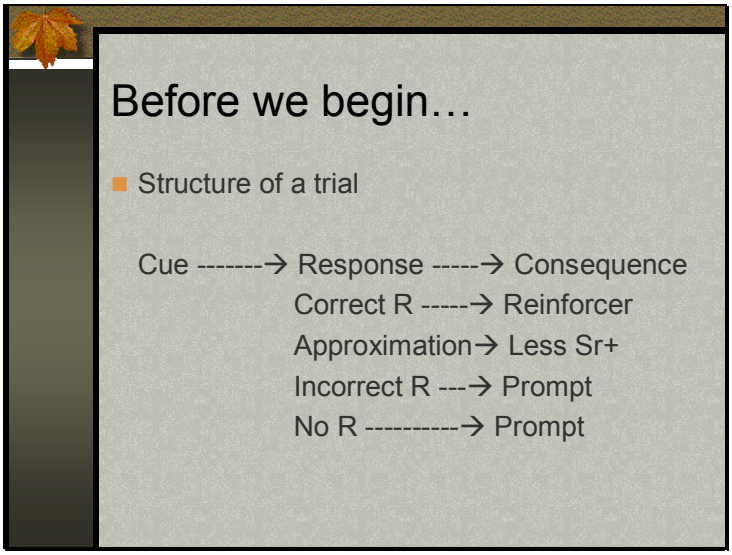

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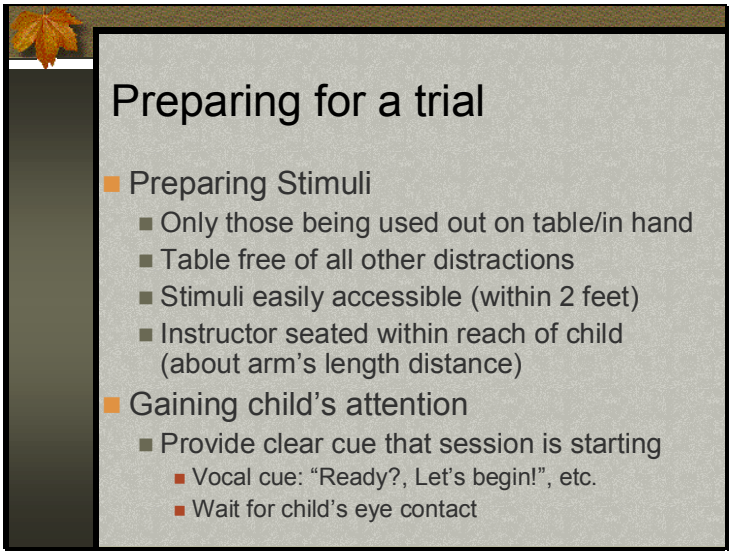

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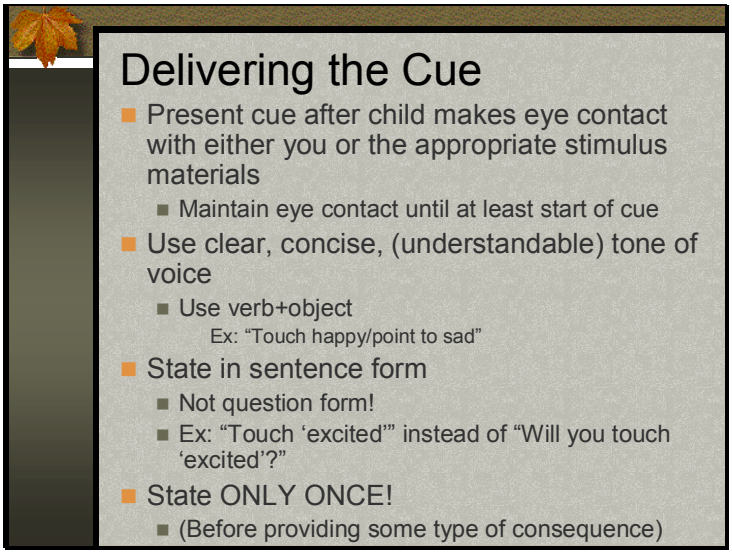

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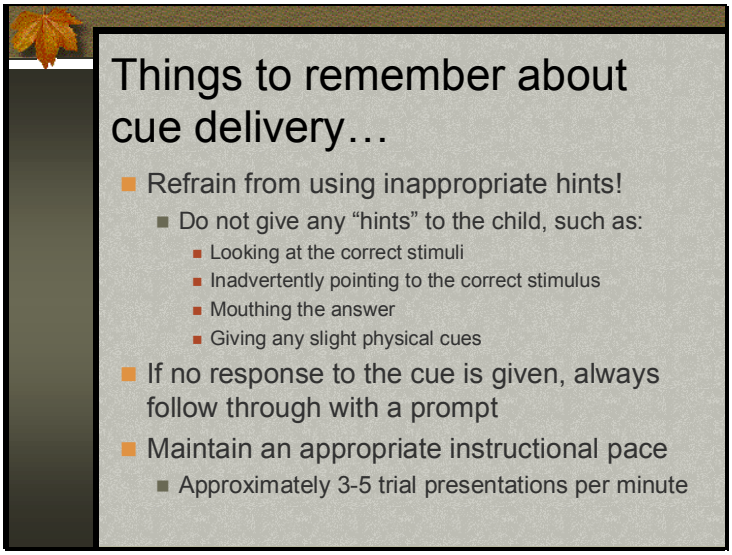

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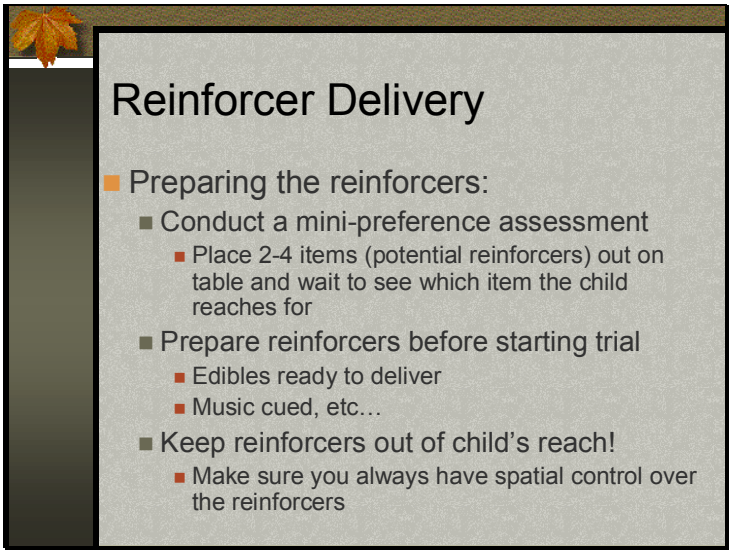

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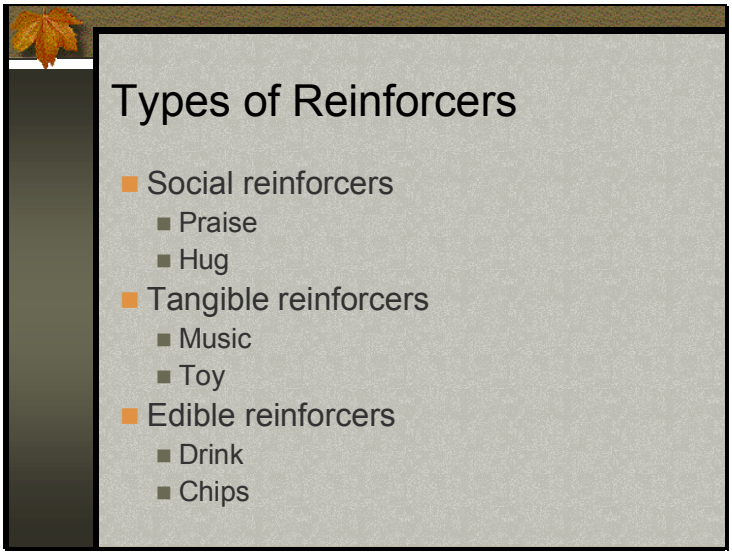

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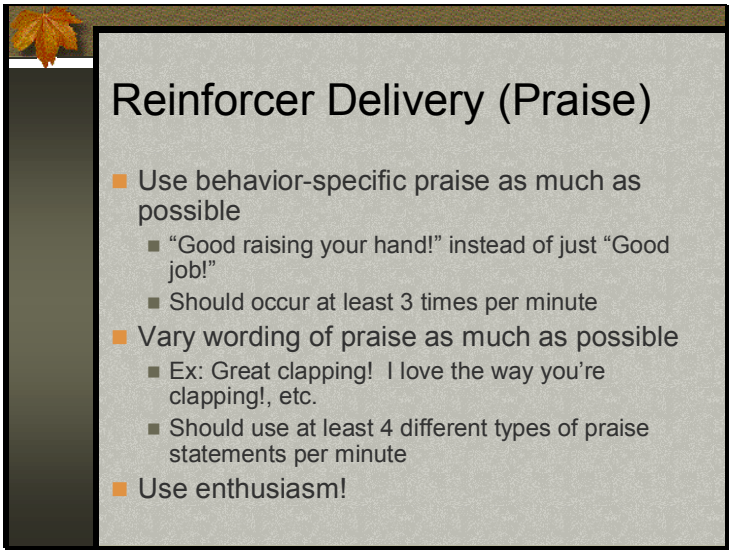

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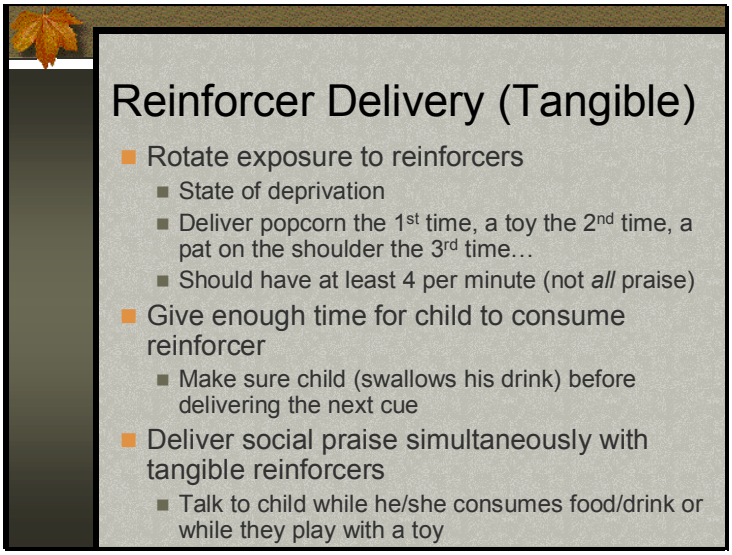

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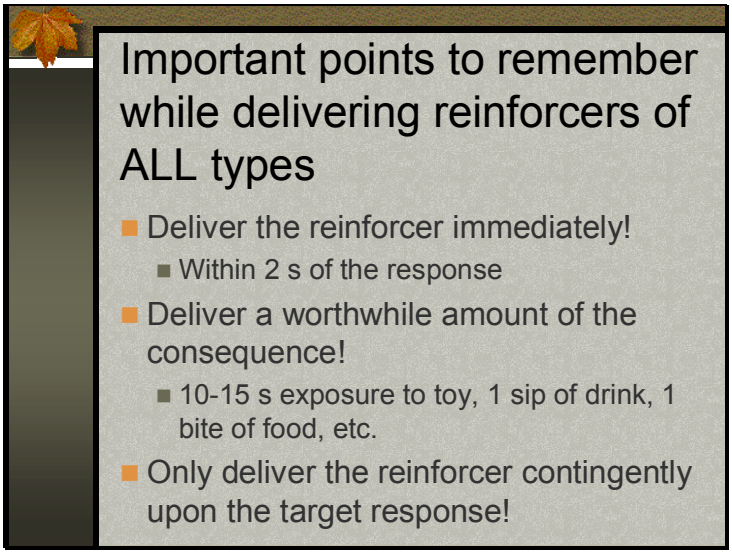

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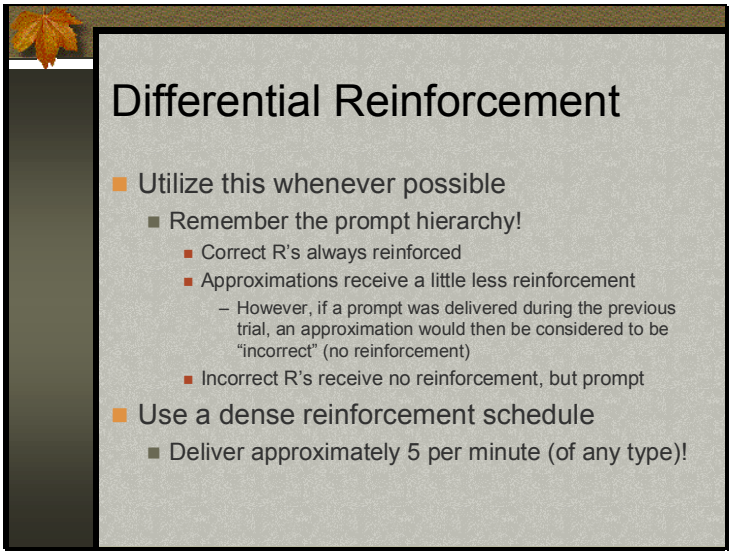

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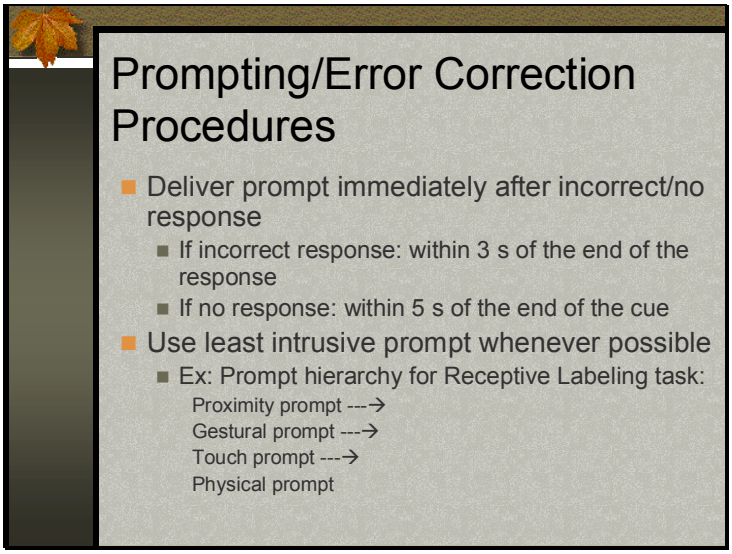

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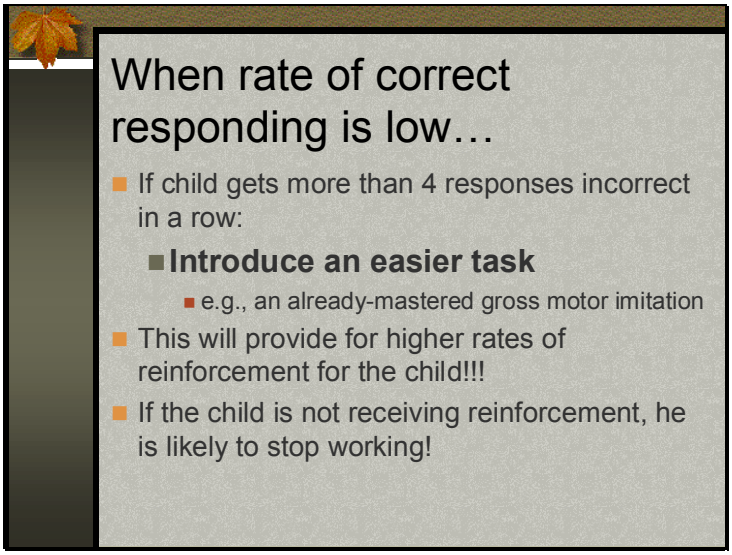

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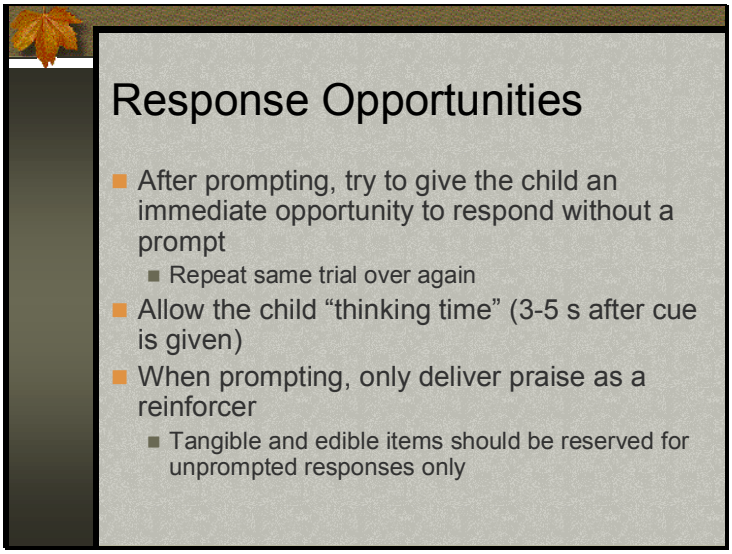

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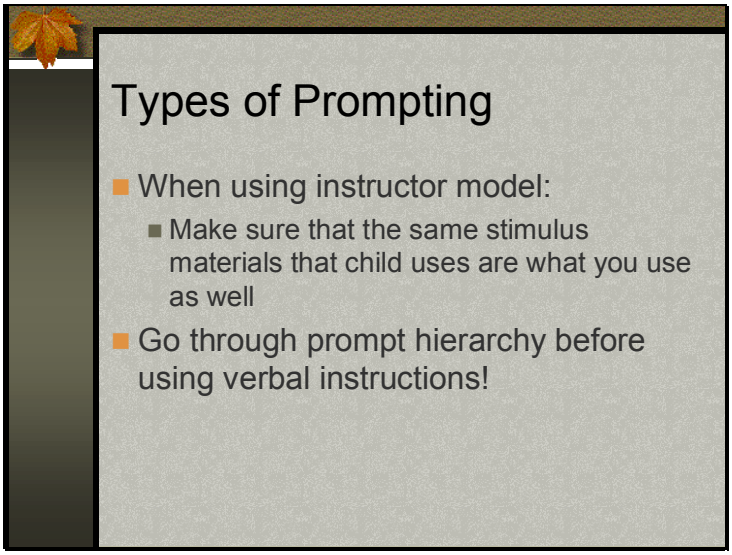

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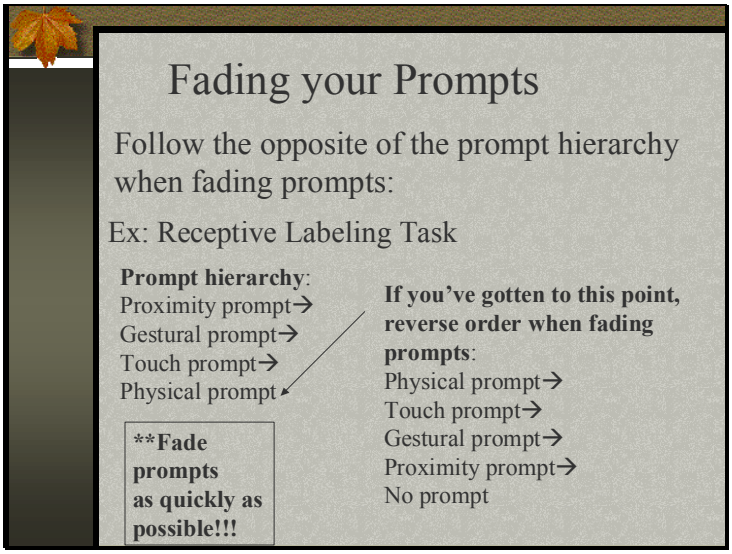

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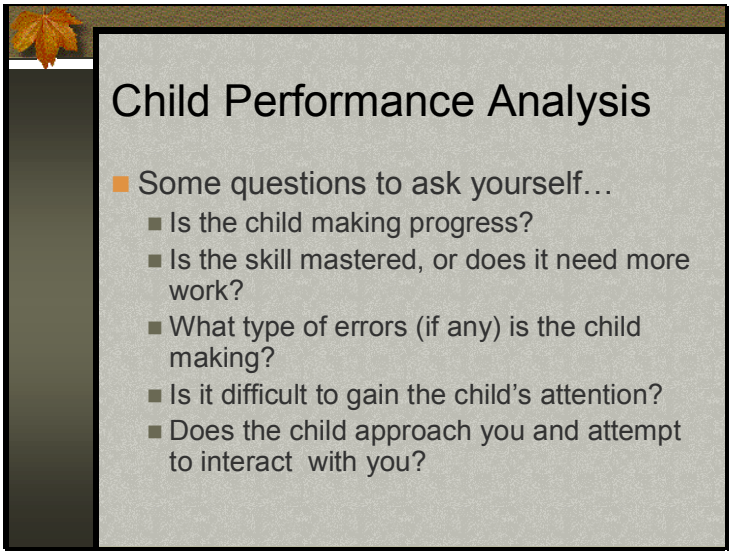

Child Performance Analysis
Some questions to ask yourself…
Is the child making progress?
Is the skill mastered, or does it need more work?
What type of errors (if any) is the child making?
Is it difficult to gain the child's attention?
Does the child approach you and attempt to interact with you?

APPENDIX B

COACHING SKILL CHECKLISTS

COACHING CHECKLIST--STIMULUS PRESENTATION TASK_____

Subject #_____
Date_____
Duration of coaching session_____

1. Only necessary stimuli are on table	☐	☐
2. Needed materials are easily accessible	☐	☐
3. Instructor seated within reach of child	☐	☐
4. Clear cue that session is starting is provided	☐	☐
5. Instructor gains child's attention before presenting cue	☐	☐
6. Correct instruction (cue) is given	☐	☐
7. Cue delivered clearly	☐	☐
8. Cue stated in sentence form	☐	☐
9. Cue delivered only once before some type of prompt or consequence occurs	☐	☐
10. Refrains from using inappropriate cues	☐	☐
11. Appropriate instructional pace is maintained (3-5 trial presentations per minute)	☐	☐

COACHING CHECKLIST--CONSEQUENCE DELIVERY TASK_____

Subject #_____
Date_____
Duration of coaching session_____

1. Identifies potential reinforcers prior to the start of session (at least once per 3-minute sample)	☐	☐
2. Prepares reinforcers prior to the start of trial	☐	☐
3. Spatial control over all reinforcers is utilized	☐	☐
4. Delivers behavior-specific praise (at least 3 per minute)	☐	☐
5. Verbal praise is delivered enthusiastically	☐	☐
6. Wording of verbal praise is varied (at least 4 different types per minute)	☐	☐
7. Rotates exposure to reinforcers (at least 4 per minute--can't all be praise)	☐	☐
8. Worthwhile amount of tangible reinforcer is delivered	☐	☐
9. Social interaction occurs during delivery of tangible reinforcer	☐	☐
10. Waits until reinforcer is consumed before delivering next cue	☐	☐
11. Delivers reinforcer immediately (within 2 s of child R)	☐	☐
12. Child only receives tangible reinforcer for correct, unprompted responses	☐	☐
13. Uses heavy reinforcement schedule (at least 5 per minute overall)	☐	☐
14. Utilizes differential reinforcement properly	☐	☐

COACHING CHECKLIST--ERROR CORRECTION TASK_____

Subject #_____
Date_____
Duration of coaching session_____

1. Prompt is delivered after incorrect responses or non-responses at all times	☐	☐
2. When used, a prompt is delivered immediately (0-3 s) after incorrect response *(for 1st IC response of specific target)*	☐	☐
3. Provides opportunities for reinforcement by means of presenting simpler tasks when rate of correct responding is low (*after 4 IC responses in a row)*	☐	☐
4. Only praise is delivered as consequence for a prompted response	☐	☐
5. After a prompt is delivered, child is given an immediate opportunity to respond without a prompt *(on the same target)*	☐	☐
6. Allows child thinking time (3-5 s) before prompt when appropriate *(for 2nd+ IC or "non-response" of that specific target)*	☐	☐
7. Appropriate (least intrusive) prompt is used at all appropriate times *(for 1st prompt of target)*	☐	☐
8. Correct stimulus materials used when using instructor model as a prompt	☐	☐
9. Properly goes through appropriate (ascending) hierarchy when needed--*after least intrusive prompt is delivered as 1st prompt)*	☐	☐
10. All prompts are faded quickly (follows opposite of prompt hierarchy)	☐	☐

APPENDIX C

OBSERVATION CODE AND PROTOCOLS

Observation Code and Protocols

Definitions are numbered, and some may contain examples of what was scored as a "yes" and a "no" during the course of the experiment.
If any changes or additions were made to definitions, they are notated in italics under the definition.

Skill Area I: Stimulus Presentation
Task Preparation

1. **Only necessary stimuli are on table**: table is free of all other distractions, table contains only necessary materials.
   SCORED AS "YES":
   - Stimuli used for that trial, one (preferably chosen) reinforcer, data sheet with clipboard, pencil

   SCORED AS "NO":
   - More than one reinforcer on table
   - Other materials from other tasks on table

2. **Needed materials are easily accessible**: materials needed for work on the skills are within the teacher's reach (i.e., teacher does not delay work to obtain materials); approximately 2 feet away from instructor.

3. **Instructor is seated within reach of child**: teacher is positioned so that he/she can control access to reinforcers, prompt the child if necessary, easily move materials if needed, etc.

4. **Clear cue that session is starting is provided**: teacher clearly indicates to the student that it is time to begin working.
   "YES":
   - "Ready?"
   - "Let's begin"
   - "It's time to start now"
   - "Let's try something"

   "NO"
   - Teacher just issues the cue without showing readiness
   - Teacher direction is not audible to observer

Cue Delivery

5. **Teacher gains child's attention before presenting the cue**: student is looking where they should be looking (either at therapist or stimuli), appears to be ready to begin instruction.
   "YES":
   - Child looks at teacher until start of the cue and is not emitting any behavior that interferes with task presentation.

   "NO":
   - Child is emitting behavior that interferes with task presentation, e.g., self-stimulatory behavior, when the cue is presented (even if still maintaining appropriate eye contact)

6. **Correct instruction (cue) is given**: teacher delivers the instructional cue that specifies exactly what the child should do and exactly when the child should respond; uses verb + object with no extraneous wording
   "YES":
   - "Touch (the one that barks)"—Receptive Labeling
   - "Show me the (nickel)"—Receptive Labeling
   - "Touch your nose and turn around"—Direction Following
   - "Do this"—Object Imitation
   - "Which one comes next?"—Sequencing

   "NO":
   - "Which one is the (cat)?"—Receptive Labeling
   - "Knock on table and pat knees really fast, please"—Direction Following
   - "Do it like this"—Object Imitation
   - "Which one of these blocks comes next?"

7. **Cue is delivered clearly**: observer can decipher what teacher is saying; cue is audible to observer

8. **Cue is stated in sentence form**: teacher gives a command instead of asking a question
   EXCEPTION:
   - "Which one comes next?"—Sequencing
   - Teacher phrases cue in question format, but then self-corrects—"Can you…(pause)…[Mike], touch the rabbit."

9. **Cue is delivered only once before some type of prompt or consequence occurs**: teacher provides either a reinforcer for correct responses or a prompt for incorrect/no responses before delivering the cue a second time
   "YES":
   - Cue→(incorrect or no child response)→prompt or reinforcer

"NO":

- Cue→(incorrect or no child response)→cue→prompt or reinforcer

Post-Cue Mechanics

10. **Refrains from using inappropriate cues**: not including prompting, teacher uses no inadvertent cueing (i.e., hints, prompting, gestures) to obtain a correct response
    "NO": Teacher:
    - Uses a gesture
    - Head nod
    - Looks at the correct target
    - Uses a proximity prompt that signals child to touch the correct target (when prompt is not needed)
    - Uses voice tone that signals correct answer

11. **Appropriate instructional pace is maintained**: 3 to 5 trials should be conducted per minute. A "trial" consists of a full combination of 1 antecedent, 1 child response, and one consequence. A trial is not considered to be counted until all three of the above components have occurred.
    EXCEPTION:
    - 2 trials per minute permitted in Sequencing task

<u>Skill Area II: Consequence Delivery</u>
Reinforcer Preparation

12. **Teacher identifies potential reinforcers prior to the start of the session**: Teacher offers the child a choice of between 2-5 potential reinforcers
    "YES":
    - Teacher places between 2-5 items on the table (or holds them in his/her hands) and asks the child, "What do you want to work for?" prior to delivery of the cue

    "NO":
    - Teacher chooses the potential reinforcer for the child to work for
    - Teacher gives child the choice after the cue has been given and before the consequence occurs
    - Teacher gives child the choice after the cue and response have occurred

13. **Prepares reinforcers prior to start of trial**: Prior to onset of trial, teacher should cue music, have edibles ready to deliver, etc. Reinforcers are considered to be "prepared" unless the teacher delays its delivery (due to preparation time) by over 2 s.
    "YES":
    - Teacher breaks edible into small pieces, gathers or prepares tangibles, etc.

    "NO":
    - Child must wait for reinforcer delivery for greater than 2 s after the end of the response due to the teacher's disorganization

14. **Spatial control over reinforcers is utilized**: teacher controls delivery of reinforcers so that the child does not have free access to them
    "YES":
    - All reinforcers are kept out of child's reach (except for 1 chosen reinforcer on table)
    - If child attempts to grab reinforcer, teacher blocks access

    "NO":
    - Reinforcers are placed within child's reach (except for chosen reinforcer)
    - Teacher does not block access if child reaches for reinforcer
    - Any materials with potential reinforcing value are within child's reach

Reinforcer Delivery (Praise)

15. **Teacher delivers behavior-specific praise at a rate of 3 times per minute**: teacher emits statements that praise and label the exact behavior that the child engaged in to occasion the praise; specific praise should be delivered at a rate of 3 per minute. One sentence equals one statement.
    "YES":
    - "Yes, the cake is right"
    - "Good touching your nose"
    - "That's right! It's the dog"—2 statements, 1 general, 1 behavior-specific
    - "Yes, the red comes next"
    - "Nice sitting"
    - "Excellent looking"

    "NO":
    - "Good job"
    - "Way to go"
    - "Great"

16. **Verbal praise is delivered enthusiastically**: teacher smiles and raises pitch of voice above monotone when delivering praise

17. **Wording of verbal praise is varied**: teacher uses at least 4 different types of praise statements per minute

Reinforcer Delivery (Praise and Tangible)

18. **Rotates exposure to reinforcers**: teacher uses a variety of consequences; provides the child access to more than 4 different reinforcers per minute (e.g., praise, food, tickles, toy) per minute; one instance must be either a tangible or edible
    "YES":
    - Within one minute, teacher uses "Good job", toy, food item, "Great watching"

    "NO":
    - Teacher uses only praise with no tangible or edible reinforcer within 1 min

19. **Teacher waits until reinforcer is consumed before delivering the next cue**: when a tangible or edible reinforcer is delivered and consumed, the teacher should wait for the item to be consumed before delivering the next cue
    "YES":
    - Child plays with toy→teacher takes toy away→cue
    - Child eats cracker→child swallows cracker→cue

    "NO":
    - Child plays with toy→cue (while child is still holding toy)
    - Child eats cracker→cue (before child swallows cracker)

20. **Social interaction occurs during delivery of tangible reinforcer**: teacher talks to child, tickles, pats shoulder, etc. at least once while child consumes reinforcer
    "YES":
    - Teacher talks to child while recording data during intertrial interval (while child drinks juice or plays with toy)

    "NO":
    - Teacher gives cookie to child without talking to him/her, then teacher turns his/her back and ignores child while he/she finished eating the cookie

21. **Delivers reinforcer immediately**: latency between the end of student's response and delivery of reinforcer is less than 2 s

22. **Worthwhile amount of the (tangible) reinforcer is delivered**: teacher delivers an appropriate amount of the reinforcer to child
"YES":
    - Couple of sips of a drink
    - One chip
    - 15-20 s exposure to toy (unless rejected)

"NO":
    - Handful of goldfish
    - A cup full of juice
    - Allows child to play with toy for over 20 s

23. **Child receives tangible reinforcer for correct, unprompted responses**: reinforcer is not delivered unless child emits desired response (excluding praise as the reinforcer)
"YES":
    - Correct response→tangible/edible reinforcer delivery

"NO":
    - Incorrect response→tangible/edible delivery
    - Approximation of target response→tangible/edible delivery

Differential Reinforcement

24. **Utilizes heavy reinforcement schedule**: teacher delivers at least a total of 5 different reinforcers per minute
"YES" (within 1 min):
    - "Great sitting!"
    - Toy
    - "Awesome touching horse!"
    - Edible
    - "Great job!"

"NO":
    - Fewer than 5 reinforcers are delivered per minute
    - Reinforcers consist of edible, toy, 1 "Good job", and 2 "Good watching"

25. **Utilizes differential reinforcement**: teacher reinforces correct responses, prompts incorrect responses with no reinforcement, reinforces close approximations to a lesser degree unless a prompt was delivered in the previous trial at all appropriate times
"YES":
    - Correct response→tangible, edible, or praise reinforcer
    - Incorrect response→no reinforcement, but prompt

- Close approximation (prompt not delivered in previous trial)→praise for trying and prompt
- Close approximation (prompt delivered in previous trial)→no reinforcement, but prompt

"NO":

- Correct response→prompt and/or no reinforcement
- Incorrect response→reinforcement of any kind
- Close approximation (prompt not delivered in previous trial)→tangible or edible reinforcer and/or no prompt
- Close approximation (prompt delivered in previous trial)→reinforcement and/or no prompt

Skill Area III: Error Correction

Prompt Delivery

26. **A prompt is delivered after an incorrect or non-response at all times**: teacher delivers some type of prompt after every incorrect response emitted by child or non-response

    "YES":

    - "Touch happy"→child touches sad→teacher delivers any type of prompt

    "NO":

    - "Touch happy"→child touches sad→teacher goes onto another target, e.g., "touch excited"
    - "Touch happy"→child touches sad→teacher delivers reinforcer
    - "Touch happy"→child touches sad→teacher delivers same cue again

    ***ADDITIONS MADE ON 10/26/02:

    EVEN WHEN A PROMPT MAY APPEAR TO BE UNINTENTIONAL, IT IS STILL SCORED AS A PROMPT

    PROMPT DOES NOT HAVE TO BE SPECIFIC TO HIERARCHY TO SCORE (type of prompt is addressed in another definition)

27. **Prompt is delivered immediately (for the first response of that particular target)**: teacher delivers prompt within 3 s of the end of the child's response if incorrect or within 3-5 s after the end of the cue if no response

28. **Provides opportunities for reinforcement by means of presenting simpler tasks when rate of correct responding is low**: when child gets more than 4 incorrect responses in a row, teacher introduces an easier

task to provide higher rates of reinforcement (except when child's behavior may be functioning as escape behavior—teacher's discretion)
"YES":
- Incorrect response (x4)→change task (when escape behavior isn't present)
- Incorrect response (x4)→stay on same task (when escape behavior is present)

"NO":
- Incorrect response (x4)→stay on same task (when escape behavior isn't present)
- Incorrect response (x4)→change task (when escape behavior is present)

29. **Only praise is delivered as a consequence for a prompted response**: teacher only delivers verbal praise and refrains from delivering tangible/edible reinforcers when child responses are prompted, even when possibly unintentional prompts are used
"YES":
- (Prompted response)→"Good try"

"NO":
- (Prompted response)→"Good try" and toy
- (Prompted response)→toy or edible

Response Opportunities

30. **Child is given an immediate opportunity to respond without a prompt on that same target**: teacher repeats cue/trial immediately after a prompted response, and does not provide a prompt for child responding for at least 3 s if needed.
"YES":
- Prompted response (any type)→teacher re-presents cue and allows child to respond with no prompt on the next trial
- Prompted response (any type)→teacher re-presents cue and allows child to respond with no prompt on the next trial→if no response within 3-5 s→next least intrusive prompt is provided
- Prompted response (any type)→teacher re-presents cue and allows child to respond with no prompt on the next trial→if incorrect response occurs→next least intrusive prompt is provided

"NO":
- Prompted response (any type)→teacher re-presents trial again with prompt
- Prompted response (any type)→teacher presents another trial with a different task

31. **Allows thinking time when appropriate (for second + incorrect or non-response of that specific target):** teacher allows 3-5 s after cue is given for child to respond before delivering a prompt; reinforces self-corrections
"FOR SECOND + INCORRECT OR NON-RESPONSE OF THAT PARTICULAR TARGET" ADDED ON 10/6/02 TO DIFFERENTIATE BETWEEN #27, WHICH ADDRESSES THE TIMING OF PROMPTS AFTER THE FIRST INCORRECT OR NON-RESPONSE OF THAT PARTICULAR TARGET

Types of Prompting

32. **Appropriate (least intrusive) prompt is used for the first prompt of that particular target**: teacher uses the least intrusive prompt in the hierarchy at all times when a prompt is delivered
"YES":
    - Receptive Labeling: proximity→gestural→touch/model→physical (hand-over-hand)
    - Direction Following: model→touch→physical
    - Object Imitation: model with vocal→gestural→touch items→physical
    - Sequencing: Label (colors) when setting out→proximity→gestural→touch/model→physical
    - Incorrect response in Receptive Labeling (no prompt delivered in previous trials of that particular target)→proximity prompt
    - Incorrect response with touch prompt in Direction Following→physical prompt

    "NO":
    - Incorrect response in Receptive Labeling (no prompt delivered in previous trial)→gestural, touch, or physical prompt
    - Incorrect response with touch prompt in Receptive Labeling→gestural prompt

33. **Correct stimulus materials are used when using instructor model as a prompt**: same stimulus materials that are used with the child are used by the teacher
EXCEPTION ADDED ON 10/23/02: BODY PARTS DURING DIRECTION FOLLOWING

34. **Properly goes through appropriate prompt hierarchy when needed after least intrusive prompt is delivered**: teacher follows the path of least→most intrusive prompting in ascending order (this component does

not include prompt fading) as needed (hierarchy varies between skills). "NA" is scored if child responds correctly after the first (least intrusive) prompt.
"YES":

- Follows order listed above for each task

Prompt Fading

35. **Prompts are faded quickly**: when needed, teacher follows the opposite of the prompt hierarchy after the least intrusive prompt was last given and child emits the correct response. This is considered "needed" when a prompt is delivered and the child is given an opportunity to respond on the same target without a prompt and emits an incorrect response.
    "YES" (all examples given in Receptive Labeling task):
    - Correct response with touch prompt→teacher allows child to respond without a prompt in the next trial, and if still incorrect, uses gestural prompt in next trial
    - Correct response with physical prompt→teacher allows child to respond without a prompt in the next trial, and if still incorrect, uses a touch prompt in the next trial
    - Correct response with proximity prompt→uses no prompt in the next trial

    "NO":
    - Correct response with touch prompt→uses physical prompt in next trial
    - Correct response with physical prompt→uses gestural prompt or proximity prompt
    - Correct response with proximity prompt→uses gestural prompt or proximity prompt again on next trial

APPENDIX D

WRITTEN TEST

Teacher # _____
Date _____
Time completed_____

Please choose the most appropriate answer from the box below to answer questions 1-5.
Answers may be used more than once for #1-5.

a.	Heavy amount of reinforcement
b.	Lighter amount of reinforcement
c.	No reinforcer and no prompt
d.	Prompt with lighter amount of reinforcement
e.	No reinforcement, but then prompt

Which of the above would the therapist deliver:

1. If the child did not respond to a cue?_____
2. If the child gives an approximation of the correct response (prompt for same response was delivered in previous trial)?_____
3. If the child gives an incorrect response?_____
4. If the child gives the correct response?_____
5. If the child gives an approximation of the correct response (prompt was **not** delivered in previous trial)?_____

Multiple choice/other:

6. When asking a child to receptively identify a 'dog' out of a field of 3 animals, what would be the most appropriate cue to deliver?
   a. "Will you touch the 'dog'?"
   b. "Touch 'dog'"
   c. "What is it?" (while pointing to dog)
   d. "Which one of those is the 'dog'?"
   e. "Will you please find the 'dog'?"

7. A "reinforcer" is
   a. anything the child likes
   b. an event that follows a behavior and increases the rate of that behavior in the future
   c. some favorite toy/food used to bribe the child for work purposes
   d. an event that occurs in the form of verbal praise, a tangible, or an edible

8. When conducting a trial, what should be on the table? (circle all that apply)
   a. stimuli needed for task
   b. all of child's favorite reinforcers
   c. data sheet
   d. pen
   e. child's one selected reinforcer (if not on table, in plain view if not distracting)
   f. back-up stimuli (e.g., all flashcards in the category of "vehicles" if working on categories, even though they are all not currently in use)

9. Put the following steps in order by placing numbers in the blanks:
   TO CONDUCT A DISCRETE TRIAL:
   _____ Give instructional cue
   _____ Have child sit in chair
   _____ Provide reinforcer for correct responding
   _____ Place needed materials on table
   _____ Conduct mini preference-assessment
   _____ Gain child's attention
   _____ Take data on child's responding
   _____ Provide a cue that session is about to begin

10. How many trials should be conducted per minute?
    a. 1-2
    b. 3-5
    c. 6-8
    d. as many as possible

11. What should the therapist do if she has given a cue, but the child either gives the incorrect response or does not respond?
    a. give the cue again
    b. assume the child is not interested and go to another task
    c. deliver a prompt and go onto the next task
    d. deliver a prompt and a (tangible) reinforcer for trying
    e. deliver a prompt and then deliver the same cue again so child can emit correct response

12. When should reinforcers be 'prepared'?
    a. prior to start of trial
    b. while giving cue
    c. after child responds
    d. every other child response

*The following 3 questions are to be considered as a **guideline**, the numbers are not set in stone.*

13. As a general rule of thumb, how many times per minute should reinforcers (all types) be delivered?
    a. at least 3
    b. at least 4
    c. at least 5
    d. at least 6

14. As a general rule of thumb, how many times per minute should behavior-specific praise be delivered?
    a. at least 3
    b. at least 4
    c. at least 5
    d. at least 6

15. As a general rule of thumb, how many **different** types of reinforcers should be delivered per minute?
    a. at least 3
    b. at least 4
    c. at least 5
    d. at least 6

16. Which of the following principles are important to consider when delivering reinforcers? (circle all that apply)
    a. whether the child liked the item 5 minutes ago
    b. child's state of deprivation with respect to that item
    c. tangible reinforcer (not praise) should be given only for correct response, not approximations
    d. item should be delivered within 2 seconds of child response
    e. item should be delivered soon, as long as it is delivered before the next cue is given
    f. worthwhile amount of item is given
    g. enough time is given to consume the item (if edible); or to play with the item (if tangible)

h. social interaction should occur during item delivery if edible or tangible
i. child should be asked to obtain item himself

17. When working on a receptive labeling task, where should all needed materials be located? (including current stimuli and other targets within that session's program)
    a. within therapist's reach
    b. all on table
    c. in their respective drawers

18. How close should the therapist sit to the child during the session?
    a. face-to-face
    b. arm's length apart (within reach)
    c. across table
    d. across room (in a classroom format)

19. **Excluding prompts**, if the child has not yet emitted a response, what may be considered an inappropriate hint when working on a receptive labeling task? (circle all that apply)
    a. gesturing toward the correct item
    b. using vocal emphasis when placing them out on table
    c. proximity of targeted item
    d. staring at the correct item
    e. pointing at the item

20. Where should reinforcers be kept during a session?
    a. within child's reach so he can reinforce his own behavior
    b. out of child's reach so he can not have free access to them
    c. next to therapist so if they are edible, she can eat some, too

21. When delivering verbal praise, which of the following are important to consider? (circle all that apply)
    a. wording of praise changes so that therapist uses at least 4 different types of praise statements per minute
    b. "Enthusiasm"—therapist raises pitch of voice above a monotone level
    c. smiling during praise delivery
    d. behavior-specific praise is favored over general praise

For the next set of questions, consider the following as a prompt hierarchy for a receptive labeling task:

Proximity→Gestural→Touch→Physical (hand-over-hand guidance)
(least intrusive) (most intrusive)

22. If the child emits either an incorrect response or does not respond, which type of prompt should be utilized first?
    a. proximity (least intrusive)
    b. physical (most intrusive)
    c. touch (show him where the target is)

23. If a touch prompt is used and during the next opportunity, the correct response is still not emitted by the child, what would be the next prompt to use?
    a. proximity
    b. touch again
    c. physical (hand-over-hand)
    d. gestural

24. Situation: When fading prompts in a receptive labeling task, a student needed a gestural prompt to respond correctly. During the next trial, after the cue is presented on the same task and the child still responds incorrectly, the type of prompt needed for the trial is:
    a. a physical/hand-over-hand prompt
    b. a proximity prompt
    c. a gestural prompt again
    d. a touch prompt
    e. none

25. When should the prompt be delivered? (choose 2 of the 4)
    a. within 3 s of the end of the child's response if incorrect
    b. within 5 s of the end of the cue if no response
    c. before child has the opportunity to make a mistake
    d. never; the child should eventually get the correct response on his own

26. If the child has a low rate of correct responding (i.e., 4 or more responses in a row have been incorrect even after assistance), what should be done? (circle all that apply)
    a. move to an easier task to promote more successful responding (if it isn't a matter of lack of attention on the child's part)
    b. move to an easier task no matter what the situation is
    c. stick with that task until the child gets 3 correct responses in a row (no matter what the situation is)
    d. if the child isn't paying attention, have him stand up and sit down a few times, then go back to the task
    e. therapist could possibly change something about the way they are presenting the task
    f. if the child isn't paying attention, stick with the task at hand

27. After prompting a response, what should be done next?
    a. move to another target
    b. re-present the cue again and have him attempt to respond correctly on his own (same target)
    c. go back to the previous target that the child got correct

28. How much "thinking time" should be allowed for the child to respond after the cue is given?
    a. none; he should be able to respond immediately
    b. 3-5 seconds
    c. 5-10 seconds
    d. as much time as needed

29. What should be delivered as a consequence for a prompted response?
    a. edible, praise, or tangible (same as for correct responses)
    b. smaller bite of a snack (if edible) or shorter engagement time with a toy (if tangible)
    c. nothing
    d. just verbal praise

30. If using a touch prompt, what stimulus materials should be used by the therapist?
    a. same as those used by child
    b. a separate set of stimuli set aside for this purpose

SCORE: # correct _____/65
_____% correct
time to complete_____

APPENDIX E

TEACHER DATASHEET

TEACHER DATA SHEET

IOA?_____

(should be videotaped)
Subject #_____
Child #_____
Date_____
Observer_____

Task_____

KEY:
Yes = Occurred (correctly) and at all appropriate times
No = Occurred inappropriately or did not occur when should have
NA = Not applicable at this time

I. Stimulus Presentation

	Minute: 1	2	3
Task Preparation			
1. Only necessary stimuli are on table (free of all other distractions)			
2. Needed materials are easily accessible (within 2 ft. of instructor)			
3. Instructor is seated within reach of child			
4. Clear cue that session is starting is provided (e.g., "Ready?")			
Sd Delivery			
5. Instructor gains child's attention before presenting cue			
6. Correct instruction (cue) is given (consice; no extraneous wording)			
7. Cue delivered clearly (audible to observer)			
8. Cue stated in sentence form			
9. Cue delivered only once before some type of prompt or consequence occurs			
Post-Sd Mechanics			
10. Refrains from using inappropriate cues (hints)			
11. Appropriate instructional pace maintained (3-5 trial presentations per minute)			

YESs on THIS page:_____ # NOs on THIS page:_____ # N/As on THIS page:_____
Ceiling:_____ **TOTAL COUNT:_____**

II. Reinforcer Delivery

Sr Preparation

12. Identifies potential reinforcers prior to the start at least *once per 3 minute sample* (offers a choice of 2-5 potential Sr)			
13. Prepares reinforcers prior to the start of trial (e.g., edibles ready to deliver, music cued, tangibles gathered)			
14. Spatial control over all reinforcers is utilized (child is *unable to reach* reinforcers)			

Reinforcer Delivery (Praise)

15. Delivers behavior-specific praise (rate of at least 3 per minute)			
16. Verbal praise is delivered enthusiastically (appropriate volume, variation in tone)			
17. Wording of verbal praise is varied (uses at least 4 different types of praise statements per minute)			

Reinforcer Delivery (Praise and Tangible)

18. Rotates exposure to reinforcers (uses a variety of consequences at a rate of 4 per minute--*can't all be praise*)			
19. Worthwhile amount of tangible Sr+ is delivered (one sip of drink, one chip, 10-15 s exposure to toy [unless rejected])			
20. Social interaction occurs during delivery of *tangible* reinforcer (instructor talks to child, tickles, pats shoulder, etc.)			
21. Therapist waits until reinforcer is consumed before delivering next cue			
22. Delivers reinforcer immediately (within 2 s of child's response)			
23. Child only receives reinforcer for correct, unprompted responses			

Differential Reinforcement

24. Utilizes heavy reinforcement schedule (at least 5 per minute overall)			
25. Utilizes differential reinforcement (correct responses reinforced, incorrect responses prompted with no reinforcement, close approximations reinforced unless prompt was delivered in previous trial)			

YESs on THIS page:_____ # Nos on THIS page:_____ # N/As on THIS page:_____

Ceiling:_____ TOTAL COUNT:_____

III. Prompting/Error Correction

Prompt Delivery

26. Prompt is delivered after incorrect responses or non-responses at all times			
27. When used, a prompt is delivered immediately (0-3 s) after incorrect response (*for 1st IC response of that specific target)*			
28. Provides opportunities for reinforcement by means of presenting simpler tasks when rate of correct responding is low (after 4 incorrect responses in a row)			
29. Only praise is delivered as a consequence for a prompted response			

Response Opportunities

30. After a prompt is delivered, child is given an immediate opportunity to respond without a prompt *(on that same target)*			
31. Allows child thinking time(3-5 s) before prompt when appropriate (*for 2nd + IC or non-response of that particular target)*			

Types of Prompting

32. Appropriate (least intrusive) prompt is used at all approp. times (for 1st prompt of target)			
33. Correct stimulus materials used when using instructor model as prompt (same as those used with child)			
34. Properly goes through appropriate (ascending) prompt hierarchy when needed--*after least intrusive prompt is delivered as 1st prompt)*			

Prompt Fading

35. Prompts are faded quickly (follows opposite of prompt hierarchy/			

SCORING:

TOTAL # YES's: _____ # YESs on THIS page:_____
TOTAL # Nos: _____ # NOs on THIS page:_____
TOTAL # N/As: _____ # N/As on THIS page:_____
Ceiling (TOTAL # YES's and Nos): _____ Ceiling:_____
% IOA: _____ TOTAL COUNT:_____

APPENDIX F

INTEROBSERVER AGREEMENT SCORES

INTEROBSERVER AGREEMENT SCORES

Session number	Teacher 1	Teacher 2
B1		
B2		
B3		
B4		99
B5	86	90
B6		
B7		
B8	87	80
B9		
B10	86	
I-1		
I-2		
I-3		80
I-4	80	
I-5		
I-6		
C-1	90	88
C-2		
C-3		
C-4		
C-5	84	
C-6		88
C-7	87	
C-8		
C-9		
C-10		
C-11	83	
C-12		79
C-13		
C-14		
C-15		
C-16		
M-1	84	
M-2		
M-3		
FollUp1		87

 # sessions scored **17**
% sessions scored **25**
Overall % Reliability **86**

APPENDIX G

CHILD DATASHEET

CHILD DATA SHEET

Date_____
Teacher #_____
Child #_____

KEY:
" + "= Correct Response
" -- " = Incorrect/prompted response

TASK: Receptive Labeling

Target:

Target:

Target:

Target:

Target:

Target:

Target:

TASK: 2-step Direction Following

Target:

Target:

Target:

Target:

Target:

Target:

Target:

TASK: 2-step Object Imitation

Target:

Target

Target:

Target:

Target:

TASK: Sequencing (Blocks)

Target:

Target:

Target:

Target:

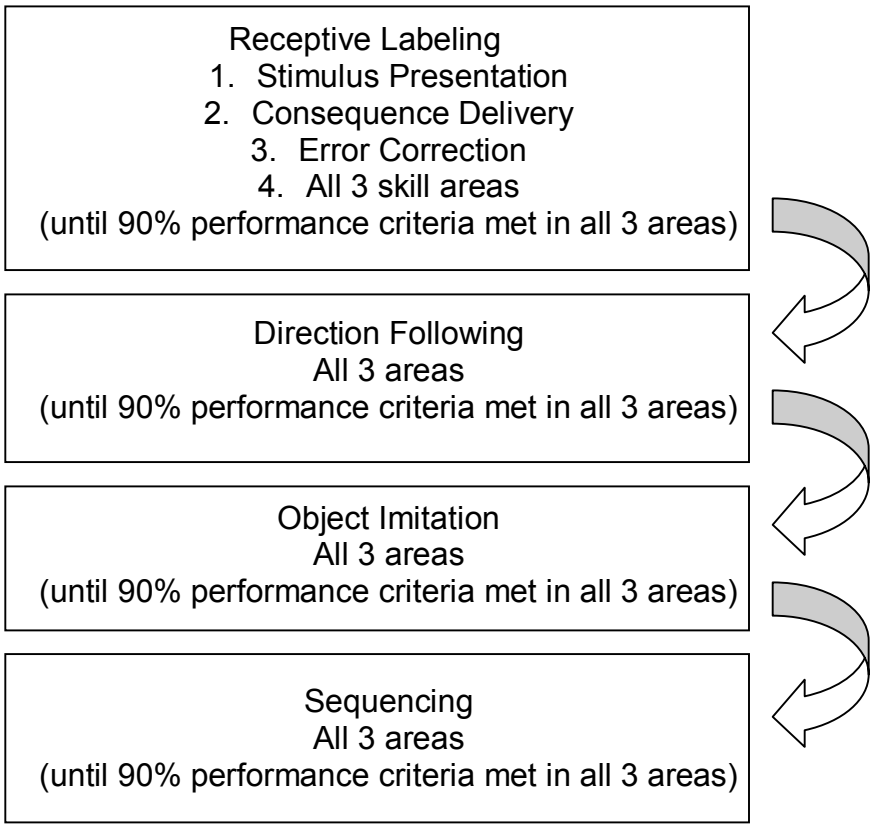
Target:

SESSION NOTES:

APPENDIX H

COACHING TASK SEQUENCE

COACHING TASK SEQUENCE



APPENDIX I

SOCIAL VALIDITY FORMS

Social Validity Form

Please take a moment to fill out this form. Your feedback is valuable to the experimenters, and will help guide future research.

(Italics indicate participant responses)

1. What part of the study did you enjoy the most?

   Learning hands-on how to teach skills to a child with autism and seeing him learn

2. What part of the study did you enjoy the least?

   The workshop at the beginning because I wasn't sure how I would use it

3. Do you believe that the study contributed to your *knowledge* of applied behavior analysis? How so?

   Yes—the study helped me learn the series of events that bring about change in behavior of children with autism

4. Do you believe that the study contributed to an *increase in your skill level* with respect to applied behavior analysis? How so?

   Yes

5. What part of the study contributed most to your increase in knowledge/skill level? (workshop, coaching, written tests, etc.)

   Coaching

6. How do you think that the study helped the child participant?

   I believe he learned sequencing skills, eye contact skills, learning from new people, following directions…

7. If we repeated the study, would you omit any particular phase, or keep all of them? (i.e., what was the most valuable phase?)

   Not sure, maybe parts of the workshop, but I did learn from that phase

8. How important is it that teachers/therapists participate in one-on-one training when working with children with autism?

   1 2 3 4 (5)

   (not important) (very important)

8. How important is it that teachers/therapists participate in one-on-one training when working with children with autism?

   1 2 3 4 (5)
   (not important) (very important)

9. Given the skills you have learned and the progress of the child, do you think that it was worth this amount of training? If needed, please explain.

   Yes—because any skills acquired to help a child progress is worth the effort.

10. Any additional comments:

    The experimenter was very professional and stayed with her task and was quite encouraging.

11. Suggestions for future research, if any:

Thank you so much for your participation in this study! Your time and feedback are greatly appreciated!!

Social Validity Form

Please take a moment to fill out this form. Your feedback is valuable to the experimenters, and will help guide future research.

(Italics indicate participant responses)

1. What part of the study did you enjoy the most?

   Coaching-- because it helped me better understand and practice the ABA principles

2. What part of the study did you enjoy the least?

   Sequencing task trials

3. Do you believe that the study contributed to your *knowledge* of applied behavior analysis? How so?

   Definitely—see #1

4. Do you believe that the study contributed to an *increase in your skill level* with respect to applied behavior analysis? How so?

   Yes. I learned the prompt hierarchy for different trials, adequate time presentation, appropriate amount of reinforcement, trial presentation (overall)

5. What part of the study contributed most to your increase in knowledge/skill level? (workshop, coaching, written tests, etc.)

   Coaching

6. How do you think that the study helped the child participant?

   The number of targets learned and maintained, learning to work with others

7. If we repeated the study, would you omit any particular phase, or keep all of them? (i.e., what was the most valuable phase?)

   Would not omit any but I do believe coaching was the most valuable

8. How important is it that teachers/therapists participate in one-on-one training when working with children with autism?

   1 2 3 4 (5)
   (not important) (very important)

9. Given the skills you have learned and the progress of the child, do you think that it was worth this amount of training? If needed, please explain.

   Yes. The amount of training compared to the amount of knowledge attained definitely was worth it.

10. Any additional comments:

    It is definitely a great thing to participate in. The knowledge gained is invaluable.

11. Suggestions for future research, if any:

Thank you so much for your participation in this study! Your time and feedback are greatly appreciated!!

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