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Observational learning in the context of group instruction

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Observational Learning in the Context of Group Instruction

A Thesis Presented

by

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The Department of Counseling and Applied Educational Psychology

In partial fulfillment of the requirements

for the degree of

Master of Science

in the field of

Applied Behavior Analysis

Northeastern University

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The New England Center for Children

Observational Learning in the Context of Group Instruction

by

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Abstract

Group instruction may be an efficient and effective format for teaching children with autism spectrum disorders. Group instruction allows for the possibility of observational learning and as a result children may acquire new skills that are not directly taught. However, not all students have the prerequisite waiting and attending skills necessary for observational learning. In the first phase of this study, two participants with autism spectrum disorders were assessed on their ability to wait which was defined as follows: while teacher is instructing other student at the same table, target student maintains sitting with feet on floor, with no interfering motor or vocal stereotypy. One participant required training and acquired the skill after 40 trials. In the second phase, the participants were each taught a set of sight words in 1:1 sessions. After each of the participants' performances met mastery criteria, they were grouped together, and after observing 2 sessions of maintenance trials for the other student, a probe was conducted. Both participants demonstrated mastery of the sight word sets that were not directly trained after observing four maintenance sessions. The results have implications for instructional arrangements other than 1:1 training. Through observational learning in the context of group instruction, students may begin to acquire skills more efficiently.

Discrete trial training delivered in a 1:1 student-to-teacher ratio is one of the most widely used interventions for children with autism. Skills are taught in discrete units consisting of the discriminative stimulus, response, consequence and inter-trial interval (Koegel, Russo, & Rincover, 1977; Lovaas, 1981).). Numerous studies demonstrated positive changes in behavior development and social-emotional functioning for students who received this intervention (Downs, Downs, Johansen, & Fossum, 2007; Stahmer, Collings, & Palinkas, 2005). However, there are disadvantages to 1:1 instruction, including fewer opportunities for social interaction and observational learning, and the high cost of providing such intensive staffing.

Group instruction can be an effective and efficient teaching method in comparison to individual instruction; however a careful transition from 1:1 to group may be necessary for many students. Graff, Green and Libby (1998) conducted a single case study on the effects of two levels of behavioral intervention. The participant, a 5-yr old child with an autism spectrum disorder received 1:1 staffing for a year, which was changed due to resource limitations. The behaviors assessed were aberrant behavior, out of seat, stereotypic responses, communication, gross motor imitation, and matching to sample.

During the initial year of 1:1 intervention there was a decrease in aberrant behavior, out of seat behavior, and stereotypy, as well as an increase in communicative responses, and gross motor imitation. When the staff to student ratio increased, the participant's challenging behavior increased, while his progress in skill acquisition either decreased or remained stable. In this case, the abrupt change in staffing resulted in a lack of progress across all his IEP objectives.

Koegel and Rincover in 1974 demonstrated a successful transition from 1:1 to a group by systematically fading in students and environmental distractions. There were eight participants in this study who were initially taught using a 1:1 instructional format. When their imitative and communicative responses reached 80% mastery, other students were gradually added into the group and the skill acquisition performance of the students was maintained, and then increased.

Once students can demonstrate prerequisite skills for group instruction, such as attending, and waiting with the absence of disruptive behavior, and further, can maintain these skills in the presence of other students and diverted teacher attention, then group instruction can be a viable alternative to 1:1 instruction. Group instruction is usually comprised of 2-5 students who are learning the same skills in a group setting, either using choral responding, individual responding, or student to student responding. A number of skills have been taught using group instruction such as language and pre-academics, daily living skills, word recognition, motor imitation and social interaction skills (Kamps, Walker, Locke & Delquardi, 1990). The benefits of using group instruction include opportunities for observational learning, increasing access to less restrictive settings, facilitating generalization, providing contexts for peer interaction (Koegel & Rincover, 1974), enhancing student motivation, using teacher time efficiently and increasing access to natural reinforcement conditions. Several studies have demonstrated the effectiveness and benefits of group formats with children and adults in the acquisition of imitative tasks (Storm & Willis, 1978).

There have been several studies that have contradicted the idea that 1:1 is necessary for fast and well-maintained acquisition such as Kamps, et al., (1990). The authors compared the instructional arrangements for children in a public school setting using 1:1 instruction and group instruction. The experimenters varied the teachers and aides within the 1:1 instruction and group

formats. They measured students' percentage of words read correctly, on task behavior, and words learned incidentally through probe conditions. The result of this study was that all students reached the criterion for the targeted words in both formats. This author suggests that group instruction can be implemented effectively in a public school setting with teachers or with aides.

Favell, Favell and McGimsey (1978) evaluated the relative effectiveness of teaching students with developmental disabilities individually versus in groups and the relative efficiency of these two strategies in terms of teacher time. They included 16 participants and taught them using both the individual teaching and the group teaching method. Participants had to demonstrate 90% accuracy for two consecutive sessions for mastery to be achieved. Participants who learned through the individual format learned 11 words after 36.5 hours while those in the group format learned 15 words in a total of 15 hours. This demonstrated that a group format was more effective and efficient in teaching sight words to severely retarded persons.

Wolery, Ault, Doyle, Gast, and Griffen (1992) evaluated choral and individual responding during group instruction using four participants who were enrolled in a self-contained classroom in a regular public school. Choral responding was demonstrated when all members of the group responded simultaneously during sight-word instruction. The researchers examined the choral and individual responding across two conditions. In the first experiment the number of exposures per stimulus was equal across conditions, but the number of opportunities to respond was greater in the choral condition. In the second experiment the number of exposures per stimulus was greater in the individual condition but the number of opportunities to respond was equal across conditions. Lastly, the researchers compared the two most effective conditions from experiment 1 and 2. The study demonstrated that only slight differences in effectiveness and efficiency were found between the two conditions and all students learned the words to criterion.

There are various instructional models within a group instruction format that have been evaluated, including discrete trials presented to a group and student-to-student responding. Taubman et al. (2001) evaluated a group discrete trial model, which, in addition to sequential and choral components, included elements that promoted overlapping instruction. The eight participants were enrolled in a preschool classroom for developmentally disabled children. Researchers looked at pre-math skills, language skills and movement to song. For the group discrete trial instructional intervention there was a combination of instruction, prompting, and fading as necessary. This method was compared to a choral responding method in which all trials were presented. All three variables, pre-math, language and movements to song, increased to 59%, 73%, and 40% accuracy from baseline rates of 0% during both intervention components. This demonstrated the effectiveness of both a group instruction format with choral responding and a group discrete trial model.

Kamps et al. (1994) conducted a study on choral responding and student-to-student responding. In this study, the use of choral responding and student-to-student responding were evaluated in a group instructional format. Students were required to respond simultaneously and the researchers rotated the materials every 5 min during the 30 min group and used random, unpredictable trials. The results of this study showed that for all students there was an increase in opportunities to respond during the group, increased levels of responding and academic engagement, higher gains on weekly pre tests and post tests and a decrease in inappropriate student behavior. This study demonstrated that the components of group instruction formats can be changed and be an effective teaching strategy.

The use of predictable and unpredictable trial sequences in a group setting was examined by Ault et al.,(1990). In the predictable sequence, the students sat in a circle. One trial was

presented to the student on the teacher's left and then to each following student. In the unpredictable sequence, the teacher delivered trials to students in random order with no student receiving more than two trials in a row. All participants learned the words in both trial presentations. This study demonstrated that there was no difference between predictable and unpredictable trial presentations within a small group format.

Another advantage of group instruction as compared to 1:1 is the possibility of observational learning, defined as the ability to acquire new responses as a result of observing a behavior model (Bandura, 1968). Lovaas, Koegel, and Schreibmann, (1979) suggested that observational learning involves attention to multiple cues such as the model's behavior, the context where the behavior is performed and the consequences of the behavior.

In 1966, Lovaas, Beberich, Perloff and Schaeffer, extended the research to include children with autism as participants and the use of peer models in the area of language acquisition. Other studies evaluated the effectiveness of the use of models on skill acquisition for children with autism for the following skills; motor skills (Baer, Peterson, & Sherman, 1967), self-help skills (Schoen, Lentz, & Suppa, 1986), sight words (Orelove, 1982), symbol identification (Oliver, 1983), vocabulary words (Hanley-Maxwell, Wilcox, & Heal, 1982), and normal voice volume.

In 1981 Egel, Richman and Koegel assessed whether children, with an autism diagnosis, learning of discrimination tasks could be improved if they observed normal children perform the tasks correctly. Four autistic children worked on five discrimination tasks. When normal peers modeled correct responses, the children's correct responding increased dramatically. In each case, the peer modeling procedure produced rapid achievement of the acquisition criterion and was maintained after the peer models were removed.

Charlop, Schreibman and Tyron (1983) extended the previous study by Egel et al.(1981) to assess whether low functioning children with autism could learn through observation using a peer modeling procedure. There were four participants in the study and all four students were taught two receptive labeling tasks. One task was taught by trial and error procedure and the other was children with an autism diagnosis as the models. Results indicated that all four participants acquired the task by observing the peer model.

Schoen & Ogden (1995) evaluated the impact of time delay on observational learning and attentional cuing upon word recognition in a group format. The authors investigated if a constant time delay (CTD) procedure would be effective in teaching sight words and if students would learn non-targeted words through observational learning. The participants were three boys with moderate mental retardation who were all enrolled in a public school. The participants had to learn eight words through direct instruction or up to 16 words through observational learning. During group learning all students had to say the target word. During observational learning one student had to say the word but the other students had to write the word before the target student could say it. Results indicated that students learned all the target words. Two students mastered the non-targeted words while the other student mastered 56% of non-targeted words.

A study conducted by Keel and Gast (1992) evaluated observational learning with 3 fifth-graders. The participants were taught to recognize multi-syllabic basal vocabulary words. After instruction on each word set students were then tested on their ability to recognize their own target words, to recognize observational words, to spell both target and observational words, and to define both target and observational words. All students had 0% correct responding on all word sets before the CTD procedure. After receiving group instruction all students achieved 100% unprompted correct responding on those word sets which were directly taught, and those

which they observed being taught to their partners, demonstrating both the efficacy of the prompt and the ability of the students to learn through observation.

In another study, a progressive time-delay procedure was used in a group instruction format to teach sight words to four participants with moderate mental retardation (Stinson, Gast, Wolery & Collins, 1991). The experimenters varied the presentation of the targeted and non-targeted stimuli, thereby increasing the number of exposures students had to their target and observational words and definitions. All students acquired their target words and at least 50% of the incidental and observational words and definitions to which they exposed.

Ledford, Gast, and Luscre (2008) evaluated the use of a constant time delay procedure to teach sight words to six participants in a self-contained classroom for students with autism. Students were placed into dyads based on skills and previous reading instruction. The results of the study indicated that the students acquired 100% of the target stimuli and 5 participants identified 100% of the observational stimuli (i.e., stimuli presented to the other student in the dyad). MacDonald, Dixon, and Leblanc (1986) found that students who had acquired stimulus relations through observing their peers also were able to demonstrate mastery in test of equivalent relations.

Behavior chains were acquired through a combination of general case training, and observational learning in a food and drink preparation task analysis conducted with three participants with autism (Tekin-Iftar & Birkan, 2008). All students learned one response chain, and then were tested on the chains performed by the other students. The skills learned during the observational learning also generalized to other response chains that were similar.

Group instruction has been shown to be effective in teaching students with autism spectrum disorders with the potential advantages of the acquisition of skills through observation

learning. However there is very little research, which identifies prerequisite skills. The purpose of the current study is to; 1) evaluate and then train a prerequisite skill of waiting in the context of group instruction, and; 2) test for acquisition of sight words as a function of observational learning during group instruction.

Methods

Participants

Two students with an autism spectrum diagnosis participated in the current study. John was a 13-year-old student and Chris was a 10-year-old student and both participated in a day program. The students' had previous sight word instruction using the Edmark Sight Words program. PPVT scores for John were a raw score of 99, standard deviation of 55 and for Chris a raw score of 79, standard deviation 57.

Settings and Materials

Baseline and instructional sessions were conducted in the students' individual work areas. Observational sessions were conducted at a group table with the 2 students sitting beside one another and across from the teacher. Probe sessions were also conducted at a group table with just one student sitting across from the teacher.

Target words were printed on 3 x 5 in unlined index cards (Table 1). The researcher had data sheets and reinforcers for each student to earn at the end of a session. Every session was recorded using a flip video camcorder.

Response Measurement and Interobserver Agreement

Prerequisites

Both students were assessed to see if they could wait appropriately with diverted teacher attention in a 1:2 group format. John was able to wait for 30s with no interrupting stereotypy

while Chris could not. Therefore, Chris went through a waiting assessment with the terminal value being 30s free of disruptive stereotypy (vocal and motor).

Pre-assessment. For the waiting assessment Chris's motor stereotypy was defined as any non-functional movement of the hands or fingers and any nonfunctional movement of his body. Examples of motor stereotypy included: hand flapping, hand wringing or finger crossing and body rocking. Non-examples of motor stereotypy included: sitting with hands in lap, high fives to a teacher, clapping, or tapping on desk. Chris's vocal stereotypy was defined as any non-functional vocalizations at or above conversational level. Examples of vocal stereotypy included: saying "ohhh", "ahhh", or "yeeee". Non-examples of vocal stereotypy included: singing, asking the researcher for an edible, or talking to teachers or students.

Acquisition of trained and observed sight words: When given a printed word, the students were required to read the word. The number of correct independent responses was measured.

Interobserver agreement data were collected during at least 33% of all sessions throughout the study. For all sessions, mean agreement was calculated by dividing the number of intervals with agreements by the total number of intervals with agreements plus disagreements, then multiplying this number by 100. Mean total agreement for baseline sessions were 100%, mean agreement for training sessions were 90% (range 83% - 100%), mean agreement for observational sessions were 96% (range 83% - 100%)

Procedures

Pre-assessment

For the waiting assessment the student were required to wait without any interfering vocal or motor stereotypy for 30s. Disruptive stereotypy for Chris was body rocking paired with hand flapping above session table and vocalizations above conversational level. The assessment

was broken down into 4 steps. Step 1 involved the student sitting at a table with a starting waiting time of 1 second. The student was given a maintenance trial and then told that they needed to wait. If the student waited appropriately they were reinforced with “nice job waiting” and then the student was given a tangible item. If the student did not wait appropriately the researcher would establish a ready response and point to the wait signal, a red card that said wait. Then the interval would decrease by 1 second for the next trial. After reaching a criterion of 5s, step 2 was introduced.

Step 2 involved a second student (confederate) who could already wait appropriately. Then the teacher ran a program with the first student, then tell them “It’s time to wait”, and turn to the confederate and ask social questions increasing by a second each trial. If the student waited the behavior was reinforced and if they did not the researcher would model the correct waiting response and decrease time on the next trial. Mastery criterion for step 2 was 10s of appropriate waiting. For step 3 the researcher ran discrete trials with the confederate increasing waiting time up to 20s. The last step was step 4 and the researcher ran discrete trials with the confederate increasing up to the terminal value of 30s.

Sight word training

During the baseline condition the researcher held up an index card and asked the student, either Chris or John, “What word?” If the student read the word correctly verbal praise was given such as “good job!” If the student did not read the word or read the word incorrectly no praise was given and the next word was presented. Three baseline conditions were conducted to identify 3 known words by each student and 3 unknown words.

For individual training sessions the students were seated in their individual work areas across from the researcher and a 0s delay was used. The researcher asked “what word?” and then

immediately modeled the correct word and the student repeated it. If the student responded correctly he was praised and the next trial was presented. If the student did not read the word correctly the researcher modeled the correct word and no praise was given. At the end of the session the student received an edible reinforcer. When the students' reached criterion, 3 sessions at 89% correct, the students then moved on to a 3s delay.

In the 3s delay sessions the researcher presented the index card and asked "What word?" The researcher then waited 3s before modeling the correct response. If the students responded correctly before the 3s they were reinforced with praise and the next word was presented. If the student didn't respond before 3s the researcher modeled the correct word and once the students repeated it, they were praised and the next trial was presented. If the student didn't read the word correctly the researcher modeled the correct word and no praise was given. At the end of the session the student received an edible reinforcer. When the student met mastery criterion, 3 sessions at 89% correct responding, they moved on to the observation sessions.

Observation sessions

In the observational sessions both students were seated next to each other, at a half moon table, with the researcher seated across from them. The researcher ran 2 sessions, 18 trials, of observation trials in an alternating trials format with each student. The researcher turned to student 1 (Chris) and said "It's time to wait", and then ran a session with student 2 (John). The researcher held up the words that John had previously learned and ran a maintenance session. Each student earned an edible at the end of the session and received verbal praise during trials. Then the researcher turned to John and said "It's time to wait" and ran a maintenance session with Chris. The researcher repeated this procedure for Chris and John so that both students had 2 sessions observing the others known words.

Probe sessions were conducted at the half moon table with a student and the researcher. In this condition the student was presented with the other student's targeted words. The researcher held up the index card and asked "What word?" The student was not prompted during this condition and only received reinforcement for correct responses. If no learning had occurred after 2 sessions, which was defined as having a score lower than 89% correct responding, then one student would demonstrate correct reading of his words and show peer correct response. The researcher would then reinforce the observer's behavior of watching. At the end of the session the student earned an edible item. Mastery was achieved if the student had 89% correct responding for 3 sessions.

Experimental Design

A non-concurrent multiple baseline design across word sets was implemented to evaluate the effectiveness of observational learning.

Results

Pre assessment

Chris: Chris required training to wait. After 40 trials Chris was able to sit and wait appropriately, with no interfering motor or vocal stereotypy, for 30s with the researcher conducting trials with another student (Figure 1).

Sight word training

During baseline Chris could not correctly read the target words that were presented to him. After three sessions with an immediate verbal model Chris was then moved to a 3s delay prompt. During the 3s delay prompt sessions Chris correctly read the targeted words with 100%, 100% and 100% independence (Figure 2).

Observation Sessions

During observation sessions each student read their newly acquired sight words in a group format with the other student. After these 2 sessions Chris was tested on John's words and he correctly read John's words with 100%, 100%, and 100% in probe sessions (Figure 3). Following mastery on probe sessions each student was given a new set of words. After 3 sessions of 3s delay, Chris correctly read the targeted words with 100%, 100% and 100% independence (Figure 2). During the probe sessions Chris was able to correctly read John's targeted words with 89%, 89% and 100% independence.

John

Sight word training

During baseline John could not correctly read his targeted words. After three sessions with an immediate verbal prompt John increased to a 3s delay prompt. John could correctly read the targeted words with 89%, 100%, and 100% accuracy (Figure 4).

Observation Sessions

After mastery criteria for the first word set were met John observed 2 sessions of Chris's word set. Following these two sessions John was then tested on Chris's newly acquired word sets and read all words correctly with 89%, 100%, and 100% accuracy for all three probes (Figure 5). Following the mastery on probe sessions John was given a new word set. In the 3s delay sessions, John correctly read the targeted words with 100%, 89% and 100% accuracy (Figure 4). During the probe sessions John correctly read Chris's targeted words with 79%, 89% and 100% accuracy (Figure 5).

Discussion

The effects of observational learning on the acquisition of sight words was assessed with two participants diagnosed with autism spectrum disorder. One student was first taught to wait in the context of alternating trials and then was able to participate successfully. Each of the students learned 12 sight words, six of which were learned through observational sessions. This suggests that observational learning is achievable within the context of a 1:2 group format.

Several studies have found that students with disabilities acquire some of words that are presented to other students in the group (Kamps et al., 1990; Schoen & Ogden, 1995; Stinson et al., 1991). Findings from the current study replicate those of others, further demonstrating that an observational learning procedure can be used as an effective and efficient teaching strategy.

Although the results of this study are promising there are some limitations with the study. First, although Chris's stereotypy was disruptive and would appear to be incompatible with attending during an observational learning session, the study did not establish experimentally that waiting was indeed a prerequisite to learning in a group.

Another limitation of this study is that there were only two participants who already had prior exposure to sight word training. Other studies on observational learning have included more students (Favell et al., 1978; Keel et al., 1992) some of whom have prior exposure to sight word training and some who have not. Further research is needed to determine if prior sight word training makes it easier for students to learn in observational sessions.

Further research is needed to see if students with no prior sight word training could also learn sight words through observation sessions. Also if a larger group format would be as effective as the 1:2 format, and if choral responding would result in the same results as

individual responding. Additionally research is needed on what other skills could be taught using a 1:2 group format.

The current study is important because it suggests a different way to teach sight words to students that requires less time than 1:1 instruction. Also it is important to develop teaching methods that can be integrated into a public school setting. Additional studies are needed to evaluate the benefits and/or problems with the group format.

Reference List

- Ault, J.M., Wolery, M., Gast, D.L., Munson, D., Martin, C.P. (1990). Comparison of Predictable and Unpredictable Trial Sequences during Small-Group Instruction. *Learning Disability Quarterly, 13*, 12-29.
- Bandura, A. (1965). Influence of model's reinforcement contingencies on the acquisition of imitative responses. *Journal of Personality and Social Psychology, 1*, 589-595.
- Bandura, A. (1968). Social learning theory of identificatory processes, Handbook of socialization theory and research. Chicago: Rand McNally.
- Becker, S., & Gidden, L. (1979). Imitation in EMR boys: Model competency and age. *American Journal of Mental Deficiency, 83*, 360-366.
- Brown, F., & Holvoet, J. (1982). Effect of systematic peer interaction on the incidental learning of two severely handicapped students. *The Journal of the Association for the Severely Handicapped, 7*, 19-28.
- Coleman, S.L., & Stedman, J.M. (1974). Use of peer model in language raining in an echolalic child. *Journal of Behavior Therapy and Experimental Psychiatry, 5*, 275 - 279.
- Charlop, M. H., Schreibman, L., & Tryon, A. S. (1983). Learning through observation: The effects of peer modeling on acquisition and generalization in autistic children. *Journal of Abnormal Child Psychology, 11*, 355-365.
- Downs, A., Downs, R.C., Johansen, M., & Fossum, M. (2007). Using discrete trial teaching within a public preschool program to facilitate skill development in students with developmental disabilities. *Education and treatment of children, 30*, 1-27.
- Egel, A. L., Richman, G., & Koegel, R. L. Normal peer models and autistic children's

learning. *Journal of Applied Behavior Analysis*, 1981, 14, 3-12.

Favell, J.E., Favell, J.E., & McGimsey, J.F. (1978). Relative Effectiveness and Efficiency of Group vs. Individual Training of Severely Retarded Persons. *American Journal of Mental Deficiency*, 83,104-109.

Ihrig, K., & Wolchik, S.A., (1988). Peer versus Adult Models and Autistic Children's Learning: Acquisition, Generalization, and Maintenance. *Journal of Autism and Developmental Disorders*, 18, 67-79.

Kamps, D., Walker, D., Locke, P., & Delquardi, J. (1990). A comparison of instructional arrangements for children with autism served in a public school setting. *Education and Treatment*, 13,197-215.

Kamps, D.M., Dugan, E.P. & Leonard, B.R. (1994). Enhanced small group instruction using choral responding and student interaction for children with autism and developmental disabilities, *American Journal on Mental Retardation*, 99, 60-73.

Keel, M.C., & Gast, D.L. (1992). Small Group Instruction for Students with Learning Disabilities: Observational and Incidental Learning. *Exceptional Children*, 58, 357-368.

Koegel R. L., & Rincover, A. (1974). Treatment of psychotic children in a classroom environment: 1:1 learning in a large group. *Journal of Applied Behavior Analysis*, 7, 45-59.

Koegel, R.L., Russo, D.C., Rincover, A. (1977). Assessing and training teachers in the generalized use of behavior modification with autistic children. *Journal of Applied Behavior Analysis*, 10, 197-205.

- Ledford, J.R., Gast, D.L., Luscre, D. (2008). Observational and incidental learning by children with autism during small group instruction. *Journal of Autism and Developmental Disorders*, 38, 86-103.
- Lovaas, O. I., Koegel, R. L., & Schreibmann, L. (1979). Stimulus over selectivity in autism: A review of research. *Psychological Bulletin*, 86, 1236-1254.
- MacDonald, P.F., Dixon, L.S., & Leblanc, J. M. (1986). Stimulus class formation following observational learning. *Journal of Analysis and Intervention in Developmental Disabilities*, 6, 73-87.
- Schoen, S. F., & Ogden, S. (1995). Impact of time delay, observational learning, and attentional cuing upon word recognition during integrated small-group instruction. *Journal of Autism and Developmental Disorders*, 25, 503-519.
- Stahmer, A.C., Collings, N.M., & Palinkas, L. A. (2005). Early intervention practices for children with autism: Descriptions from community providers. *Focus on Autism and Other Developmental Disabilities*, 20, 66-79.
- Sternberg, L., McNervey, C., & Pegnatore, L. (1985). Developing co-active imitative behaviors with profoundly mentally handicapped students. *Education and Training of the Mentally Retarded*, 20(4), 260-267.
- Stinson, D.M., Gast, D.L., Wolery, M., & Collins, B.C. (1991). Acquisition of Nontargeted Information during Small - Group Instruction. *Exceptionality*, 2, 65-80.
- Storm, R.H., & Willis, J. H. (1978). Small group training as an alternative to individual programs for profoundly retarded persons. *American Journal of Mental Deficiency*, 83, 283-288.

- Taubman M., Brierly, S., Wishner, J., Baker, D., McEachin, J. Leaf, R. (2001). The effectiveness of a group trial instructional approach for preschoolers with developmental disabilities, *Research in Developmental Disabilities*, 22, 205-219.
- Tekin-Iftar, E., & Birkan, B., (2008). Small Group Instruction for Students with Autism: General case training and Observational Learning. *The Journal of Special Education*, 0, 1-14.
- Wolery, M., Ault, M. J., Doyle, P.M., Gast, D., & Griffen, A.K. (1992). Choral and individual responding during small group instruction: Identification of interactional effects. *Education and Treatment of Children*, 15, 289-309.
- Zimmerman, B.J., & Rosenthal, T.L. (1974). Observational learning of rule-governed behavior by children. *Psychological Bulletin*, 81, 29 - 42.

Table 1

Sight Word Sets for Chris and John

Chris	Word Set 1	Word set 2	John	Word Set 1	Word Set 2
	Echo	Identified		Indicate	Similar
	Height	Distribution		Orbit	Structure
	Angle	Legislation		Debt	Variable

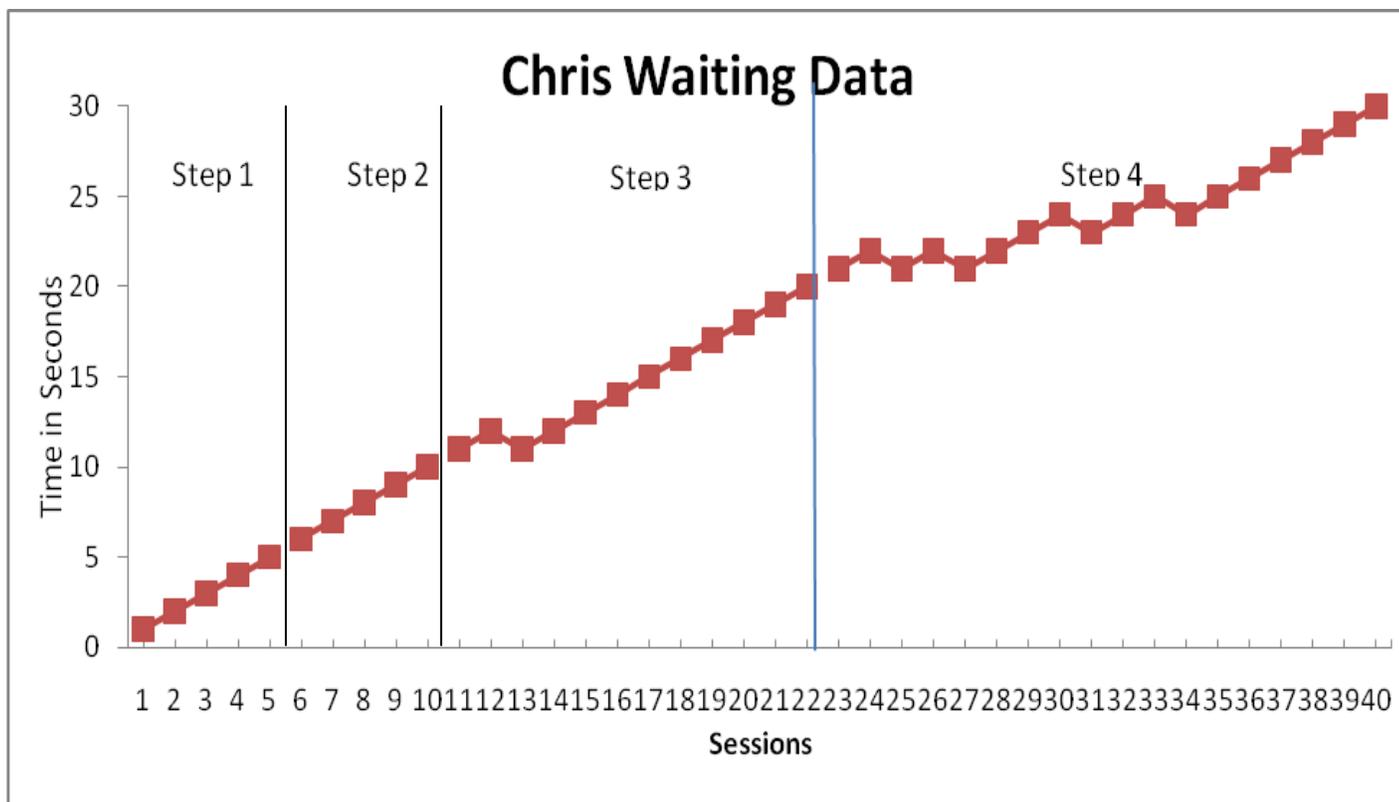


Figure 1: Number of sessions to mastery criteria (30s) for waiting assessment.

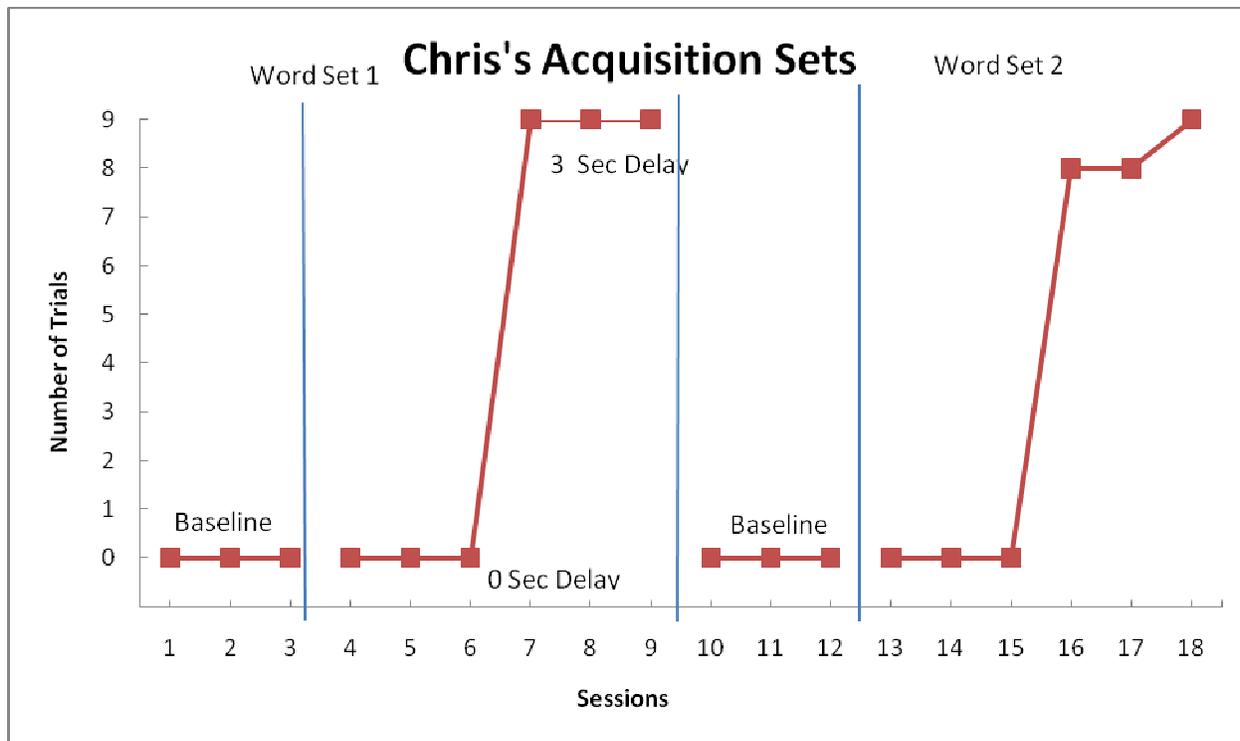


Figure 2: Independence for sight word reading during 0s and 3s delay across 2 word sets.

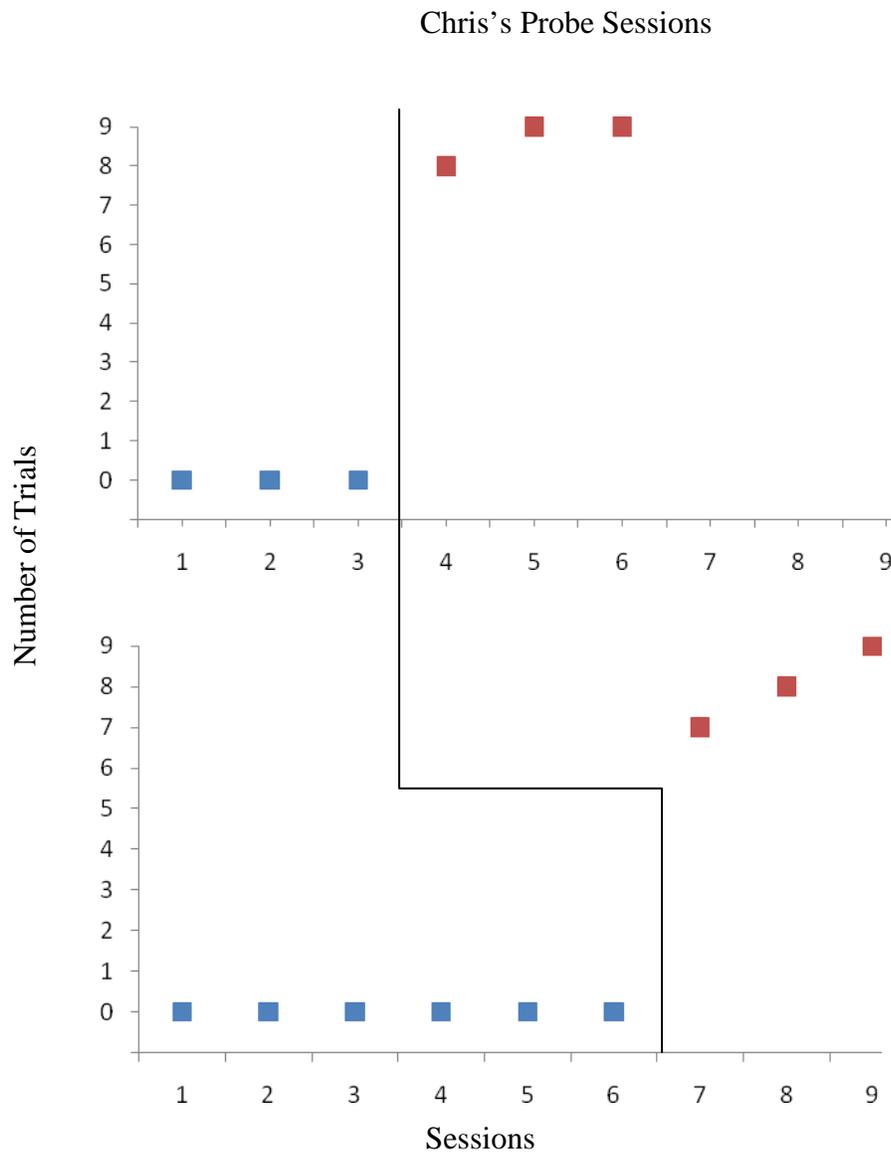


Figure 3: Number of correct trials for sight words in a multiple baseline design across probe sessions.

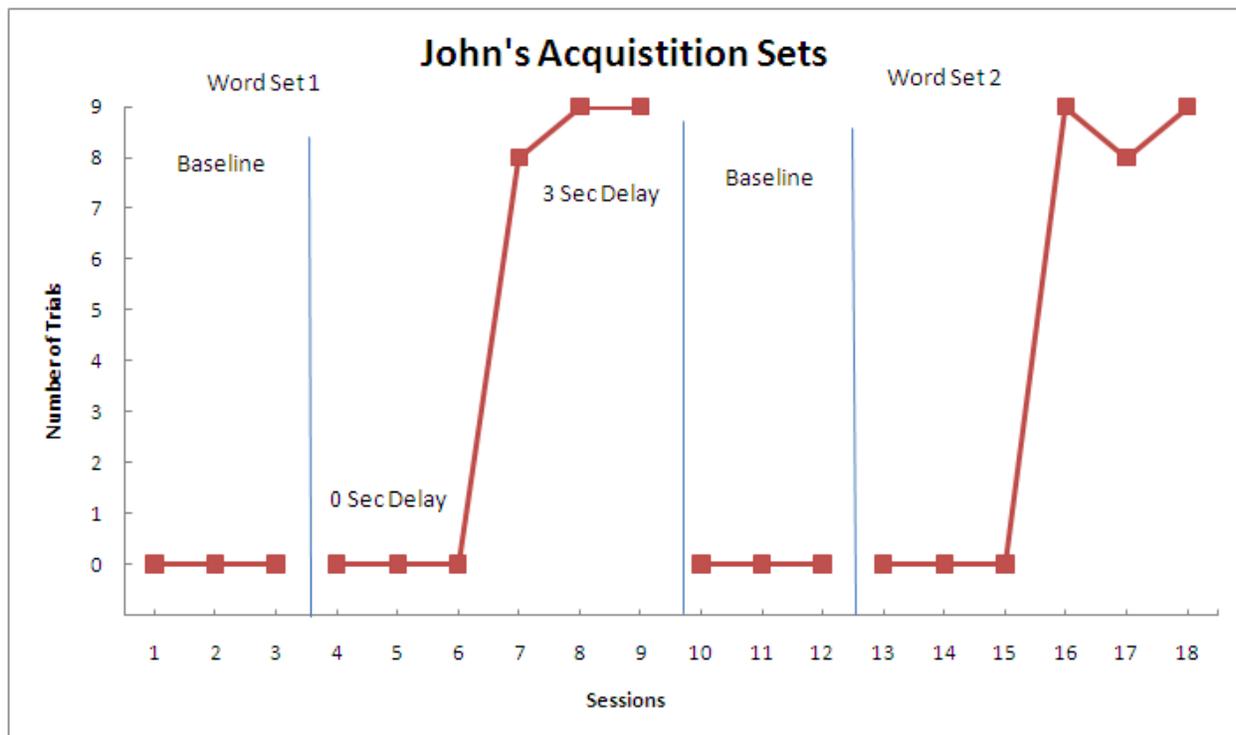


Figure 4: Independence for sight word reading during 0s and 3s delay across 2 word sets.

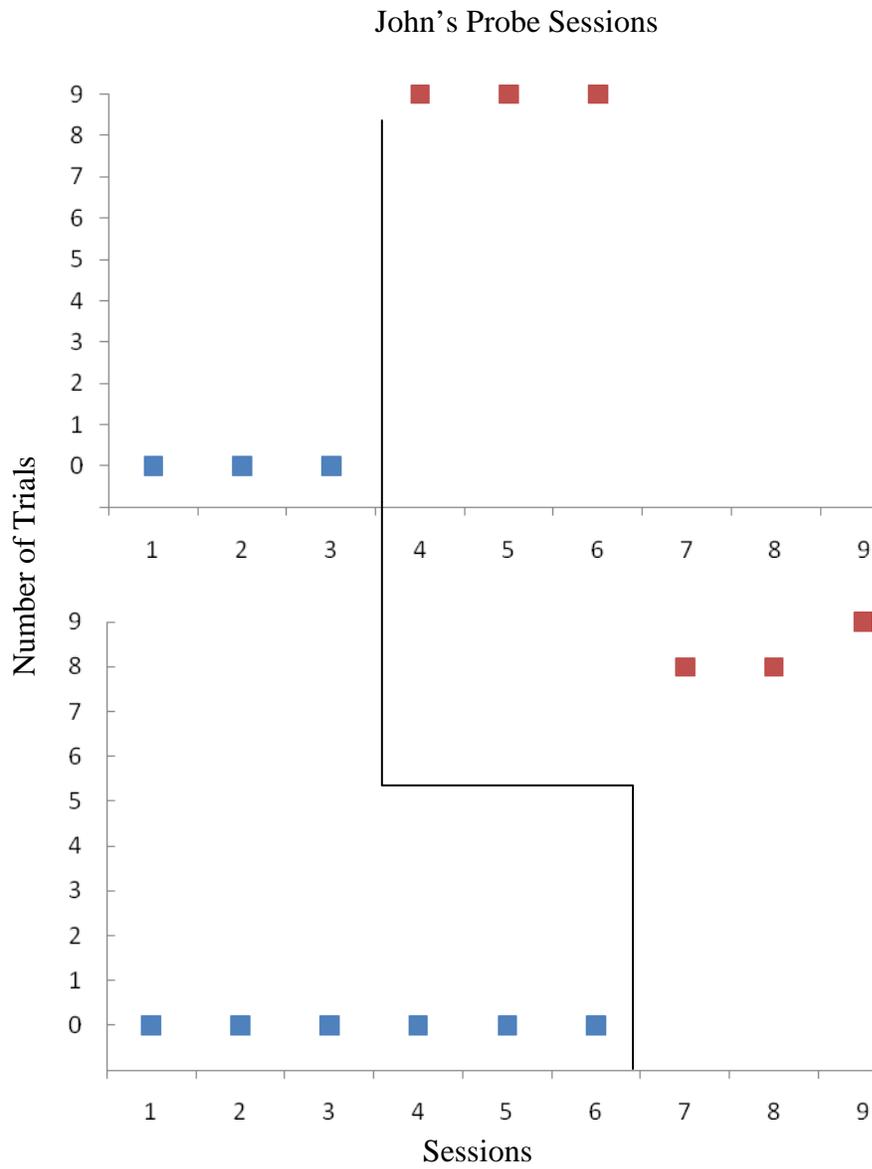


Figure 5: Number of trials correct for sight words in a multiple baseline design across probe sessions.