Summer 7-3-2014

A Manual for Teaching Intraverbals to Elderly People With Aphasia

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A MANUAL FOR TEACHING INTRAVERBALS TO ELDERLY PEOPLE WITH
APHASIA

by

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B.A., Southern Illinois University, 2005

A Research Paper
Submitted in Partial Fulfillment of the Requirements for the
Masters of Science.

Department of Behavior Analysis and Therapy
in the Graduate School
Southern Illinois University Carbondale
August 2014

RESEARCH PAPER APPROVAL

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In the field of Behavior Analysis and Therapy

Approved by:

Dr. Jonathan Baker, Chair

Graduate School
Southern Illinois University Carbondale
July 3rd, 2014

AN ABSTRACT OF THE RESEARCH PAPER OF

Allison Lee Chamberlain, for the Masters of Science degree in Behavior Analysis and Therapy, presented on July 3rd 2014 at Southern Illinois University Carbondale.

TITLE: A MANUAL FOR TEACHING INTRAVERBALS TO ELDERLY PEOPLE WITH APHASIA

MAJOR PROFESSOR: Dr. Jonathan Baker

About 2.1 million Americans over the age of 65 are diagnosed with aphasia, which is a neurological disorder that affects language and communication. Baker, LeBlanc, and Raetz (2008) published a behavioral conceptualization of aphasia and proposed an assessment and treatment model based on Skinner's (1957) operants, Haughton's (1980) learning channels, and Sidman's (1971) identity non-identity categories. To date, no research has demonstrated the most efficacious way to use a transfer of stimulus control with older adults with aphasia. It is possible that if a clinician or researcher knows the learning channel/operant that is best to train the individual, it may improve training. The purpose of this research paper is to suggest a design method using an alternating treatments design to assess if the type of learning channel/operant being taught effects intraverbal teaching for elderly people with aphasia.

ACKNOWLEDGEMENTS

I would like to thank Dr. Jonathan Baker for his devotion and guidance through the process. I would also like to thank my family for their patience and constant support.

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CHAPTER 1

APHASIA

Aphasia is a neurological disorder that refers to "the disturbance of any or all of

the skills, associations, and habits of spoken and written language, produced by injury

to certain brain areas that are specialized for these functions" (Goodglass, 2001, p. 5).

Traditionally, aphasia has been classified by the location of brain damage such as

Broca's area or Wernicke's area (National Aphasia Association, 2011b). The current

medical model supports classification of aphasia by the area of the brain that displays

the damage as well as by classification of similar symptoms (Goodglass, 2001).

Aphasia is categorized by impairments in four main areas: "oral production, reading,

writing, auditory comprehension" (Goodglass, 2001, p. 5). There are two opposing

speech patterns that result from aphasia known as fluent or nonfluent (Goodglass,

2001). Goodglass (2001, p. 7) states that "nonfluent aphasia is typically produced

laboriously, in short word-groupings, rarely exceeding three or four words in a breath."

Fluent aphasia is "typically produced with effortless articulation, involving word-

groupings that commonly exceed 5 or 6 words between pauses" (Goodglass, 2001, p.

7). Aphasia is often separated into categories of expressive, receptive, and global.

Expressive aphasia, also known as Broca's Aphasia, presents as difficulty expressing

thoughts through speech and writing (American Stroke Association, 2013). Receptive

aphasia, also known as Wernicke's Aphasia, presents through difficulty understanding

spoken or written language (American Stroke Association, 2013). Global aphasia, which

is the most severe, is the loss of almost all language function with both comprehension

and expression (American Stroke Association, 2013). The American Speech Language

Association (ASHA, 2014b) notes that aphasia most commonly affects elderly people

over the age of 65, people who have suffered a stroke, and individuals who have suffered a brain injury.

Individuals who experience deficits related to communication have difficulty communicating to family and caregivers, which can often result in a variety of behavior changes resulting from the lack of effective communication and comprehension. The National Aphasia Association (NAA) recognizes that aphasia has the "largest impact on quality of life, more than cancer and Alzheimer's disease" (Facts About Aphasia, para. 6). The NAA (2011c) acknowledges the severity of the lack of communication that an individual who has a diagnosis of aphasia suffers from. The NAA (2011c) notes that due to the lack of communication, the affected individual is unable to effectively comprehend and communicate with their family, friends, caregivers, and other individuals in their life. As known with other disorders that affect language, such as Autism (Dominick, Davis, Lainhart, Tager-Flusberg, & Folstein, 2007), a variety of challenging behaviors could potentially result due to the lack of effective communication or comprehension on the part of the individual with a diagnosis of aphasia.

The ASHA (2014a) states that the current medical model classifies the categories of aphasia based on the deficits that the individual is suffering and from the areas off the brain that sustained damage. The ASHA (2014a) recognizes that the current classification of subtypes of aphasia can prove to be difficult and not all conclusive. Other researchers have expressed similar concerns (Baker, LeBlanc, & Raetz, 2008). The ASHA (2014a) further explains that often times the presenting symptoms can either diminish or change therefore placing that individual in a different classification after they have already been classified. Symptoms of aphasia can also

co-occur with other speech and language impairments creating complications with assessment and categorization based on the current medical model (ASHA, 2014a).

The assessments administered to the patients include a wide variety of information and can include concern's from the patient, medical history including the areas of the brain that have been damaged, a linguistic analysis of the patients current speech, measures of the patient's senses and emotional state, and other forms of assessment (ASHA, 2014a). Goodglass (2001) recognizes that current limitations of aphasia assessments are that they are not exhaustive and there is a great deal of responsibility placed on the examiner. Further, due to the extensive list of standardized and nonstandardized assessments, the examiner must be able to provide variations of assessments and be able to obtain the information needed from the assessments (Goodglass, 2001). These statements conclude that there is a large variety of assessments that must be tailor made to each individual and further probing is often necessary. The ASHA (2014a) acknowledges that the choice of which assessments to use and not use are often decided upon by the clinician with such factors influencing the decision such as needs of the individual, policies, financial variables, and complexity of the symptoms presenting. These variables that influence the choice of assessment such as financial variables and policies have little or none to do with the actual impairment, yet are considered in the assessment decision making process. Goodglass states that there are three primary objectives for the assessment of aphasia. These primary objectives include for the purpose of a diagnosis and identification of type of aphasia, measurement of level of impairment, and as a guide to therapy (Goodglass, 2001). The combination of a lack of adequate classification of

aphasia and variety of assessments could potentially result in inappropriate decisions for therapy of the individuals. The fact that the current classification of aphasia is not all-inclusive and can include symptoms that might change or may not be appropriate for a classification makes it difficult for individuals to obtain the appropriate treatment.

The current treatment recommendations for aphasia currently consist of classification of symptoms based on area of damage to the brain and subsequent therapy based decisions being dictated by this classification system. The current treatment recommendations that follow this medical model for aphasia, focuses strongly on compensating behaviors for the deficits that resulted due to the impact of the disorder. The NAA (2011b) states that there are two general categories of therapy and that each category focuses on their own targets. The first category of therapy is Impairment-based therapies, which focus on "listening, speaking, reading and writing skills" (Aphasia Therapy Guide, para. 1). The second category of therapy is Communication-based therapies, which focus on increasing comprehension by means of naturalistic approach (NAA, 2011b). An example of an Impairment-based therapy is Melodic Intonation Therapy (NAA, 2011b). This specific type of therapy "consists of intoning normal language with exaggerated rhythm, stress, and melody" (Albert, 1998, p. 1418). Other forms of Impairment-based therapies include Constraint-induced therapy and Tele-rehabilitation (NAA, 2011b). Constraint-induced therapy involves the individual being constrained into engaging into using a gesture or damaged part of their body (NAA, 2011b). Tele-rehabilitation involves the use of the internet to connect individuals with aphasia. A specific type of Communication-based therapies is Promoting the Aphasic's Communicative Effectiveness (PACE) which consists of a

focus on enhancing verbal and nonverbal communicative effectiveness (Albert, 1998).

PACE can include the use of Augmentative and Alternative Communication (ACC)

devices. Other forms of Communication-based therapies include Conversational

coaching and Supportive conversation (NAA, 2011b).

Currently the classification of aphasia symptoms dictate the therapy that individuals

diagnosed with aphasia receive. The ASHA (2014c) has addressed complications with

this current assessment process and other variables associated with process. There is

a need for a more effective way to be able to assess the specific language strengths

and weaknesses that an individual has in order to be able to provide an effective

treatment procedure as well. Skinner's (1957) analysis of verbal behavior is a function

based approach that could help address the gap that currently exists between the

current recommendations that exist for treatment and assessment for individuals with

aphasia. Utilizing a function based approach for assessment and treatment approaches

could provide a tailored approach to providing assessment and therapy decisions to

individuals with aphasia. An assessment that would identify the existing level of

operants would be able to provide a guideline for treatment. A behavioral approach

using a transfer of stimulus control methodology based on the results from a function

based assessment could provide an effective methodology to addressing language

deficits.

CHAPTER 2

BEHAVIORAL APPROACHES TO LANGUAGE DEFICITS AMONG ADULTS

There have been relatively few studies assessing transfer of stimulus control methodologies within the aging population. One of the main reasons that research within the aging population within this subject matter is a valid area of interest, is that within this population, often comes many speech based disorders that can hinder the individual's ability to comprehend and effectively communicate with others.

Henry and Horne (2000) conducted one of the few studies that have addressed the concept of verbal behavior within the aging population. Henry and Horne assessed the effects of reinforcement procedures on speaker and listener behaviors in elderly people with severe dementia. This study assessed speaker behaviors which included echoing, tacting, and prepositional tacting and listener behaviors which included different forms of mand compliance. Baseline levels of responding were obtained for the participants for both speaker and listener behaviors. The speaker listener behaviors were assessed by asking the participant to either repeat the name of the item (echoic), label the name of the object (tact), or identify what was in or on the object (prepositional tact). The listener behaviors were assessed by asking the participant to give them an object (mand), place something in or on an object (prepositional mand), or to perform a task before handing the researcher an object (conditional mand). After baseline responding was established the study compared the effects of two different interventions. The first intervention delivered reinforcers after the correct response was provided by the participant. The second intervention utilized this procedure as well, but

also provided modeling for any response given by the participant that was considered incorrect. This intervention, consisting solely of reinforcement, resulted in an increase in the echoic responding for 1 participant and resulted in a slight decline in tacting for the remaining participants. The first intervention also demonstrated an increase in mand compliance for 2 of the 3 participants and conditional mand compliance for 1 participant. The second intervention, which combined the reinforcement procedure with modeling for incorrect responding, failed to yield conclusive increases in any of the repertoires targeted for the participants. The results from this study suggest that some of the operants, such as the echoic, were impacted and increased with the use of reinforcement while other operants were not impacted from the procedure. They also suggest further continuation of this type of work in order to address the operants that are affected with different procedures and to address how the operants themselves are impacted and affected through the training. The results suggest that there is a need for further investigation and research within this area to be able to understand and identify the roles that the specific operant play during verbal behavior training. Further investigations such as the current study would allow for a better understanding of how the operants could impact each other or remain functionally independent during training. The identification of specific procedures that would facilitate the teaching process would have a great impact on the individuals that receive this form of language training.

Skinner (1957) supported a behavioral approach to language in the creation of operants and advocating a function based approach to language assessment. Furthermore, several other researchers support this behavioral model for addressing

language deficits within individuals with language deficits. Gross, Fuqua, and Merritt

(2013) addressed verbal behavior concepts within the population of elderly people.

The study compared two different groups of elderly people, those with a diagnosis of

dementia and those without a diagnosis of dementia. Gross et al. sought to examine the

differences between the strengths and weaknesses of operants in individuals with and

without a diagnosis and dementia and also sought to explore the patterns of language

deterioration across operants. The study utilized an extensive list of assessments to be

able to assess the individual's language deficits and operant deficits. The assessment

revealed differences between the groups that were being compared. The results

indicate that there was a difference between the groups indicating that the control group

performed better on the tact measures than the group that had a diagnosis of dementia.

The results of the assessment also indicated that both groups performed significantly

better on the tact measures than they did on the measures of intraverbals and mands.

These results support the use of a function based assessment with language deficits

due to the fact that the participants displayed functional independence of operants. The

assessments Gross et al. used consisted of the same words throughout the assessment

to help identify if functional independence was being exhibited by the participants. The

results from the study suggest that the operants were functionally independent of each

other in that a deficit in one operant did not necessarily indicate that it would be a deficit

in another operant despite it being the exact same word or object. The results also

revealed that participants showed inconsistently on responding to the exact same

stimulus but in a different operant form. These findings strongly support Skinner's

function approach to language and should be considered the foundation for a behavioral approach to language deficit training.

.   The results from the Gross et al. (2013) study support what previous researchers (Baker et al., 2008) have suggested that a functionally independent analysis of operants should be the fore going form of assessment within language deficits. Baker et al. proposed a classification of language deficits using of combination of Haughton (1980) learning channels, Sidman's (1971) identity and nonidentity, and Skinner's (1957) operants. Baker et al. (2008, p. 156.) stated that they believe that "aphasia appears to be more a deficit of antecedent stimulus control and response production rather than ineffective consequences." This concept would support the functional independence of the operants and not the topographical form that the medical model focuses on when assessing and diagnosing aphasia. For example, an individual might not be able to tell you what you use to brush your hair (intraverbal), but might be able to label a hair brush if one is seen (tact). These specific deficits are seen in aphasia but with the medical model they are categorized into either one type of aphasia or another. These groups often become overlapped with symptoms thus losing the individual's specific deficits or strengths. The importance of this behavioral approach to language deficits lies within the methodology that is used for a behavioral approach to addressing and training the language deficits. If the individual's strengths and weaknesses were known for their operants, learning channels, and identity and nonidentity categories then they could be used to facilitate the teaching of the language deficits themselves. There is still much research to do be done in this area in conducting research that supports the function based approach to language deficits as well as researching the variable such as

procedures used to teach the deficits in identifying the most effective and efficacious

methodology for doing so.

CHAPTER 3

TRANSFER OF STIMULUS CONTROL METHODOLOGIES

Cooper, Heron and Heward (2007) define the application of transfer of stimulus control as "gradually fading stimuli in or out, gradually presenting or removing antecedent stimuli." (p. 403). The purpose of using this methodology is that after the transfer of stimulus control procedure, the naturally occurring stimuli would evoke the desired response being taught (Cooper et al., 2007). Cooper et al. identifies that response prompts are "antecedent stimuli used to occasion a correct response in the presence of a discriminative stimulus that will eventually control the behavior" (p. 401). Verbal instructions are one major form of response prompts and can include orally informing the individual and nonvocal forms of instruction as well such as written text and pictures (Cooper et al., 2007).

A response prompt in the form of a spoken word or verbal instruction is often referred to as an echoic prompt. Williams, Carnerero, and Perez-Gonzalez (2006) utilized an echoic prompting strategy to compare the effects of two different strategies on the maintenance of the tacting repertoires in 6 children with diagnoses of autism spectrum disorder. The study sought to examine the effects between combing an action with a statement of what the action was, or simply performing the action alone that the individuals were being taught to tact. The researchers in this study provided an echoic prompt stating what action the person was performing and would reinforce the correct repetition of the statement. The echoic prompts were faded until the participants were able to correctly tact the action being performed in response to the antecedent stimuli of "What is this person doing?"

A response prompt in form of written text is often referred to as a textual prompt. Emmick, Cihon, and Eshleman (2010) examined the effects of intraverbal responding while utilizing a textual prompting procedure in 3 individuals with developmental disabilities. Emmick et al. used textual prompts which consisted of a socially appropriate response to an intraverbal placed onto a card. The experimenter would provide the verbal stimulus which would be a typical social question or comment, such as "I like to play with trucks" and then provide the textual prompt in the presence of incorrect responding or lack of responding. The study utilized a fading procedure to fade out the use of the textual prompts.

Another form of verbal response that is often utilized is a pictorial prompt, which is commonly used in the form of a picture of something placed onto paper. Rivera, Koorland, and Fueyo (2002) examined the effects of an adolescent student with learning disabilities that created and used pictorial flash cards to facilitate the learning of sight words. The student was informed to draw a pictorial representation of the word on a flash card and was taught to use the flash cards as a prompt to learn sight words. The student also utilized a fading procedure for the use of the flash cards as well.

There are a wide variety of prompting procedures within the category of verbal response prompts and have been used in a wide variety of studies encompassing a variety of different areas of investigation. Investigators not only have a need for examining the specific prompting procedures being used and their effectiveness as a prompting procedure, but also have examined the most efficacious and effective style of prompting methods. Researchers are able to examine these specific variables of prompting methods by comparing different prompting procedures within the same study.

To date, there have been several studies that have examined what prompting procedures are the most efficacious and effective for teaching intraverbals.

Finkel and Williams (2001) examined the effects of comparing textual and echoic prompts in training intraverbals in a 6-year-old individual with Autism. The researchers used a multiple baseline design across behaviors. The behaviors which were being measured as the dependent variable were "the number of full sentence target answers", "partial answers that made sense", and "partial answers that did not make sense, or no response, to direct questions asked" (Finkel & Williams, 2001, p. 63). The phrases that were used as the intraverbals were chosen randomly and were used due to being commonly used phrases in a social setting. The intraverbals were measured through tests that were given during several phases of the study. The intraverbals were randomly divided in that "two questions from each set were taught using textual prompts, and two questions from each set were taught using echoic prompts" (Finkel & William, 2001, p. 63). The design consisted of baseline phase, a fading procedure, a post fading phase, and a follow-up phase. During baseline all of the questions chosen were asked to the participant and the answers were scored as correct, partially correct, or incorrect. The questions were presented to the participant and the assigned prompt was used if the response was incorrect or if no response was given. If the textual prompt was being used the researcher would inform the participant to read the written prompt that was placed on a card. A prompting procedure was used for the textual prompts where the answer was faded one word at a time. If the echoic prompt was being used the researcher would inform the participant to say the correct response if the participant provided an incorrect response or no response at all. A fading procedure

was used for the echoic prompt where the researcher would fade the answer one word at a time. The post-fading procedure involved presenting all of the test questions to the participant without the use of any prompts. The follow-up phase consisted of administering the same questions at one week following the post-fading procedure and two weeks following the post-fading procedure. The results revealed that the echoic prompts resulted in a moderate increase in correct partial answers and only 1 out of the 3 sets of questions maintained or increased the level of correct partial answers at post-fading and follow-up. The use of textual prompts generated a drastic increase in correct responding using full-sentence answers which maintained for all 3 sets of questions and actually increased for 1 set at post-fading and follow-up. The results from Finkel and Williams suggest that the textual prompts were more effective than the echoic prompts in the training and maintenance of intraverbals.

Vedora, Meunier, and Mackay (2009) suggested that echoic prompts have been effective in teaching intraverbals to children with autism, but can promote prompt dependence. Vedora et al. stated that as of that time, Finkel and Williams (2001) was the only study that compared textual and echoic prompts. Vedora et al. sought to extend the findings on Finkel and Williams in the comparison of textual and echoic prompts with two children with autism using an alternating treatment design. The intraverbals being trained consisted of 3 sets of questions, with 2 questions in each set were chosen for each participant. The questions were considered to be functional in nature and were considered to be socially relevant. The methods consisted of a baseline, training sessions, and generalization tests. The baseline phase consisted of presenting each question in a set 10 times. Textual prompts, which consisted of the correct response

written on a card, were provided during the training sessions if the response was incorrect or if no response was provided. The echoic prompts, which consisted of the spoken correct response, were provided during the training sessions if the participant provided an incorrect response or no response at all. A progressive prompt-delay procedure was used to fade the prompts away during the training session based on a criterion of correct responses. The generalization tests were conducted after mastery of the questions had been obtained and was utilized to assess generalization across other people. One participant learned the correct responses in fewer sessions with the textual prompt than the echoic prompt. This participant also displayed errors with the use of the echoic prompt. The other participant was able to meet criterion with using the textual prompts, but for one set failed to obtain criterion with the echoic prompt. The textual prompts were then used for the questions that were unable to be obtained with the echoic prompt and the participant was able to meet criterion with the textual prompt. Both participants were able to meet criterion in fewer trials with the textual prompting procedure. The results of the Vedora et al. study extended the findings in the Finkel and Williams study, suggesting that textual prompts were more effective than the echoic in training intraverbals.

Ingvarsson (2011) assessed prompting procedures for training intraverbals in children with autism using an alternating treatment design. Ingvarsson increased the amount of prompts being compared by comparing echoic and pictorial prompts with 3 participants, and compared textual, echoic, and pictorial prompts with 1 participant. All of the participants were administered pre-tests for tacts, textuals, intraverbals, and echoics. The participants then went through the following phases: intraverbal training

baseline, pre-intervention generalization probe, intraverbal training, post-intervention generalization probes, color preference assessment, baseline, pre-intervention generalization probe, intraverbal training, concurrent-chains assessment, post-intervention generalization probe, follow-up concurrent-chains assessment, and maintenance probes. The preference assessment and concurrent-chains assessment were used for the purposes of identifying prompt preference for the participants, and therefore will not be discussed in this paper. The pre-tests consisted of assessing 51 questions that could be prompted by the use of textual, echoic, or pictorial prompts. Any incorrect response or questions that could not be answered were then assigned to 1 of 3 prompting procedures including echoic, textual, and pictorial. In the baseline phase each set of questions was assessed to obtain baseline responding. During the intraverbal training phase the sets of questions were trained using the assigned prompting procedure using a prompt delay procedure. The textual prompt was a card that was placed in front of the participant, the echoic prompt resulted in the researcher stating the correct response, and the pictorial prompt consisted of a picture of the correct response being placed in front of the participant. The generalization and maintenance probes were conducted with different researchers outside of the setting from the training session and no prompt was provided. One participant displayed slightly lower levels of intraverbal acquisition with the textual prompting methods. The results for the other 2 participants suggested similar acquisition for both prompting procedures. Together, the data suggest that all prompting procedures were effective, but the vocal prompts resulted in fewer trials to criterion for all of the participants during the first prompt comparison. The second prompt comparison was not conclusive in the results.

Ingvarsson and Hollobaugh (2011) examined the comparison of echoic and pictorial prompts to train intraverbals in three children with autism. Ingvarsson and Hollobaugh acknowledged that at the time, only two studies had compared prompting procedures in a transfer of control procedure in teaching intraverbals. Ingvarsson and Hollobaugh identified Finkel and Williams (2001) and Vedora et al. (2009) as these studies that compared the use of echoic and textual prompting procedures, with the textual prompts shown as the more effective prompting procedure in both studies. Ingvarsson and Hollobaugh identified that at that time, even though previous research had indicated that pictorial prompts were effective in the use of training intraverbals, there had been no research comparing the effectiveness of the pictorial prompts. Ingvarsson and Hollobaugh sought to compare pictorial and echoic prompts in training intraverbals in children with autism with an alternating treatment design. The participants were administered an assessment of 32 questions that could be prompted by pictorial or echoic prompts. The questions that were not correctly identified were then used as the training questions. The participants then went through a baseline phase where responding was assessed without any prompts being administered. The training sessions took place next, which consisted of the same questions but were prompted when identified as incorrect by the use of either an echoic prompt or a pictorial prompt. The researchers administered the questions and then were followed by an immediate prompt for the first three trials. In each trial after that a 5-s prompt delay was used with the prompts. Generalization probes were performed prior to and after the training sessions. The generalization probes were identical to the baseline sessions and the participant's teachers administered the generalization probes instead of the

researchers. For all 3 participants, the results indicated that the acquisition was faster and maintained a more stable responding in the pictorial prompt trials. The results indicate that the pictorial prompts resulted in fewer trials to criterion in all 3 participants. These results suggest that the pictorial prompt procedure was more effective in training intraverbals than the echoic prompting procedure.

The wide variety of studies encompassing several different prompting procedures with mixed results suggest that not one prompting procedure is more effective than another, but that there may be other variables in determining the most effective prompting procedure. Coon and Miguel (2012) suggest that the individual's history with prompt procedures may facilitate their acquisition of the operant being taught. Coon and Miguel sought to examine whether exposure to specific prompting procedures would result in accompanying increases in acquisition rate of intraverbals. The study investigated these effects using typically developing children utilizing pictorial and echoic prompt procedures while providing exposure to one prompting procedure prior to training. They measured the number of trials to criterion, the number of correct answers, and the mean number of errors or incorrect responses across sessions while utilizing a multiple baseline design across participants to assess the effects of the pictorial and echoic prompts. All participants were administered stimulus probes prior to the intervention to ensure that the participants could respond to the prompts being used in the methods. A baseline phase was conducted next to achieve baseline responding for the participants for the target questions that would be used in training trials. Next the participants went through a pre-exposure comparison phase which consisted of responding to 2 sets of 3 questions, one set which used the pictorial prompt and the

other set that used the echoic prompt. This phase used a prompt delay procedure to increase the amount of time before the prompt was presented. The purpose of this phase was to assess the trials to criterion for the pictorial and echoic prompt. The next phase was an exposure training phase which provided the participants with increased exposure to one of the two prompting procedures that was being assessed. In this phase the participants were taught using the prompting procedure that had previously required more trials to criterion. The last phase was the post exposure comparison, which was similar to the pre-exposure comparison in that 3 new items were taught with pictorial prompts and also with echoic prompts. The results indicated that after the initial comparison there was minimal difference between the prompting procedures, but after the exposure phase the participants results suggested that the prompting procedure used most recently resulted in fewer trials to criterion when training new intraverbals. These results suggest that the individual's history with specific prompts may facilitate their acquisition of learning. Finkel and Williams (2001) noted that 1 of the participants in their study most likely had a history of ineffective learning with echoic prompting procedure that may have facilitated the use of textual prompts.

The majority of the above studies have been conducted with adolescents with autism and other developmental disabilities. There is a need for further research in this area to be explored within other populations and with other disabilities and deficits. It is also important to note that these studies deal specifically with the population of children with developmental disabilities, many of whom do not have much of a history of verbal behavior; they are learning it for the first time. The majority of the individuals in the

elderly population with language deficits have a verbal history in their repertoire already. This is a significant variable that needs further evaluation and research.

As such, the following section provides a framework for conducting such a study with older adults. The purpose of this paper is to suggest a design method using an alternating treatments design to assess if the type of learning channel/operant being taught effects intraverbal teaching for elderly people with aphasia.

CHAPTER 4

HYPOTHETICAL METHODS

Hypothetical Participants and Setting

The current paper suggests methods that should be used to investigate the transfer of stimulus control utilizing participants over the age of 65. An example of settings for the proposed methods would be at an assisted living facility or nursing home. Facilities such as these would be an excellent location due to the fact that many residents in these facilities have aphasia and are stable in their rehabilitation. All of the participants that would participate should have a diagnosis of aphasia. The sessions should take place in the facility that the individuals reside at.

Materials and Assessments

The current paper suggests utilizing an assessment that would identify the current strengths and weaknesses of operants, identity and non-identity, and learning channels for each participant prior to sessions. The assessment could include test portions C, D, E, and Appendix F of the Porch Index of Communicative Ability Assessment (PICA). The materials that would be needed for the assessment include a cigarette, comb, fork, key, knife, lighter, pen, pencil, coin, toothbrush, several pieces of paper, several index cards, and writing utensils. The assessment could also include test portions of the Boston Diagnostic Aphasia Examination 3rd edition (BDAE). The assessment could also include portions from the Mini Mental Status Examination (MMSE). The materials needed for the portion of this assessment would be a key, comb, pencil, several pieces of paper, and additional writing utensils. Materials needed

for the training sessions would include several index cards, the intraverbal portions of the assessments, and writing utensils.

Assessment

All participants would initially be administered an assessment that would include portions of the PICA, BDAE, and MMSE prior to training sessions to identify the baseline levels of responding for all of the operants being assessed. The assessment includes a variety of tasks where the participants would be asked to follow instructions to repeat words, write words, identify objects, mand for items needed to complete instructions, and other verbal and non-verbal tasks. The suggested portions of the assessments would be used to identify the baseline level of strengths and weaknesses in operants, identity and non-identity, and learning channels for each individual participant. The information that would be obtained from the assessments would identify the operants that would be used during training sessions to assess their effects on the facilitation of the training of intraverbals. The information obtained from the assessment sections would be beneficial in assessing each operant and learning channel if each portion of the assessment were scored and separated into operant, identity or non-identity, and learning channel when evaluating the results. Separating the results into these three categories would allow the researcher to identify the existing operants that are at moderate or strong levels. Additionally, it would allow the researcher to identify the operants that are at a low level. Together, these different operants could be used to assess the effectiveness of different operants during the transfer of stimulus control procedure. The strongest operant, which would be identified as the operant that had the most amount identified correctly, would be used as one of the operants used in training

the intraverbals. The weakest operant, excluding the intraverbal, would be used as well during the training procedure to be able to compare the effectiveness of the choice of operant to use during the training of intraverbals. The use of two different operants would allow the researcher to use an alternating treatment design in order to maintain experimental control. The assessment should be conducted with each participant prior to any training sessions taking place. Once the researcher has identified the current levels of responding from the assessment and chosen the operants that would be used during training, then training sessions should be initiated.

Data Collection/Analysis/IOA

The current paper suggests hypothetical methods for assessing choice of operants used for teaching intraverbals to elderly people with aphasia. The hypothetical methods suggest using a randomized list of intraverbals that have been assigned to one of two operants used for a prompting procedure. Data collection should consist of scoring each intraverbal trial as either correct, incorrect, and whether or not a prompt was used within the trial. This would allow the researcher to assess the data and analyze the percentage of trials scored as correct, incorrect, and prompted trials. Data collection could also consist of collecting data on trials to criterion. This would be done by analyzing the data and assessing the amount of prompted trials needed for the participant to be able to correctly identify the specific intraverbal in question. The combination of these data analyses would allow for an evaluation of the results to be able to assess the effectiveness of both operants being used in the training trials.

Inter observer agreement could be assessed by having two different researchers score the sessions either in person or via video recording. Inter observer reliability could

be measured by calculating the percentage of total agreements divided by the total

agreements plus the total disagreements multiplied by 100% for each session ran. The

study should attempt to have an inter observer agreement score of 80% or higher.

Procedural integrity should be addressed to ensure that the sessions would be

conducted consistently throughout the methods. A checklist that entailed all of the

essential components of the assessment, baseline, and intervention phases could be

used during sessions to maintain procedural integrity.

Experimental Design

An alternating treatments design should be utilized for the current suggested methods in

order to maintain experimental control. Each prompt should be assigned to different

stimuli in order to ensure that there is not an effect between the two prompting

procedures being assessed. Maintaining different stimuli for different prompting

procedures will help to provide experimental control.

Baseline

Baseline and training sessions should include the portion of the assessment that

assessed intraverbals. All of the intraverbals that were assessed in that portion of the

assessment would be included in training sessions. The intraverbals included in the

training sessions should be randomized in their order or appearance. The intraverbals

would also need to be assigned to either the strong or weak operant. There are several

ways that this could be achieved. One potential way to randomize the order of the

intraverbals would be to use a random number generator and assign the order of the

intraverbals in that manner. Another potential way that the intraverbals could be

randomized would be to place them in a hat and to pick them out one by one and assign

them the order that they were chosen. In order to assign each intraverbal to either a

strong or weak operant, after the randomization then the intraverbals would need to be

assigned to one of the two operants being used during training. The first one could be

assigned to the strong operant, the second to the weak, the third to the strong, and

continue this pattern for the entire list of intraverbls. After the order of the intraverbals

has been established and they have been assigned to either the strong or weak

operant, then a baseline measure of responding should be measured. Each intraverbal

would be presented in the order that was chosen through randomization to the

participant and obtain if the response was correct or incorrect. During baseline data

collection, each session should consist of one presentation of the entire list of

intraverbals and obtain whether or not the participant provided the correct or incorrect

response. The order of the intraverbals should be randomized at the beginning of each

session, but the initial assignment of prompt choice would have to remain the same

throughout the entire methods. After stable responding has been established for the

intraverbals during baseline sessions then training sessions should take place.

Training

Training sessions should be administered in the exact same manner as the

baseline sessions with the only difference being that the operant identified as the

moderate or strong operant and the operant identified as the weak operant should be

used to prompt the correct response to the intraverbal if the participant were to give the

incorrect response. At the beginning of each training session the intraverbals should be

placed in a randomized order while maintaining the initial assignment of the prompt

assigned to each intraverbal. The first intraverbal would be presented to the participant

if the participant provided the correct answer to the intraverbal then that would be scored as a correct response. If the participant provided an incorrect response to the intraverbal then the researcher would use the operant assigned to that intraverbal as a prompt. For example, if the participant's assessment revealed that their echoic responding was at a higher level than the intraverbals and their tact operant was at a lower level than the echoic, then an echoic prompting and a tact prompting should be used. An example of a training trial using an echoic operant as a prompt would be if the researcher asked the participant "What is your full name?" and the participant responded "It's just one of those things", then the researcher would vocally prompt the participant to say "Jane Doe." An example of a training trial using a tact operant as a prompt would be if the researcher asked the participant "What do you drink from?" and the participant responded "yeah" then the researcher would hold up an index card with the a picture of a cup. The researcher should collect data on if the response was correct, incorrect, and also the prompts provided. The researcher should use a prompt time delay strategy in order to prevent the participant from becoming prompt dependent. The researcher should increase the amount of time in between an incorrect response and the prompt that is provided to the participant. The time delay could start with an immediate prompt and then gradual increase the amount of time that elapses in between the incorrect response and the prompt that is provided. The basis for increasing the time delay for the prompting strategy would depend on a criterion that has been established by the researcher. An example of this would be after 10 consecutive correct responses after an immediate prompt then 1 second could be added to the time delay before the prompt was provided. The training sessions should

continue until the researcher has obtained stable responding from the participant. This entire procedure should be repeated for every participant that would be included in the study.

CHAPTER 5

SUMMARY

The current paper suggests hypothetical methods for teaching intraverbals using a transfer of stimulus control procedure with elderly people with aphasia. The assessment discussed in this paper suggests using a variety of assessments used to identify the current level of strengths of operants and the learning channels. The methods suggest using an alternating treatment design to assess the effects of using two different strength operants in a transfer of stimulus control procedure. The alternating treatment design would allow for the investigation of the effects that each operant had on the intraverbals that would be taught.

There are several potential outcomes for the results that could be obtained from the suggested methods within this paper. The potential results of the data analysis could reveal that there was no difference between the operants within the training trials. The results would be indicative of training trials that would result in relatively equal percentages of trials scored as correct as a result of training and a relatively equal amount of trials to criterion as well. The results would suggest that the choice of operant used in transfer of stimulus control procedures would have little to no effect on the outcome of training. This would suggest that each operant could facilitate learning to the same strength, indicating that a strong operant could facilitate as well as a weak operant.

Another potential outcome could be that the weaker operant would facilitate the outcome of the training trials more effectively than the stronger operant. These potential results would indicative of training trials that resulted in a higher percentage of trials

scored as correct for the weaker operant and faster acquisition that would be shown through fewer trials to criterion. These potential outcomes would suggest that a weaker operant could facilitate the teaching of intraverbals more effectively than a stronger operant.

A third potential outcome of the suggested methods could reveal results that would show that the stronger operant facilitated teaching intraverbals more effectively than the weaker operant. The results would indicative of training trials that resulted in the stronger operant resulting in a higher percentage of trials correct and fewer trials to criterion than the weaker operant being used to teach the intraverbals. These potential results would suggest that a stronger operant could facilitate the teaching of intraverbals more effectively than a weaker operant.

These potential results are three possible outcomes of the suggested methods within this paper. Despite the potential variety of outcomes of the hypothetical results, all results would shed light on the understanding how each operant affects the hindering or facilitation of transfer of stimulus control. Due to the current lack of research in transfer of stimulus control methodology with the elderly population, identification of outcomes of a behavioral approach would contribute to the knowledge base that is needed to expand upon. The suggested methods in the current paper suggest an assessment procedure focusing on the identification of the level of responding for operants and learning channels in the participant's repertoire. As suggested by Baker et al. (2008), the assessment should compromise of assessing all of the operants and learning channels within the individuals repertoire to be able to have an idea of which operants have been weakened and which operants would be a strong enough

response to use to potentially facilitate teaching. This method of assessment and teaching could potentially result in a much better outcome for affected individuals suffering from aphasia.

Skinner (1957) suggested a function based approach to language such as the current paper suggests as an approach to language deficits. Individuals that experience language deficits may be able to correctly identify an object in one operant but not another. For example, if an individual that had a diagnosis of aphasia was asked "What do you drive?" (intraverbal) and would be unable to provide the correct response, but when provided a picture of a car and asked "What is this?" (tact) may be able to correctly identify the same stimulus within the different context. These specific examples explain how operants can function independent of each other. When individuals are undergoing assessments for aphasia classification the information obtained generally consists of history of trauma, current speech abilities focusing on the linguistic form of speech (ASHA, 2013a). Unfortunately, such information does not effectively inform treatment. This medical model approach to assessment of aphasia would more than likely be unable to identify the fact that an individual would be able to use the word "car" in one situation and not in another despite the fact that it is exactly the same word. If researchers can develop assessments that identify specific deficits, as well as provide suggestions for treatments (e.g., transfer of stimulus control), there may be a greater chance of improving the lives of those who experience aphasia.

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Research Paper Title:

     A MANUAL FOR TEACHING INTRAVERBALS TO ELDERLY PEOPLE WITH APHASIA

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