LANGUAGE DEVELOPMENT IN CHILDREN WITH LANGUAGE DISORDERS: AN INTRODUCTION TO SKINNER'S VERBAL BEHAVIOR AND THE TECHNIQUES FOR INITIAL LANGUAGE ACQUISITION

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ABSTRACT

Language development in typically developing children has a very predictable pattern beginning with crying, cooing, babbling, and gestures along with the recognition of spoken words, comprehension of spoken words, and then one word utterances. This predictable pattern breaks down for children with language disorders. This article will discuss Skinner's verbal behavior theory and will provide the techniques needed to teach children to repeat, request, label, and respond with novel responses in a conversational method by providing the reader with step by step instructions for successful implementation.

Key words: Verbal Behavior, Teaching Language Skills, Language Disorders and Treatment.

INTRODUCTION

Language development in typically developing children has a very predictable pattern beginning with crying, cooing, babbling, and gestures along with the recognition of spoken words, comprehension of spoken words, and then one word utterances (Heflin & Alaimo, 2007). For children with language delays the development and progress of language is slower but generally progresses along the same path (Reed, 2005). However, the predictable pattern of development breaks down for children with severe developmental retardation such as Autism (Heward, 2009). These children often are described as having a *language disorder* (Reed, 2005). In other words, language for these children will proceed in an unpredictable or splintered fashion or may not appear at all. For example, many children with Austim develop *echolalia*, verbatim repetitions of words with seemingly no apparent communicative purpose. While others may display little expressive language, but demonstrate near normal or normal receptive language. Overall, children with severe language disorders are more likely to have difficulty in school and problems in social development,

and may appear more disabled than they really are. This may be especially the case if the child is not exposed to early and intensive intervention.

Over the years, the field of psychology has embraced multiple theoretical orientations and subscribes to many varied perspectives depending on the topic discussed. In the case of language development, there are two main theoretical perspectives. The authors would describe them loosely as *Nativist* and *non-Nativist*. Although it is not within the scope of this paper to illustrate these accounts in great detail, the authors would briefly describe the two accounts as they relate to initial acquisition of language.

The Nativist account of language development suggests that the development of language is a biological predisposition of being human and is most famously exemplified by Chomsky's *Generative or Universal Grammar* (Chomsky, 1965; 2006). In this account language is thought to be a universal aspect of the human species due to the neurophysiology of the human brain. Humans only need a minimally effective language environment and language will be discovered naturally, hence no learning actually takes place. If one posits the

view of the Nativists, a child with a language disorder must have some brain abnormality that inhibits the development and progression of language. In addition, and unfortunately for these children whatever language they do acquire is constrained by their level of brain abnormality, there is little if anything one can do to change the trajectory.

The non-Nativist accounts for language place language within the developmental process. In this account, language development affects cognitive development and vice versa (Bloom, Tinker, and Scholnick, 2001). For these theorists language is a window into the mind. The child is not a passive beneficiary of genetics, but plays an active role in her own development. The child acts as an *agent* in his or her own development, and language is acquired as part of a child's social and perhaps more importantly, emotional life (Bloom et al., 2001). If one posits the view of the non-Nativists, the limited prognosis for a child at risk for developing a language disorder is not immutable. However, unfortunately the research generated thus far has provided little if any guidance to those interested in teaching language to children with little or no useful language. For children with Autism, therapy mainly addresses issues related to articulation and vocabulary (pragmatics and semantics) through the use of play therapy and talking and augmentative and alternative communication devices (ASHA, 2008).

A third approach of language development that is more closely aligned with a non-Nativist account has been proposed by behavioral psychologist B. F. Skinner in his book *Verbal Behavior* (1957). Initially the behavioral account of language development met with much criticism (e.g., Chomsky, 1957). Regrettably Skinner never chose to answer his critics although others have (MacCorquodale, 1970). Regardless of the philosophical tête-à-tête on any side of the philosophical divide, others have put to use the theoretical framework in *Verbal Behavior* to teach children with severe language delays such as Autism to speak, listen, sign, and communicate non-verbally (e.g, Charlop-Christy, Carpenter, Le, LeBlanc, & Kellet, 2002; Hall & Sundberg, 1987; Hart, 1985; Hernandez, Hanley, Ingvarsson, & Tiger, 2007; Krantz, &

McClannahan 1993; McGee, Krantz, & McClanahan, 1985;Murphy, Barnes-Holmes, & Barnes-Holmes, 2005; Twyman 1995; Wallace, Iwata, & Hanley, 2006; Whalon & Schreibman, 2003, Yoon & Feliciano, 2007).

The purpose of this article is to discuss Skinner's verbal behavior theory and provide an overview of the conceptual foundations and the techniques used to teach children to repeat, request, label, and respond with novel responses in a conversation.

Verbal Behavior

Skinner (1957) defined verbal behavior as behavior that is reinforced through the mediation of a listener. Verbal behavior implies a social and reciprocal relationship between a speaker and listener, where by the speaker gets access to reinforcement through the behavior of the listener. Yet it is important to note that the speaker and the listener could reside in the same skin. A speaker acting as his or her own listener seems to be an important part of what the author refer to as self-control.

In defining verbal behavior as that which is strengthened through mediated reinforcement Skinner was trying to break with traditional accounts of language that focused on the *form* behavior (phonemes, morphemes, grammar, and syntax) and put in its place an analysis of the *function* of the language in order to understand verbal behavior's controlling variables. For Skinner, the form of the response was secondary to understanding language in context. For example, the form "car" could *mean* different things depending on the context in which the word was emitted. "Car" could mean, "I see the car" if the sight of the car occasioned the response. "Car" could mean, "I want to go to the car" if the response was in relation to a scared child wanting to go. "Car "could be the answer to the question, "How did you get here?". "Car" could be written on a piece of paper and placed on the refrigerator in order for the person to remember to take the car to get its oil changed. Additionally, car could be signed or in pictographic form in any of those instances and still be considered *verbal*. In other words, the manner in which one communicates is of secondary importantance; rather, it is the context of the behavior that is important.

Verbal Operants

Skinner chose as his unit of analysis not just the behavior but the conditions upon which the behavior occurred. So, a verbal operant includes the antecedent conditions, the behavioral form, and the consequence of the behavior. The primary verbal operants include mands, tacts, echoics, intraverbals, textuals, and transcriptions. In this paper the authors will only focus will on mands, tacts, echoics, and intraverbals and the step needed to conduct initial training with each verbal operant as they are the most important for initial language acquisition.

Skinner (1957) defines these terms as the following:

- *Mand- Verbal behavior:* This is under the control of depravation or aversive stimulation that is reinforced by a characteristic consequence (characteristic consequence means a specific consequence specified by the response, i.e., "I'll have a Coke will usually be reinforced by receiving a Coca-Cola not another soft-drink").

Non-technical way of understanding the term: Asking for things that you want. For example, saying cookie because you want a cookie. Basically, this is how the child gets his/her needs met.

- *Tact- Verbal behavior:* This is under the control of a non-verbal stimulus or property of that stimulus and is strengthened by a generalized reinforcer (a generalized reinforcer is one that is not specific to that response).

Non-technical way of understanding the term: Naming, labeling, or identifying objects or events, etc. In other words, it is the ability to verbally label common items and actions that you make contact with in the environment.

- *Echoic- Verbal behavior:* This is under the control of a prior verbal stimulus with a point-to-point correspondence and formal similarity and is strengthened by a generalized reinforcer.

Non-technical way of understanding the term: Repeating what is heard. Basically, this term is derived from echo and implies a one to one correspondence with the speaker.

- *Intraverbal- Verbal behavior:* This is under the control of a prior verbal stimulus without a point-to-point correspondence and is strengthened by a generalized

reinforcer.

Non-technical way of understanding the term: Answering questions or having conversations in which your words are controlled by other words. It is the ability to answer questions and participate in meaningful conversations where there is not a one to one correspondence to the speaker's words. For example, saying "fine" when someone asks, "how are you today?"

These terms, mirror the typical progression of spoken and comprehended language and lend themselves directly to the teaching of language (Sundberg & Michael, 2001; Sundberg & Partington, 1998).

Communication in its must rudimentary form is first seen in an infant crying when it is in distress (the baby is hungry, cold or uncomfortable). The crying normally results in some form of attention from a caregiver. Whether or not this is a true mand is debatable, but nonetheless it is the most rudimentary form of language and sets the stage for learning through operant conditioning. For example, while the initial cry is spontaneous it results in a powerful and meaningful learning trial where the object or need that is being requested is delivered. This learning trial is critical in the life of a child by enabling the child to request the delivery of a reinforcer and by establishing the communicative roles of speaker and listener that are needed for further language development.

Typically children continue down this path of requesting and learn from this pairing of mands and the delivery of the reinforcement requested. They also begin to acquire appropriate speaker skills and ultimately substitute the rudimentary methods such as crying and the maladaptive methods such as tantruming for words. This association of manding yielding reinforcement requires little to no direct instruction for the typically developing child; however, the scenario is much different for a child with language delays. For this child, direct and systematic instruction is vital to his or her ability to gain verbalizations and request his or her needs appropriately.

Although acquiring mands is one of the end goals for all children, it is often not the first verbal behavior taught. Before mands can be taught the child must learn to

attend and gain appropriate listener skills such as making eye contact, following one step directions, imitating simple gross motor and fine motor skills, and having point-to-point correspondence to spoken words. Once the motor skills have been obtained, having point-to-point correspondence with the spoken word is needed. This correspondence is achieved through echoic training. The paper will proceed with brief discussions of each verbal operant and follow with initial step for training each in isolation. There are more specific steps for going from one verbal operant to another such as echoic to mand and tact to mand but for the purpose of this paper, the training steps will remain generic and specific to the verbal operant being discussed.

Echoics

Echoics are verbal operants that occur when the child repeats the spoken word of another individual. Echoics are controlled by verbal stimuli and have point to point correspondence. Echoics are also categorized by having formal similarity to that of the spoken word. Truly, echoics are echos of another individual's spoken language. The ability to repeat the spoken word verbatim implies that the child has the motor skills necessary for further language acquisition and the attention span to attend to vocalizations and ultimately to a training program. However, if the child does not having an echoic repertoire than echoic training is needed.

Teaching Echoics

When you begin the echoic training session be mindful that this skill is critical to further language development and recognize the importance those early attempts and approximations to the sound that is desired. The goal for echoic training is to develop these fundamental skills need for manding, tacting, and intraverbal communication thus it is important that strong reinforcers be used throughout training. If you are unfamiliar with strong reinforcers for the particular child you are working with you may want to use a preference assessment interview or sample a few items with the child and collect data on attempts to engage and time engaged with each item. An initial echoic training session should

resemble the following steps: (1) Make sure you have a powerful reward for the student, (2) Show the item (if you are teaching an item), (3) Say the word (You can accept an approximation of the word or the word depending on the student) and (4) Provide a reward. Once echoics have been added to the individual's verbal repertoire, training should begin on mands or tacts depending on the child's skills and immediate needs in his or her environment.

Mands

A mand is the ability to ask for a reinforcer to be delivered. Mands are utilized when the child is in a state of deprivation and therefore mands are under the functional control of motivating operations and specific reinforcement. For example, food deprivation will make food effective as reinforcement and will evoke behavior such as manding for cookie if this (verbal) behavior has produced cookies in the past. Since mands are under the control of the receipt of the desired item, mand training does not begin with a question or a command rather it should begin by establishing a state of motivation for an object or item, blocking attempts to gain access without appropriately requesting for the item, and prompting the individual to ask or sign for the item desired.

Teaching mands

To begin teaching mands, the teacher needs to establish that a child will want the object of event being trained. This is important because mands are defined as being under the control of obtaining the desired reinforcer. Sundberg & Partington, (1998) listed several techniques to help establish motivation or contrive a motivating scenario. Some of the techniques recommended are as follows: (1) Give the child a bowl of ice cream without a spoon, (2) Give the child locked box but not the key (3) Ask the child to comb his hair but don't give him a comb (4) Give the child a coloring book but no crayon (5) Give the child a Tupperware container with a reinforcer in it and (7) Stand in the doorway when a child wants out. Once an establing operation is in place, the treatment session should begin.

There are, however, some things to consider when selecting which mands to begin with. Basically, the teacher would want to consider those items that are

motivating to the child and that adults can easily control the access to. Also, select only those items or activities that a child has demonstrated that he or she understands through some means of communication such as imitation or pulling you. For example, when the parent says, "Do you want to go outside," the child goes towards the door (Sundberg & Partington, 1998). Another important thing to consider is that the child only needs to gain access to the reinforcer during the teaching trials and keep in mind that parental consent is often needed to ensure that access to the reinforce is approved.

The following guidelines, according to Sundberg & Partington (1998), are also applicable when identifying initial mands to teach and are as follows:

(1) Select reinforcers that allow for short a duration of engagement (e.g., m and m(s), bubbles, tickles),

(2) Use reinforcers that are easy to remove from the student (e.g., computer time, watching a video clip)

(3) Select rein forcers that are easy to deliver (e.g., Toys),

(4) Select reinforcers that can be delivered on multiple occasions (e.g., sip of juice instead of entire cup) and

(5) Select words that are relevant to the child and that the child sees or uses frequently in daily activities.

As mand training begins, the teacher must also be cognizant of the child's ability to vocalize. Sundberg and Partington (1998) also provide guidelines for working with children that have some vocalizations. "For vocal children, select words that involve a relatively short and easy response for the child to make. For example, many speech sounds are easier to produce than others, such as "aa," "ba," "mm," and "da"; "la" and "rrr" may be much harder. Also, words should be selected that match the child's existing imitative repertoire" (114). For signing children, these authors recommend that the words selected are "iconic, that is, the signs look like the objects that they stand for; as in the sign "book" looks like the action of opening a book, or the sign "eat" looks like putting food in the mouth. Also, signs should be selected that match the child's existing imitative repertoire" (114). A typical initial mand training session (regardless of the child's ability) would resemble the following:

(1) Contriving a motivating operation,

(2) Placing the desired item in front of or close to the child

(3) Waiting for the child to request the item,

(4) Rewarding the child for the request by delivering the item,

(5) Allowing the child to consume or engage the item, and

(6) Never questioning or using a verbal prompt to elicit a response.

Tacts

The tact is a type of a verbal operant in which the speaker names items and/or actions that the speaker has direct contact with through any of the sense modes. Furthermore a tact is under the functional control of nonverbal stimuli and produces generalized conditioned reinforcement for the individual. Therefore, initial tact training does not occur through the use of questioning and answering rather teaching trials consist of selecting and placing objects near the child and awaiting his or her response.

Tact training

Tact training, similar to mand training, has guidelines to be followed prior to beginning a session. Sundberg and Partington (1998) provide the following list for selecting tacts to be used during the first training sessions. Some of the items on the list include:

(1) Select words that are relevant items in the child's daily life that occur frequently (e.g., Eat),

(2) Select items that can be clearly identified across all variations of the item (e.g., Ball)

(3) Select words that easy to discriminate from each other (i.e., a car and a tree not a truck and a car) and

(4) Select words familiar as demonstrated by a following directions, imitation, etc (e.g. teach "ball" if the child touches the ball when prompted to, "Touch the ball.").

Training tacts should also be based on the child's current level of functioning. "For vocal children, select words that involve a relatively short and easy response for the child to make. For example, many speech sounds are easier to produce than others, such as "aa," "ba," "mm," and "da"; "la" and "rrr" may be much harder. Also, words should be

selected that match the child existing echoic repertoire" (Sundberg and Partington, 1998, 151) and for a child who signs again to use words that are iconic or look like the objects that they stand for.

Basically, a Tact Training session would resemble the teacher doing the following steps:

(1) Hold up the item or place it within his view (e.g. toy car),

(2) Do not prompt the response and

(3) Wait for the student to say "car" and give him a reward.

Intraverbals

The intraverbal is a type of verbal operant in which a speaker differentially responds to the verbal behavior of others. This type of responding is commonly demonstrated by a child filling in words to songs such as saying "boat" when you say "row, row, row your _____" and responding to questions such as saying "chips" when asked "What you like with your sandwich?" With typically developing children you observe a high frequency of intraverbal responses however with a child with a language disorder you may observe good receptive skills, the ability to use echoics, mands and tacts but the inability to respond differently to questioning or the give and take of daily conversations. When the child struggles with intraverbal behavior it is important to begin a training program based on the use of a language based assessment.

Intraverbal training

Before an intraverbal training program is established, the child must be able to demonstrate success with echoic and tact. The beginning phase should consist of the use of a question or verbal prompt to elicit a response from the child. If a response is not given within a reasonable time frame then provide the child with a response and encourage an echoic response. This should be faded quickly as it only serves as a model for the desired session. Once this is faded, initial training should begin and the frequency of trials should be increased.

An initial training session would resemble the following:

(1) present the target verbal stimulus such as *A cow says...*
(2) provide an immediate echoic prompt (if needed) such as mooo

(3) re-state the verbal stimulus and delay the echoic prompt

(4) Reinforce a correct response (*Moo*) with praise or a tangible or provide corrective feedback.

When conducting a session there are some indicators that point to stopping. They are as follows:

(1) If it takes a lot of training trials

(2) the child is rote responding

(3) the exhibits negative behavior (such as escape/avoidance) and

(4) failure to totally break free from prompts.

With each of the above described verbal operants one must proceed only after time has been taken to gather baseline data. Without baseline data, a starting point is nothing more than a guess and only does a disservice to the child. Baseline can be obtained through systematic observations, parental reports, and anectodal information. Typical language can serve as an important guide for curriculum development for children with language disorders. Only when we know typical progression and normative information, can we truly be able to ascertain the nature and degree of the language disorder.

Conclusion

Typical language development is often seen as a natural course of overall cognitive and physical development. When development is severely delayed or nonexistent parents and teachers are often confronted with little options for treatment, and in the past, little hope for success. Increasingly parents and educators are using the framework first theorized by Skinner to teach what was once thought unteachable. Each of the verbal operants described in the manuscript can be thought of as the core to understading verbal behavior and the essential components for teaching language acquisition. Once each of these operants have been achieved during a teaching session the goal is to generalize them to other settings. This is true for all of the operants but in terms of achieving a desired level of social skills and leveling the playing field with the typically developing peers,

generalization is most vital for intraverbals. "Generalized answers can be beneficial in at least two ways: (a) They may replace undesirable responses to questions, which in turn may enable the person to contact more social reinforcement from peers and teachers, and (b) such responses may enable acquisition of novel answers, which in turn may be beneficial to developmental and educational progress" (Ingvarsson, Tiger, Hanley, & Stephenson, 2007 p.428). In summary, Skinner's verbal behavior approach provides a glimpse of hope to the child with a language disorder and a tool kit for the educator, parent, and speech therapist working with the individual child.

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