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ABSTRACT

Although articulation errors are common among the preschool population, they can affect a child's relationship with peers and adults by an inability to express clearly ideas and needs. To address hypotonia in the lips, cheeks, and tongue of a 4.8 year old Spanish-dominant male who presents with very poor speech intelligibility, an oral sensory motor intervention was designed to complement the phonological work done during clinical sessions. The oral sensory motor intervention was provided by a classroom special education teacher 3 times per week for 15 minutes over 4 weeks. The targeted productions consisted of bilabial, velar, and lingual alveolar sounds. A pre- and posttest consisting of 10 Spanish words of objects found in the child's environment was administered. The results indicated an improved range of motion within the oral cavity as well as a greater awareness of phonetic segmentation. Recommendations are offered to clinicians, teachers, paraprofessionals, and parents regarding the value of simple, common activities such as toothbrushing, straw drinking, and bubble blowing. (Contains 10 references.) (Author/CR)

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Effects of Oral Motor Stimulation

on the Speech Clarity of a Preschool-aged Child

Abstract

Although articulation errors are common among the preschool population, they can impact a child's relationship with peers and significant adults simply by not being able to clearly express ideas and needs. To address hypotonia in the lips, cheeks, and tongue of a 4.8 year old Spanish dominant male who presents with very poor speech intelligibility, oral motor stimulation activities were implemented. The targeted productions consisted of bilabial, velar, and lingual alveolar sounds. A pre- and posttest consisting of ten Spanish words of objects found in the child's environment was administered. The results indicated an improved range of motion within the oral cavity as well as a greater awareness of phonetic segmentation. Recommendations are offered to clinicians, teachers, paraprofessionals, and parents regarding the value of simple, common activities such as toothbrushing, straw drinking, and bubble blowing.

Introduction

The preschool years are ones of much learning through discovery and experimentation. A tremendous amount of growth occurs across all developmental domains. The purpose of this writing is to investigate the effectiveness of various oral motor stimulation techniques on speech clarity, since being understood is crucial to successful communication, which in

turn effects development in many other areas.

Language Development

Bredekamp and Copple (1997) share that "from 3 to 5 years of age, language development seems to explode, with children learning an average of 50 new words per month" (p. 107), however, although sequential, there exists an enormous variation in development across this time span. Some widely held expectations for typically developing language are as follows:

For Three Year Olds

- vocabulary of 2000-4000 words
- simple 3-4 word sentences
- asks many "Wh" questions to gain information, but has difficulty answering such questions
- likes simple finger plays and rhymes; learns repetitive songs
- can tell a simple story but may lose sequence of events

For Four Year Olds

- 4000-6000 word vocabulary
- 5-6 word sentences
- expresses emotions through facial gestures and begins reading body language of others
- can modify speech and control volume of voice
- uses more advanced sentence structure and experiments with new constructions
- learns new vocabulary quickly when related to own

experiences

For Five Year Olds

- 5000-8000 word vocabulary
- uses fuller, more complex sentences
- uses pitch and inflection
- shows growing speech fluency in expressing ideas
- takes conversational turns
- shares experiences verbally
- remembers lines from poems, television shows, and commercials (Pierangelo & Jacoby, 1996; Bredekamp & Copple, 1997).

By just taking note of the amount of vocabulary words children in each age group tend to acquire, gives one an appreciation for the scope of children's language development during this time period. Of course as children develop at their own individual rates, there may be some overlapping of skills. This is normal. However, in the case of children with developmental disabilities, children whose level of functioning is significantly below their chronological age, it is more common to see, for example, a four year old functioning within the two to three year old level of development.

Atypical Language Development

According to Broen and Westman (1990), one's manner of articulation and errors of omission are language production issues considered significant among the preschool population, and tend to correlate with unintelligibility. Given the

importance of communication in our daily lives, unintelligible speech, having others not understand us, is frustrating for the individual, impedes the development of peer relationships, and complicates the relationships with other significant adults. These concerns have been reflected in research involving parents of children with disabilities. Westling (1996) found that socialization and friendship skills were considered significant areas of development by parents, and Stephenson and Dowrick (2000) concluded that parents rated the skills of asking for objects, objecting to the actions of others, maintaining an interaction, and drawing attention to pain or discomfort as most important for their young children. They also encountered the frustration of parents whose children could not "express these needs unambiguously" (p. 30).

In an attempt to address these needs, nonstigmatizing, unobtrusive oral sensory motor stimulation techniques will be implemented to manipulate the components of the oral cavity, namely the cheeks, lips and tongue. These oral structures are involved in the production of phonological sounds required for speech and language. The goal of such an intervention is to improve the speech clarity of a preschool-aged child so that he will be better understood by not only unfamiliar adults, but familiar as well.

Personal Profile

C is a 4.8 year old, Spanish speaking male of Puerto Rican descent. His current level of expressive language functioning

is within the 36-42 month range as per The Five P's (Bloch, 1987), a preschool performance profile for children with special needs. His speech repertoire had previously consisted of monosyllabic words to label or request, however in recent months his productions have increased to 3-4 word utterances and polysyllabic words. As his communicative intent has improved, his intelligibility has decreased. C displays a delay in phonological development as demonstrated by such processes as stopping, weak syllable deletion, cluster reduction, stridency, and assimilation. He does not respond well to modeling (visual feedback of articulatory movements), therefore, in collaboration with his speech therapist, an oral sensory motor intervention has been designed to complement the phonological work done during clinical sessions. The clinical sessions are mandated two times per week for thirty minutes in a group. The oral sensory motor intervention will be provided by the classroom special education teacher three times per week for fifteen minutes over four weeks.

As one can surmise, C is not developing typically. In addition to speech and language delays, he also presents with cognitive delays. To his credit he is extremely engaging and cooperative; therefore it is anticipated that he will greatly benefit from the planned intervention. However, one should not assume that such methods are only necessary for children with special needs. Clinicians, teachers, paraprofessionals, and parents can implement these and other activities with typically developing children to address any observed low tone

in the cheeks, lips, and/or tongue, or as preventative measures.

Pre-/Posttest and Intervention

In designing the pre-/posttest, remarks by Swift and Rosin (1990) have been taken into consideration. In their attempt to promote generalizability, they encourage clinicians to not only focus on words rather than sounds and syllables, but words which relate to the child's environment. For this reason, the pre-/posttest consists of ten Spanish words of items found in C's play, articles of clothing, as well as his sister's name. These particular words have also been chosen based on his consistent incorrect pronunciations of these words. They also contain bilabial, velar, and lingual alveolar sounds which are the targeted areas of the intervention.

The exercises to be implemented are adapted from the recommendations by Morris and Klein (1987). Hypotonia in the cheeks reduces the strength and skill with which the lips can move during speech activities. To increase the movement and control of the lips, straw drinking will be introduced, as well as bubble blowing through straws. Loop straws and increasingly thickened liquids will be used. Beads will also be added to the straw to adjust the length of the portion entering the mouth. The length will gradually become shorter, requiring increased lip control. Such an activity should improve the quality of bilabial sounds which require intraoral pressure (eg. /b/, /p/).

To address hypotonia of the tongue which impedes the

strength and skill with which the tongue can move during speech activities, toothbrushing will be introduced. Not only will this promote oral hygiene, but by brushing the lips, inner cheeks, and tongue with a battery powered toothbrush, the intended result will be increased muscle tone in these areas so as to improve the quality of velar and lingual alveolar sounds (eg. /k/, /g/, and /t/, /d/ respectively). In cooperation with toothbrushing, gargling will follow as this exercise strengthens the base of the tongue which is utilized in the production of velar sounds.

Results

The following list consists of the ten Spanish words used for the pre- and posttest, and demonstrates the pronunciations elicited each time.

	Pretest	Posttest
casa	tasa	tasa
bicicleta	ceta	hihiheta
teléfono	zéfwono	enéfolno
pescado	cado	petado
Maxine	asine	axine
jaqueta	jake	jacket
camisa	misa	misa
bloques	bwoke	bwoses
camión	camwón	gamión
guantes	guante	guante

As can be seen, with the exception of casa, camisa, and

guantes which were pronounced the same in both the pre- and posttest indicating no improvement, there have been marked improvements made in the production of all other words. Although most may still not be pronounced correctly, the changes made indicate an awareness on C's part of the syllables composing the words and his attempts to produce them. In addition, the posttest results for pescado, ie. petado, indicate an awareness and improvement of the lingual alveolar sounds and phonetic segmentation within this production.

Considering the changes which exist after only four weeks of oral motor intervention and observation, one can assume that with continuous intervention of this nature, greater improvements are yet to be seen. During the course of this intervention, classroom observations were made indicating greater attempts made by C to produce most if not all syllables in a word. Likewise, as he participated in the activities, eg. straw drinking, C demonstrated a greater range of mobility within his lips and cheeks, resulting in improved precision and strength with which he sucked the thickened liquid (milkshake). Some of this can also be attributed to the stimulation he received to his lips, cheeks, and tongue from the battery powered toothbrush. All in all, over the short course of four weeks, C has acquired an increased awareness of these parts of his mouth, improving his ability to manipulate them, resulting in improved speech clarity.

Recommendations

For the purpose of this paper, the focus remained primarily on the use of straw sucking and blowing thickened liquids, and toothbrushing, however, there are many different activities to be implemented to address oral motor issues. For some of these methods, one to one attention may be required, which may in and of itself have positive social emotional results as the child receives special attention from the teacher/clinician. For other activities, group participation may be feasible so as not to single out any one individual. Many of the activities to be discussed are fun and not foreign to the early childhood experience.

Kumin, Goodman, and Councill (1996) share techniques which ultimately result in sequenced oral motor movements which are necessary for precise speech production. They find mirror work to be a critical component of oral motor interventions as this allows for immediate visual feedback for the child. Suggested activities include blowing whistles and musical instruments with various sized mouth pieces, as well as blowing soap bubbles. As an added challenge, children can be instructed to blow large bubbles which require greater control to produce. Balloon blowing is also effective for increasing lip strength as well as intraoral pressure necessary for the production of bilabial sounds (eg. /b/, /p/). To exercise the tongue musculature, certain tongue commands can be used such as touching the tongue to each corner of the mouth as well as licking peanut butter

off of the top lip.

Morris and Klein (1987) further provide ideas for addressing oral motor needs. Aside from toothbrushing and straw drinking which were used in the aforementioned intervention, they also speak of incorporating tapping, patting, and stroking the cheeks, lips, and jaw to provide stimulation. To emphasize the interaction rather than the stimulation, they recommend using music with a clear rhythm and regular tempo, allowing the children to sing along if they can while the adult provides the sensory input.

Conclusion

Although Klein's (1996) findings tend to favor the results of phonological approaches as opposed to traditional oral motor techniques, one must consider the targeted population and be open to incorporating various techniques so as to maximize the potential of each child. Whether it be a typically developing child or one with special needs, one should address not only the desired speech production, but also the mechanism with which it is to be produced. We need to consider the whole child, not just separate parts.

As can be seen by the recommendations made, there are many different ways to incorporate oral motor activities into a child's day. Although C, the targeted child, has special needs, these exercises are not only for special needs children or to be implemented by clinicians. Parents certainly can recognize these methods as commonplace in the lives of their young children

and can now appreciate the developmental value of such simple tasks.

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