



Effectiveness of Hand Cues in the Treatment of Children with Suspected Childhood Apraxia of Speech

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ABSTRACT

Clinicians use a variety of body and hand movements, or "phonemic hand cues", in the treatment of individuals with speech sound disorders. It is presumed that these cues provide additional visual, kinesthetic, and tactile input by mimicking the place and manner of production of target sounds. The use of these cues has been studied extensively with hearing-impaired individuals, but there is limited research to define the role of phonemic hand cues in the treatment of children with speech sound disorders. The purpose of this pilot study was to determine the effects of using phonemic hand cues in addition to a traditional speech sound therapy approach in the treatment of two children with suspected childhood apraxia of speech (sCAS). Three stimulative target sounds were chosen for each child. A single-subject, additive interaction design allowed the children's progress to be measured during each distinct phase of the study: baseline testing, traditional therapy, and traditional therapy with hand cues. Results of the study indicated that a traditional therapy approach consisting of verbal placement cues and acoustic highlighting was effective in remedying speech sound errors when the target sounds were produced with 30-50% accuracy in imitation at baseline. When targets were produced with less than 30% accuracy in imitation at baseline, hand cues aided in the remediation of errors in spontaneous productions. Phonemic hand cues may provide the additional kinesthetic and visual input needed to hasten carryover from imitative to spontaneous productions.

INTRODUCTION

Background

Childhood apraxia of speech is a severe speech sound disorder that affects the motor planning abilities needed for speech production. It has been suggested that motor learning is optimal when the brain receives sensory input from multiple modalities (e.g. visual, auditory, tactile, kinesthetic) (Square, 1994), and phonemic hand cues are often an integral component of a treatment program for these individuals. For example, the Touch-Cue method designed by Bashir, Grahamjones, and Bostwick (1984) utilizes specific phonemic hand cues to facilitate the sequencing of speech sounds in children with suspected childhood apraxia of speech. Auditory, visual, and tactile cues are modeled by the clinician on his or her own face while saying a target phoneme or word (e.g. touching a finger to the child's lips to emphasize the /b/ sound).

Determining which treatment approaches are effective for those with sCAS is critical to optimizing outcomes and adhering to evidence-based practice. The evidence-based research supporting the use of phonemic hand cues in the treatment of children with suspected childhood apraxia of speech is limited, and there is a dearth of literature regarding treatment efficacy of any kind for sCAS (ASHA Position Statement, 2007). This pilot study measured the effects of adding phonemic hand cues, similar to those used in the Touch-Cue Method but with a kinesthetic component, to a traditional speech sound treatment program for two children with sCAS, using a single-subject design. Differences between the subjects were also investigated to ascertain whether certain characteristics may predispose an individual to perform better with one treatment approach over another.

Purpose

Though phonemic hand cues are often used in speech sound therapy, their effects have not been widely studied outside of the hearing-impaired population. The purpose of this pilot study was to 1) determine the effects of adding phonemic hand cues to a traditional speech sound treatment program for two children with sCAS, 2) determine whether certain characteristics of the child may predict responsiveness to phonemic hand cues, and 3) propose questions for further research in this area.

METHODS

Participants

Two children with suspected childhood apraxia of speech were chosen for this study. Criteria for inclusion in this study were highly specific in order to exclude children who do not meet the proposed diagnostic characteristics of childhood apraxia of speech, as recommended by Davis et al. (1998), Davis and Velleman (2000), and Hodge & Hancock (1994) (as cited in *Childhood Apraxia of Speech Technical Report*, 2007). Children chosen for inclusion in this study were between the ages of 3;5-8;0 (Hayden, 1994) and did not present with any concomitant syndromes or abnormal musculature for speech. Hearing was within normal limits, and receptive language skills were near age-level. Possible current speech characteristics included but were not limited to a high incidence of vowel errors, inconsistent articulation errors, and more frequent errors on longer units of speech output. Additional characteristics determined by case history information included a previously limited consonant and vowel repertoire, significant difficulty imitating words and phrases, and a predominant use of simple syllable shapes. Specific characteristics of each child were as follows.

Age	CHILD "A"	CHILD "B"
Gender	Male	Male
Nonverbal IQ (Wechsler Intelligence Scale-III)	118	118
Verbal IQ (Wechsler Intelligence Scale-III)	118	118
Standardized Language Test (CELF-2)	118	118
Nonverbal IQ (Wechsler Intelligence Scale-III)	118	118
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