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The effects of a nonspeech response mode on phonological sensitivity assessment tasks

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Abstract

This study compared typically developing kindergartener's scores on phonological sensitivity assessment tasks in two response conditions. Tasks were assessed in both speech mode where participants stated their answers aloud and nonspeech mode where participants pointed to a picture on a response array to indicate their answers. A within subjects design was used wherein participants received all eight assessment tasks in both conditions. Order of presentation of condition in combination with equivalent sets of assessment items were counterbalanced across four groups. Results revealed no statistically significant differences in scores between the two response conditions for six of the eight assessment tasks providing evidence that a nonspeech response mode is a valid approach to measuring some phonological sensitivity skills. These results have implications for the effective assessment of phonological sensitivity skills among children who have AAC needs, a population at risk for insufficient literacy development.

Introduction

Phonological sensitivity (PS) skills measured in young children have repeatedly shown a strong relationship to later reading and spelling achievement. PS skills are traditionally assessed via tasks requiring a spoken response. Validation of a nonspeech response mode must be conducted before it can be used to assess for existing or potential weaknesses in PS among young children with AAC needs. Given that so few individuals with AAC needs attain functional literacy skills and growing evidence that many individuals with AAC needs have weak or underdeveloped PS skills (Berninger & Gans, 1986; Blischak, 1995; Smith, 1989; Vandervelden & Siegel, 1999), early identification of those weak skills is imperative.

Additionally, there is emerging evidence that PS intervention programs have successfully increased literacy skills among individuals with AAC needs (Heller, Fredrick, & Diggs, 1999; Shah, Blischak, & Lombardino, 2002). Therefore, it is critical that young children with AAC needs be assessed on PS skills and early intervention be provided to address identified weaknesses.

Purpose

The ultimate aim of this study was to gain information about the validity of PS assessment task scores obtained from a nonspeech response condition for the potential use with children who have AAC needs. Due to the lack of previous research on this issue, it was important to first determine general performance differences between the two response conditions among children who could participate in both response conditions. Therefore, typically developing participants were used rather than participants with AAC needs.

When assessing children with AAC needs, too often clinicians and teachers have created adaptations for existing standardized tests without determining whether the adaptations were valid (O'Conner & Jenkins, 1999). Such informal adaptations can cause problems not only because the norms are likely affected, but the underlying skill being assessed by a given task may not remain the same (Blischak, 1994). To date, little is known about “the effects these adaptations may have on task and response requirements” (Blischak, p. 250) when assessing PS among children with AAC needs.

Methods

This study was designed to compare typically developing kindergartner's scores on eight measures of PS under two response conditions. In the spoken response condition, participants answered questions using speech, the typical response mode used for assessing PS skills. In the nonspeech response condition, participants answered questions by pointing to their answer on an array of pictures. The spoken directions provided by the examiner were nearly identical in both conditions. Prior to administration of the PS assessment tasks, participants were assessed for their knowledge of letter names and were taught to name the pictures used on response arrays.

Forty-two typically developing, native English-speaking children enrolled in kindergarten classrooms were recruited from five public schools in central Indiana. Participants were required to have hearing, corrected vision, and speech-language abilities within normal limits according to school records and teacher report.

This study utilized a balanced, within-subject design (Cotton, 1998). The order of response condition (speech first vs. nonspeech first) in combination with list type (List 1 and List 2) was counterbalanced across four groups. Each participant within a group received the same combination of temporal ordering of response condition and list type for each of the eight PS assessment tasks. Therefore, the dependent variables (task scores) were compared within participants for response condition (independent variable) and between groups for order of response condition (independent variable) and list type (independent variable).

Results

Results revealed that mean scores for two of the eight tasks were significantly larger in the nonspeech condition than in the speech response condition. The results indicated that, overall, only phoneme blending and initial phoneme deletion were affected by the nonspeech

response condition. No differences were detected for temporal ordering of response condition or list type.

The results of this study support previous, preliminary findings (Blischak, 1995; Vandervelden & Siegel, 1999, 2001) that PS skills can be validly assessed using a nonspeech response mode via picture response arrays. Although the task demands were altered from open-ended to forced-choice recognition for many PS tasks in the nonspeech condition, careful selection of foils and pre-teaching of picture names allowed similar results to be obtained.

Conclusions

In general, practitioners can be relatively confident that scores obtained from a carefully constructed nonspeech assessment of PS skills provide an accurate representation of the individual's skill level. Additional research is needed, though, to determine whether PS tasks administered in the nonspeech mode accurately measure the construct of PS and whether they predict future literacy achievement to the same degree as tasks administered in the speech mode. More importantly, research is needed to determine the developmental progression of PS skills among children with AAC needs and effective instructional strategies for teaching PS skills to children with such varying abilities.

Clinical Implications

Although the results of this study provide a critical missing piece of the puzzle related to assessment of PS skills among individuals with AAC needs, the ultimate purpose for assessing PS skills among individuals with AAC needs is to contribute to the development of appropriate instruction that will enhance future literacy achievement. Therefore, the next logical step in this line of research is to determine if PS skills administered in the nonspeech condition measure the same construct(s) as the tasks administered in the speech condition. The tasks administered in the nonspeech condition here were highly interrelated and revealed a pattern of correlations similar to previous studies that used the traditional speech response (Stanovich, Cunningham, & Cramer, 1984; Yopp, 1988). These results suggest that the tasks administered in the nonspeech mode were measuring the same construct as similar tasks administered in the speech mode in previous research. But confirmation of this hypothesis is needed through factor analysis which can then be compared to previous findings.

Given that the purpose for assessing PS skills among young children with AAC needs is to identify skill deficits that might hamper future literacy achievement, evidence must be obtained as to the degree that PS skills predict future literacy achievement in children with AAC needs. Minimal evidence is available of concurrent validity between PS skills and measures of reading ability obtained from individuals with AAC needs (Vandervelden & Siegel, 1999). But that evidence must be supplemented with evidence regarding the relationship between PS skills and future reading achievement. Therefore, longitudinal research is needed wherein PS skills are measured among children with AAC needs and then the reading and spelling abilities of the same children are measured some distance in the future.

Finally, assessment of PS skills among children with AAC needs must be utilized to determine the effectiveness of instructional programs. Instruction in PS has shown to be effective at increasing reading (Heller et al., 1999) and spelling (Shah et al., 2002) skills among individuals with AAC needs. Yet, to date, only Blischak (1995) has used nonspeech assessment of PS pre- and post-test to determine instructional effectiveness and, then, only for rhyming skills. Given that no significant differences were detected for list type in this study, the current PS assessment protocol, having two equivalent forms, could be used as a pre-test and post-test to measure the effectiveness of an instructional program in phonological sensitivity skills.

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