1-1-2001

Phonological Intervention using a Multiple Opposition Approach

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METHODS (Cont.)

A combined single-subject design of multiple baseline across error patterns was selected to investigate the efficacy of the multiple opposition approach. Two error patterns were selected for intervention for each child. Half of the children received treatment on the first pattern while the other half of the children remained in an extended baseline until treatment was completed on the first pattern with the first group of children. After 21 treatment sessions, or 90% generalization to the target behaviors in the trained patterns was achieved, treatment switched to the second patterns for the first group of children and the second group of children began treatment on their first error pattern. Treatment consisted of five contrastive multiple oppositions for each error pattern which resulted in a total of 20-25 min per pattern trained.

Narrow and broad theories of generalization were used. Generalization probes were created for each child to assess learning using target sounds to untrained words as well as to provide a baseline level of performance on target sounds prior to the initiation of intervention. If the generalization criterion of 90% accuracy on the target sound in untrained words was met, a short conversational sample was collected to check the child’s use of the targeted sound in connected speech. If the child produced the sound with at least 90% accuracy, treatment for that sound was terminated, as suggested by By (1999).

Data analysis. For each target, the end of treatment mean was compared with the baseline mean with the t-test. The pre-post comparison of means for phonological knowledge was tested with the paired t-test. A probability level of 0.05 or smaller was used to indicate statistical significance.

RESULTS

Table 2 shows the mean baseline and final treatment performance for each child treated within the two behavior patterns (i.e., B1 and B2) for each of the 14 children. The statistical significance between these two scores is also indicated as well as the child’s response level on each target at the end of treatment (i.e., imitation or spontaneous).

Table 3 summarizes the results for each of the two behaviors trained in terms of number of sounds that demonstrated significant improvement and the number of sounds that reached the spontaneous level of production by the end of intervention. As indicated in this table, the majority of sounds showed significant improvement 21 treatment sessions or less. Specifically, 77% (37/48) of the sounds demonstrated Behavior 1 achieved statistical significance. In Behavior 2, 37% (18/48) of the sounds demonstrated improvement that was statistically significant. Further, the majority of target sounds reached the spontaneous level of production by the end of treatment. For Behavior 1, 38% of the sounds were at the spontaneous level and 90% of the sounds in Behavior 2 were at the spontaneous level.

System-wide phonological change in terms of productive phonological knowledge is summarized for all children in Figure 1. Productive phonological knowledge significantly increased from a mean of 38.5% (pre-treatment) to a mean of 62.5% (post-treatment). An increase was observed for each study participant.

DISCUSSION

These results indicated that the multiple opposition treatment model resulted in significant changes on trained as well as untrained aspects of the children’s sound systems. These changes occurred in a relatively short time period of 21 to 42 treatment sessions.

The context of multiple oppositions has implications for the part/whole learning theory and therefore poses an interesting learnability hypothesis. Apel’s (1990) phonological learning theory involved larger, integrated treatment sets (multiple oppositions) in order to facilitate change across an entire rule rather than one contrast at a time. This theoretical perspective assumes that the greatest amount of change will occur in the shortest amount of time with the least amount of effort when information is focused on disruption across a rule set.

Future research is planned to directly examine the role of learning theory in manipulating the “part” versus “whole” aspect of the treatment input presented to the learner.

REFERENCES


Phonological Intervention Using A Multiple Opposition Approach

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INTRODUCTION

The construct of contrastive oppositions in phonological intervention has been shown to be effective in remediating speech disorders in children for the past several decades (cf., Winter, 1981; Guerri, 1989, 1992). Although derivatives of contrastive oppositions have been examined, particularly with the nature of the comparison sound contrasted with the target sound (i.e., known – unknown, unknown – unknown), all variations have incorporated a singular contrast. Frequently, however, children with speech disorders do not learn single contrast multiple sounds to a single phonological system (Williams, 2000). The purpose of this investigation was to examine a phonological restructuring when contrastive oppositions were constructed to include larger treatment sets that combined the child with multiple sound targets selected from an entire rule set.

PARTICIPANTS

Fourteen children with moderate to severe phonological impairments served as participants in this study. Two girls and nine boys who ranged in age from 4 years to 6 years (mean age = 4 years; 9 months) met the following criteria to be included in the project: (1) inclusion of at least six sounds across three primary categories of sound production, as determined by performance on the Goldman-Fristoe Test of Articulation (Goldman & Farentin, 1986); (2) normal hearing; (3) minimal history of organic or motor disorders; (4) normal verbal abilities within normal limits; (5) between the ages of 42 and 78 months, and (6) reside in a monolingual English-speaking family. Table 1 describes the participants with regard to age, PPVT & standard scores, and pre- and post-treatment phonetic part/whole learning theory in manipulating the “part” versus “whole” aspect of the treatment input presented to the learner.