The Relationship Between Non-Nutritive Sucking Use and Speech Sound Development

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Introduction

The purpose of this study was to examine the relationship between non-nutritive sucking (NSS) and speech sound development in young children. Non-nutritive sucking (e.g., pacifier use) is thought to have both positive and negative effects on the populations who adopt its practices. Pacifier use is related to reductions in both the amount of time preterm infants are tube fed and the duration of the infant's hospital stay (Field, et al., 1982). It is also thought to be related to a reduction in the duration of a child's restless state and is associated with reduced negative behavioral responses in young children (Mason, Harris, & Blissett, 2005). However, extended NNS use is thought to potentially impact both dentition (Nelson, 2012) and speech sound development (Barbosa, et al., 2009). Previous studies have examined the relationship between length of NNS use in months and speech sound production, but have not looked at the relationship between amount of time used during the day and speech sound production.

Methods

The study was conducted in two phases:

Phase 1- A survey was completed by parents of 3 & 4 year old children. The survey consisted of questions about their child's developmental and medical history and history of pacifier use. The following information on NNS use was gathered: duration of NNS use in months, amount of daytime use, and amount of nighttime use

Phase 2- The Goldman-Fristoe Test of Articulation-3 (GFTA-3) was administered to assess speech sound production of children who met criteria. Criteria for participation in phase 2 was typical developmental history and no significant history of ear infections.

Participants

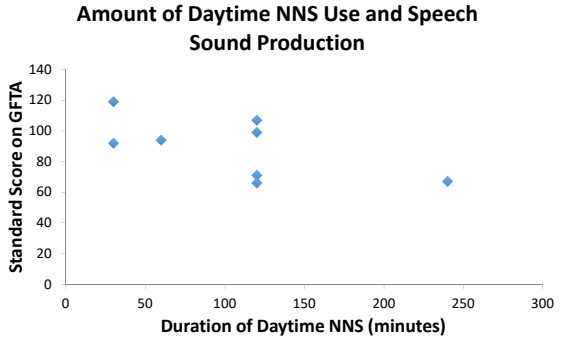
Participants were between the ages of 3;2-4;8. There were 12 participants in phase 1, and 8 participants in phase 2. Participants who did not meet the criteria of typical development and/or had a significant history of ear infections were not included in phase 2 of this study. Of the 8 participants in Phase 2, 5 were female and 3 were male. Participants in Phase 2 had no history of speech/language assessment or intervention.

Results

Pacifier use extent and duration of time varied among all participants. This information was gathered from the parent survey.

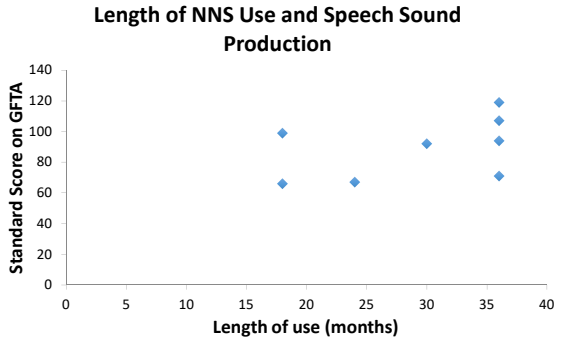
Participant	Duration (months)	Amount during day (minutes)	Amount during night
1	18	120	All the time
2	36	60	All the time
3	36	120	Some
4	36	120	All the time
5	36	30	Some
6	24	240	Some
7	30	30	All the time
8	18	120	Some

Standardized Scores from the GFTA-3 were placed on a scatter plot along with duration of NNS use, amount of daytime use, and amount of nighttime use.



The strongest relationship appeared to be between the amount of daytime NNS use in minutes and standard scores on the GFTA-3 (depicted on the left). As the number of minutes of daytime NNS use increased, the standard score on the GFTA-3 decreased.

R^2=0.39



As depicted on the graph on the left, there appeared to be a moderate relationship between the length of NNS use in months and scores on the GFTA-3.

R^2= 0.20

Discussion

A moderate relationship was found between the duration of NNS in months and speech sound production. However, a stronger relationship was found between amount of daytime NNS use in minutes and speech sound production. There was no apparent relationship between the amount of nighttime NNS use and GFTA-3 scores. A possible explanation for these results may be that children who frequently had a pacifier in their mouth during the day might have learned to talk around the pacifier. The pacifier could potentially have impacted the movements of articulators, leading to habitual production patterns that were not be immediately modified by removal of the pacifier. Past studies have focused primarily on the relationship between NNS use in months and speech sound production, making the findings of this study innovative. Future studies may wish to continue to focus on both the duration of pacifier use in months and the amount of daytime pacifier use.

There are multiple limitations to this study. One limitation is the small sample size. Another limitation is that the study relied on parent memory of child NNS use. Finally, this study was limited to pacifier use. Future studies could include larger sample size, include other types of NNS use (e.g., thumb sucking), and document NNS use as it is occurring, rather than relying on parent memory.

References

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