Effect of Prolonged Pacifier Use on Speech Articulation

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Introduction

• Nutritive sucking (NNS): allows infants to suck without ingesting nourishment (e.g., pacifier & digit sucking)
• Purpose of NNS: calming, state regulation, pacifying
• In Western countries, approximately 75 to 85 % of children use a pacifier (Niemela, Uhari, & Hannuksela, 1994)

Pacifier Research

Advantages of Pacifier Use

• Facilitate calming and soothing of young infants (Adair, 2003)
• Stimulate sucking reflex & aid coordination of suck, swallow, breathe in preterm infants (Booth & Leijonhufvud, 2001)
• Potential preventive measure in SIDS (Hauck, Omojokum, & Siadaty, 2005)

Disadvantages of Pacifier Use

• Correlation between early pacifier use and decline in breastfeeding (Barros, Victorra, Semer, Filho, Tomasi, & Weiderpass, 1995)
• Correlation between pacifier use & occurrences of acute otitis media in infants (Niemela, Uhari, & Mottonen, 1995)
• Increased occurrences of dental anomalies: anterior and posterior crossbites, open bites, overjet and dental arches (Larsson, 1994)
• Dental anomalies with possible link to speech articulation problems (Boskurt, 2001)
• Tongue thrust causing recurrence of anterior open bite following orthodontic correction and subsequent distortion of /s/ and /z/ and lingual alveolar consonants /l/, /d/, and /l/ (Van Norman, 2001)

Participant Selection

• Recruited two-year-olds and three-year-olds through preschool screenings at central Illinois preschool and daycare classes.
• Subjects’ parents completed questionnaires regarding: frequency, duration, and time of day of pacifier use; hx of otitis media, hx of family speech and language problems, and hx of digit sucking.

Experimental Group

• Included 7 children with h/o pacifier use for at least two years and were currently using a pacifier or had discontinued use within six months.
• 4 females and 3 males.
• The mean age of 3 years; 1 month.
• PPVT-4 standard scores mean of 111 (SD=7.90).
• Mean duration of pacifier use ranged from 2 years; 0 months to 4 years; 9 months, with a mean duration of 2 years; 10 months.

Control Group

• Seven control subjects were recruited within three months of each experimental subject’s age.
• Mean age of the control group was 3 years; 0 months.
• 3 females and 4 males.
• Comparable standard scores on the PPVT-4; mean standard score of 108 (SD=4)
• Mean duration of pacifier use ranged from 0 years; 9 months to 0 years; 8 months, with a mean duration of 0 years; 5 months.

Purpose

• Pacifier research has predominately focused on its relationship to dental anomalies, but little is known about the effects pacifiers have on speech production . Hypothesis of the current research study is that children who use pacifiers more frequently and for longer duration will display more articulation error patterns.

Research Question

• Is there a difference in articulation errors displayed by children who use pacifiers for extended durations and frequency as compared to children with no history of pacifier use?

Measuremen of Articulation Skills

• All subjects were administered the Goldman-Fristoe Test of Articulation-Second Edition (GFTA-2; Goldman & Fristoe, 2000)
• Assessed speech articulation development.
• Admin. Sounds-in-words section of the GFTA-2, (53 target words on 34 picture plates to elicit 61 consonant sounds in the initial, medial, and/or final position.)
• 16 consonant clusters in the initial position were evaluated using the GFTA-2.
• All subjects were administered subs tests of the Second Contextual Articulation Tests (S-CAT); (Secord & Shine, 1997)
• The S-CAT word retelling tasks for the phonemes /s/,/z/,/d/, /t/ and/l/ were given to probe fricative patterns and alveolar stops

Comparison to Past Norms

• Fabio-Smith & Goldstein, 2010; Irwin & Wong, 1983; Smit et al., 1990

Reliability

• Testing was recorded on a video camera
• Speech-language pathologist rescored 25% of the testing
• Pearson Correlation was calculated (r=.92)

Conclusions

• The pacifier users as a group averaged a standard score of 106.43 (SD=12.96) on the GFTA-2.
• The non-pacifier users as a group averaged a standard score of 115.57 (SD=3.31) on the GFTA-2.
• The non-pacifier users as a group consistently obtained greater percent accuracies and standard scores on all articulation tasks (i.e., GFTA-2 and S-CAT probes).
• Both the pacifier and non-pacifier users’ averaged standard scores on the GFTA-2 that were within the average range.
• The pacifier users as a group obtained percent accuracies that ranged from 68.85 to 81.11 on the S-CAT probes. The non-pacifier users as a group obtained percent accuracies that ranged from 84.34 to 92.59 on the S-CAT probes.
• The pacifier group demonstrated accuracies lower than the range reported by past studies for several of the alveolar phonemes. Therefore, the data seems to indicate that pacifier use may have affected articulation skills for this group of subjects.
• However there was not a clear relationship for individual pacifier users between the amount and time of pacifier use and articulation skills.