

Implications of Oral Language Instruction on Phonemic Awareness of Hard of Hearing Pupils in Lower Grades in Lusaka, Zambia

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Abstract

This paper is an extract from a PhD thesis based on one of the objectives which sought to investigate the extent to which pupils with hard of hearing in grade one and two know about sounds of letters. There was evidence of poor performance in letter sound tasks in pupils with hard of hearing impairment. It was not known why the pupils with hard of hearing impairment perform poorly on letter sound tasks in Zambia. This study therefore sought to establish the predictive role of oral language in phonemic development of pupils with hard of hearing impairment in grades one and two in Lusaka Zambia. The study was conducted in selected primary schools in Lusaka District, Lusaka Province, Zambia. The study utilised ex post facto research design as all children in their respective grades were assessed. The sample comprised 60 pupils of which 31 were girls and 29 were boys. Pupils were tested individually at the start of grade two and three to tap the skills they had acquired having completed grades one and two using the Basic Skills Assessment Tool, Peabody and One Word Picture Vocabulary Assessment Tool. Descriptive statistics and t tests were computed to analyse data. Results revealed that hard of hearing pupils displayed insufficient knowledge in phonemic awareness tasks. It was established that both expressive and receptive vocabularies did not predict phonemic awareness in hard of hearing pupils due to lack of instruction in this area. Based on the findings, the study recommended that teachers of the hard of hearing pupils should utilize oral language when teaching letter sound knowledge tasks to hard of hearing pupils and that pupils with hearing impairment should be identified early by the teachers, possibly at entry into preschool or grade one so that they are provided with hearing aid device to help them speed up the acquisition of oral language skills.

Keywords: Oral language, letter sound knowledge and hard of hearing.

INTRODUCTION

Background

Developing phonemic awareness skills in pupils who are hard of hearing is a possibility. Unequivocally recognized as a critical dimension for phonological success with hearing pupils, phonemic awareness skills are now receiving more attention for pupils who are hard of hearing (Rachel & Friedman 2006). Oral language development is considered one of the indicators of phonemic development in hard of hearing pupils. Oral language is verbal communication through spoken symbols; sounds, words, sentences and discourse that represent objects, actions and ideas. It is essential for phonological learning, and successful use of oral language is critical for pupils' literacy development. The communicative competence of pupils with hard of hearing is directly associated with their acquisition of language. Young learner's proficiency in their language is critical for facilitating communication and academic success (Daniels, 1994). Teachers of hard of hearing pupils in Zambia however, ignore use of oral language when teaching the hard of hearing pupils (Kuo & Anderson, 2006) creating knowledge gap on how oral language contribute to development of phonological awareness.

To understand how oral language contributes to phonemic awareness in hard of hearing pupils, the current study applied the Phonological Sensitivity Approach (PSA) by Dickinson et al. (2003).

Proponents of this model reveal that oral language is directly related to phonemic awareness and it is this phonemic awareness that enhance development of sound blending skills and consequently reading (Poe, Burchinal, & Roberts, 2004). This approach envisages that vocabulary and discourse skills are key in the emergence of phonemic and phonological sensitivity (i.e., ability to detect and manipulate the sound structure of oral language), phonemic and phonological memory (i.e., short term memory for sound based information, and phonological naming (i.e., retrieval of phonological information from long-term memory), and it is these skills that uniquely predict reading skills once children enter school (Chikopela & Ndhlovu, 2016; Matafwali, 2010).

Methodology

This was a quantitative study. Ex post facto research design was used to investigate cause-and-effect relationships between independent (oral language) and dependent (hard of hearing pupils) variables. This design is used in situations that do not permit the randomization and manipulation of variables characteristic of experimental research (Ary et al., 2010).

Population

The target population of this study comprised all hard of hearing pupils who had completed grades 1 and 2 and were in Grades 2 and 3 in term one in the selected schools. The focus was their experience in phonemes/phonics in Grades one (1) and two (2).

Sample and sampling technique

The sample for this study consisted of sixty (60) hard of hearing pupils. Schools that were part of this study were selected using simple random sampling. All the pupils in grade two and three in the first week of term one January, 2016 made the sample in the selected schools.

Instruments and procedure for data collection

The Basic Skills Assessment Tool (BASAT) was used to assess pupil's phonemic awareness skills. Two tests were used to tap expressive and receptive language in pupils with hard of hearing. The Peabody Picture Vocabulary Test (PPVT) was used to assess receptive vocabulary and the Fink et al (2012) version was used because it was adapted to the Zambian context. It was used to measure the knowledge of a child in common items found in the environment. One-Word Picture Vocabulary Test (OPVT) was used to assess expressive vocabulary. The assessment tool was developed by the researcher to test receptive language of pupils in common items found in the environment.

Data analysis

Data was analysed quantitatively using SPSS version 21. Information obtained from the BASAT, Peabody and One-word picture vocabulary test was analysed using descriptive statistics and t tests to investigate if there were differences in performance between grade one and two on letter sound knowledge (phonemic/phonics).

Results

Pupils' knowledge about sounds of letters

In order to investigate phonemic awareness in pupils, descriptive statistics were run to check the overall performance on letter knowledge, letter sound knowledge, syllable segmentation, initial sound discrimination and ending sound discrimination. In addition, t-test was run to check whether there was significant difference between grades on variables under investigation.

Concerning whether pupils had knowledge about letters, it was found that 11 (18.3%) of the 60 pupils knew the letters in the alphabet. Table 1 shows details on this.

Table 1, Pupils' performance on letter knowledge (n = 60)

| | | | | | | | | | | | | | | | | | | |
|-------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Marks obtained | 4.00 | 6.00 | 7.00 | 8.00 | 13.00 | 14.00 | 15.00 | 17.00 | 18.00 | 19.00 | 20.00 | 21.00 | 22.00 | 23.00 | 24.00 | 25.00 | 26.00 | Total |
| Pupils | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 4 | 4 | 5 | 5 | 5 | 4 | 3 | 4 | 11 | 60 |
| Percent of pupils | 1.7 | 1.7 | 3.3 | 3.3 | 3.3 | 3.3 | 5.0 | 3.3 | 6.7 | 6.7 | 8.3 | 8.3 | 8.3 | 6.7 | 5.0 | 6.7 | 18.3 | 100.0 |

Majority of the pupils scored between 15 and 25 of which the expected maximum average score was 26. As shown in the table, only one pupil had the lowest score four. This shows that most pupils in the study were able to write, name and identify the letters of the alphabet.

Concerning performance on sounds of letters in the alphabet, it was found to be low as the highest score was 8 out of 26. Table two provides detailed information.

Table 2, Pupils’ performance on letter sound knowledge (n=60)

| | | | | | | | | | | | | | |
|----------------------|------|-----|------|------|------|------|------|------|------|------|------|------|-------|
| Marks obtained | .00 | .50 | 1.00 | 1.50 | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 | 8.00 | Total |
| Number of Pupils | 32 | 4 | 4 | 6 | 1 | 4 | 1 | 1 | 3 | 2 | 1 | 1 | 60 |
| Percentage of pupils | 53.3 | 6.7 | 6.7 | 10.0 | 1.7 | 6.7 | 1.7 | 1.7 | 5.0 | 3.3 | 1.7 | 1.7 | 100.0 |

Table 2 shows that 32 (53.3%) of the 60 pupils had no score at all. In addition, 6 (10%) scored 1.5 out of 26. Most pupils had very low scores. This implies that the performance on letter sound knowledge task was generally low.

As regards to performance on initial sound discrimination, 24 (40%) of the 60 pupils that participated in the study did not identify initial sounds in words. The details on this task are in table 3.

Table 3, Pupils' performance on initial sound discrimination (n=60)

| Marks obtained | .00 | 1.00 | 2.00 | 3.00 | 4.00 | 5.00 | 6.00 | 7.00 | 8.00 | 9.00 | Total |
|-------------------|------|------|------|------|------|------|------|------|------|------|-------|
| Pupils | 24 | 6 | 3 | 4 | 3 | 5 | 6 | 4 | 3 | 2 | 60 |
| Percent of pupils | 40.0 | 10.0 | 5.0 | 6.7 | 5.0 | 8.3 | 10.0 | 6.7 | 5.0 | 3.3 | 100.0 |

The table indicates that only 2 (3.3%) of the 60 pupils were able to identify nine out of a maximum of ten initial sound in words with a majority of pupils scoring between one and eight. This means that performance on this task was equally low.

Concerning whether pupils had knowledge about discriminating ending sounds in words, it was found that only one pupil managed to score ten out of a maximum of ten ending sounds. Details are in table 4 below.

Table 4, Pupils' performance on discriminating ending sounds (n=60)

| Marks obtained | .00 | 1.00 | 2.00 | 3.00 | 4.00 | 5.00 | 8.00 | 10.00 | Total |
|-------------------|------|------|------|------|------|------|------|-------|-------|
| Pupils | 30 | 6 | 8 | 7 | 3 | 2 | 3 | 1 | 60 |
| Percent of pupils | 50.0 | 10.0 | 13.3 | 11.7 | 5.0 | 3.3 | 5.0 | 1.7 | 100.0 |

The results in table 4 reveals that 30 (50%) of the pupils did not discriminate ending sounds in words. In addition, the majority of the pupils scored between one and three. This indicates that pupils' performance on this task was quite low.

Further tests were conducted on sound knowledge. As regards to performance on syllable segmentation, all the pupils did not segment words into syllables. Details on this are provided in table 5.

Table 5, Pupils' performance on syllable segmentation (n=60)

| | |
|-------------------|-----|
| Marks obtained | .00 |
| Pupils | 60 |
| Percent of pupils | 100 |

Findings indicate that all the 60 pupils that participated in the study were not able to segment words into syllables. The expected maximum score on this task was 4. Performance on this task was very poor as pupils did not attempt to answer anything at all, they said they did not know how to segment the words that were said to them into syllables and that they had not learnt anything on syllable segmentation. This implies that pupils had no idea what syllable segmentation means.

Differences in performance in sounds of letters

To determine whether there were differences in performance between grade one and two, independent samples t-tests were conducted to compare pupils' scores on letter sound knowledge, initial sound discrimination and ending sound discrimination between grade one and two. Results revealed that there were no differences in performance between the grades on all tasks. The table 7 below shows details on this.

Table 7, Differences in pupils' performance in sounds of letters

| Variable | N | M | SD | t | df | p |
|------------------------------|----|------|------|-------|----|------|
| Letter sound knowledge | | | | | | |
| Grade 1 | 30 | 0.95 | 1.53 | -.795 | 58 | .430 |
| Grade 2 | 30 | 1.30 | 1.90 | | | |
| Initial sound discrimination | | | | | | |
| Grade 1 | 30 | 2.20 | 2.92 | -1.52 | 58 | .132 |
| Grade 2 | 30 | 3.40 | 2.10 | | | |
| Ending Sound discrimination | | | | | | |
| Grade 1 | 30 | 1.10 | 1.91 | -1.84 | 58 | .070 |
| Grade 2 | 30 | 2.20 | 2.20 | | | |

As shown in table 7, pupils in grade one and two were not significantly different on letter sound knowledge, ($p=.430$). Inspection of the two group means indicates that the average letter sound score for grade one ($M=0.95$) is significantly lower than the score ($M=1.30$) for grade 2. The difference between the means is 0.34. The table further shows that performance on initial sound discrimination was not significant, ($p=.132$). The two group means indicates the average initial sound discrimination score for grade one (2.20) significantly lower than the score (3.40) for grade two. The difference between the means is 5.6. In addition, there was no significant difference on discriminating ending sounds, ($p=.070$). Inspection of the two group means indicates that the average ending sound discrimination score for grade one (1.10) is significantly lower than the score (2.20) for grade two. The difference between the means is 1.1. The results imply that both grades are at the same level in terms of performance on letter sound knowledge tasks.

DISCUSSION OF FINDINGS

Pupils' knowledge about letter sounds

Studies have demonstrated that oral language skills make an important contribution to the development of phonemes/phonics (letter sound knowledge). Thus, a corollary of this is that hard of hearing pupils with limited oral language abilities should have more difficulty in letter sound development and than those with adequate oral language abilities that were given training in this area.

It was sad to note that pupils with hard of hearing displayed insufficient knowledge in sound awareness tasks as 53.3% of the pupils were not able to identify letter sounds and vice-versa. In addition, 40% of the pupils were not able to identify initial sounds in words and 50% of the pupils did not discriminate ending sounds in words. These results could be interpreted to imply that hard of hearing pupils had limited skills in oral language which acts as a benchmark to acquisition of sound awareness skills. In addition, all pupils with hard of hearing that participated in the study were not able to segment words into syllables and 73.3% of them were unable to blend sounds into words. Similarly, the relative difficulty of phonological awareness tasks has been revealed by several researchers. Schatschneider, Francis, Foorman, Fletcher, & Mehta (1999) found that a group of kindergarten to second-grade children performed better on onset-rhyme blending, phoneme matching and phoneme categorization tasks than they did on phoneme segmentation, phoneme blending (of nonwords), and phoneme deletion tasks. In addition, Stahl and Murray (1994) found that a group of 5 to 7-year-old children obtained higher scores on a phoneme isolation task than on phoneme blending and phoneme deletion tasks, while performing most poorly on a phoneme segmentation task. Overall, results regarding the relations between the levels of phonological awareness have not yielded consistent, definitive results across studies to date. In general, however, tasks that involve explicit manipulation of phonological units seem to be more difficult for hard of hearing pupils in grade one and two to carry out than tasks that involve isolating or classifying (matching) units.

These results could be interpreted to imply that pupils have weak oral language hence are unable to learn sounds when some teachers in the study try to teach them. These findings are also consistent with Chikopela (2013) who found that 100% deaf/hard of hearing pupils in the study were unable to segment, discriminate initial and ending sounds in words and blend sounds into words. It is

noteworthy that both expressive and receptive vocabularies did not predict sound awareness in hard of hearing pupils. This pattern of performance among the hard of hearing pupils in grades one and two clearly shows that there is negligent on the part of the teachers to utilise oral language to spearhead development of sound blending in hard of hearing pupils.

In contrast, Geers, Nicholas & Sedey (2003) found that, use of a cochlear implant had a dramatic impact on the linguistic competence of profoundly hearing-impaired children. More than half of the children in their sample with average learning ability produced and understood English language at a level comparable with that of their hearing age mates. Such mature language outcomes were not typical of children with profound hearing loss who used hearing aids. Use of a visual (i.e., sign) language system did not provide the linguistic advantage that had been anticipated in their study. The outcomes of Geers, Nicholas & Sedey's (2003) study challenges the constant use of sign language, ignoring the use of oral language in lesson delivery to hard of hearing pupils.

The current study has provided important evidence on the consequences of not using both oral and sign language when teaching pupils with hard of hearing impairment. In the study, few pupils that were educated with use of oral and sign language exhibited a significant advantage in their use of narratives, the breadth of their vocabulary, in their use of bound morphemes, in the length of their utterances and in the complexity of the syntax used in their spontaneous language. Taken together, these results indicated that focus on both oral and sign language educational training provided a significant advantage for both spoken and total language skills in hard of hearing children of which, if it was a similar case for all hard of hearing pupils in Zambian schools, all pupils would benefit and be able to develop phonemic and phonological skills.

Conversely, Bowey's (1994) findings revealed evidence of the interrelationships between phonological awareness, letter knowledge, word identification, and several measures of oral language (e.g., receptive vocabulary, sentence imitation). All the measures of oral language and literacy were significantly intercorrelated. When Bowey divided the children into novice readers and three groups of nonreaders who varied in letter knowledge, she found that novice readers scored higher than all groups of nonreaders on phonological sensitivity and vocabulary knowledge. However, when she controlled for differences in vocabulary knowledge, sentence imitation, and digit span effects, none of the differences in phonological sensitivity remained significant. These findings

lend support to the point of view that, at least in kindergarten, this set of abilities is interrelated in important ways.

The current research has demonstrated that phonemic processing deficits in pupils with hard of hearing may contribute to poor performance in phonological tasks. At the same time, insensitivity reflected in speech processing may also affect language development in a more general way. For instance, it was established that optimal vocabulary growth is facilitated by the combination of a rich linguistic environment (diversity of input) and intact abilities for continuous phonological restructuring of the representations forming one's vocabulary (Fowler, 1991; Metsälä & Walley, 1998; Hoff & Naigles, 2002). It was also established that hard of hearing pupils in grades one and two have access to sounds in spoken language through use of their residual hearing and are able to hear and understand speech sounds. This auditory accessibility would allow more immediate internalization of the phonological properties of words during training in this area. Because many pupils who are hard of hearing also use spoken language to communicate, the way they are coding and storing the information matches their internal lexicons. In the current study, these abilities have not been promoted because oral language training is not there hence the poor performance in oral language related tasks. Similar studies grappled with the thought that phonemic awareness and rhyming abilities developed in separate domains, and that phonemic awareness should be in training programs during emergent literacy experiences at school and at home (Phillips & Torgesen, 2006). In congruent, studies have angled toward the idea that phonological awareness is a single construct with varying levels of linguistic and cognitive complexity, much the same way all other metalinguistic abilities may develop. More specifically, the simple to complex aspects of phonological awareness involve a spiraling progression of sensitivity to words, syllables, rhyme, and phonemes. Furthermore, the timing of this progression could also depend on cognitive growth (Anthony et al., 2002) and therefore should be treated as a developmental skill. For example, Lonigan (2007) has considered a line of thought that recognizes that children with highly developed levels of phonemic awareness have reached this height, not so much do to drilling, but more due to oral language and attentional control. In fact, Lonigan (2007) demonstrated through reanalysis of previous data that effective vocabulary impacted phonological awareness, rather than the other way around. Lonigan (2006) revisited the inside out outside in construct given the new understandings related to phonological awareness and language. He considered the idea that the two domains are not necessarily independent of common experiences, as once thought. They may be tied together through

listening comprehension, understanding syntax, and definitional vocabulary. Given the established importance of phonological sensitivity, a number of researchers have explored the early origins of its development. Shankweiler et al. (1999) focused on phonological processing and argued that “deficient skill in mapping between the alphabetic representations of words and their spoken counterparts is the chief barrier to comprehension of text, at least in learners who are still at relatively early stages of reading”. This perspective has been widely influential and has shaped research methodology and analytic approaches in ways that have limited attention paid to the independent contributions of oral language during the early phase of reading development. Given this wealth of research on the importance of oral language on phonemic awareness, this study suggests that lack of training in this area highly contributed to poor performance of pupils in the study.

Group differences between groups on letter sound knowledge

It was anticipated in this study that grade two pupils would outperform grade one in all the tasks reason being that they are a year ahead in terms of learning and that they have had more exposure to oral language instruction unlike grade ones. Surprisingly, results revealed that grade one and two were not significantly different on letter sound knowledge tasks. Similar studies have shown that phonological processing skills are related to vocabulary size (Edwards, Beckman, & Munson, 2004; Munson, Edwards, & Beckman, 2005). Other researchers (e.g., Elbro, Borstron, & Petersen, 1998; Fowler, 1991; Studdert-Kennedy, 2002) have proposed that the relationship between vocabulary knowledge and phonological processing skills arises because children’s phonological representations become more robust as they are able to make more generalizations about the phonological structure of language due to the increases in their lexicon size that accompany increased exposure to spoken language. The same level of performance by grades one and two could be interpreted to imply that both groups are at the same level in terms of vocabulary knowledge. Majority of these pupils were experiencing difficulties developing grade level phonemic skills as a result of weak oral language abilities hence the similar pattern of performance on letter sound knowledge tasks.

Inspection of the two group means indicated that the average letter sound knowledge score for grade one and two was low. This finding clearly shows that hard of hearing pupils hardly make progress in this area from grade one to two. This finding is consistent with the Phonological Sensitivity

Approach (PSA) which posits that if a child has a serious deficiency in oral language abilities, this deficiency might limit the extent to which oral language support acquisition of phonemic and phonological skills that are key to early literacy learning (Dickinson et al., 2003). This finding is also in support of the assertion that the size of a child's vocabulary may play a role in bolstering the emergence of phonological awareness (Goswami, 2001; Metsala, 1999). The findings of the current study also conform with Mwanza-Kabaghe (2015) who revealed that oral language was important for performance in literacy skills and that linguistic diversity may explain delays of phonological and reading development of children who attend preschool in the first grade in Lusaka, Zambia. In addition, Catts et al. (1999) found that over 70% of poor readers had a history of language deficits in kindergarten and, further, that most of these had problems in both phonological processing and oral language. Although both phonological processing and oral language (a composite of oral vocabulary, grammatical completion, sentence imitation, and narrative recall) accounted for unique and significant variance in second-grade reading achievement, the contribution of oral-language abilities to reading achievement was as great as or greater than that observed for phonological processing in their study. The findings of this study therefore prove that there is so much reliance on sign language as a language of instruction other than oral language thereby limiting the pupils' performance in tasks that demand use of oral language. In addition, the relative difficulty of phonological awareness tasks has been investigated by several researchers. Schatschneider, Francis, Foorman, Fletcher, & Mehta (1999) found that a group of kindergarten to second-grade children performed better on onset-rime blending, phoneme matching and phoneme categorization tasks than they did on phoneme segmentation, phoneme blending (of nonwords), and phoneme deletion tasks.

The results also revealed that there was no difference in performance between boys and girls. This means that performance in sound awareness as well as reading tasks was generally very low to the extent that the two groups could not be distinguished in their achievement. Conversely, Elley (1994) found that girls scored significantly higher than boys in reading. The results are however in line with Matafwali (2010) who revealed that there was no significant difference between boys and girls in reading.

Conclusion

Based on the findings, the study concludes that pupils had difficulties in phonemic awareness tasks due to inadequate instructions from the teachers in this area. Both grade one and two pupils were not statistically significant in letter sound awareness tasks implying that pupils hardly made progress in grade one and two.

Recommendations

1. Based on the findings, the study recommended that teachers of the hard of hearing pupils should utilize oral language when teaching letter sound knowledge tasks to hard of hearing pupils
2. Pupils with hearing impairment should be identified early by the teachers, possibly at entry into preschool or grade one so that they are provided with hearing aid device to help them speed up the acquisition of oral language skills.

REFERENCES

- Anthony, J. L., Lonigan, C. J., Burgess, S. R., Driscoll, K., Phillips, B. M, & Cantor, B. G. (2002). Structure of preschool phonological sensitivity: overlapping sensitivity to rhyme, words, syllables, and phonemes. *J Exp Child Psycho*, 82(1):65-92.
- Ary, D., Jacobs L.C., & Sorensen C.K, (2010). *Introduction to research in education*. Eighth Edition. Belmont, CA: Wadsworth Publishing Company
- Bowey, J. A. (1994). Phonological sensitivity in novice readers and nonreaders. *Journal of Experimental Child Psychology*, 58, 134–159.
- Catts, H.W., Hogan, T.P. & Fey, M.E. (2003). Sub Grouping Poor Readers on the Basis of Individual Differences in Reading-related Abilities. *Journal of Learning Disabilities*, 36(2):151–164.
- Chikopela, R. & Ndhlovu, D. (2016). Letter Sound Awareness among Grade One and Two Pupils with Hard of Hearing Impairment in Selected Schools in Lusaka District, Zambia *International Journal of Humanities Social Sciences and Education (IJHSSE) Volume 3, Issue 11, November 2016, PP 36-41*
- Chikopela, R. (2013). *The Impact of New Breakthrough to Literacy programme on reading performance of learners with hearing impairment*. Unpublished Master Thesis. Lusaka: University of Zambia.
- Daniels, M. (1994). Words more powerful than sounds. *Sign Language Studies*, 82,155 - 167.
- Dickinson, D. K., McCabe, A., Anastopolous, L., Peisner-Feinberg, E. S. & Poe, M. D. (2003). The Comprehensive Approach to Early Literacy: The Interrelationship among Vocabulary, Phonological Sensitivity, and Print Knowledge among Preschool aged Children. *Journal of Educational Psychology* 95, 465-481.
- Edwards, J., Beckman, M. E. & Munson, B. (2004). The interaction between vocabulary size and phonotactic probability effects on children’s production accuracy and fluency in nonword repetition. *Journal of Speech, Language, and Hearing Research*. 47:421–436.

- Elbro, C., Borstrom, I. & Petersen, D. K. (1998). Predicting dyslexia from kindergarten: The importance of distinctness of phonological representations of lexical items. *Reading Research Quarterly*. 33:36–60.
- Elley, W. B. (ed.). (1994). *The IEA study of reading literacy: Achievement and instruction in thirty-two systems*. Oxford: Pergamon.
- Fink, G., Matafwali, B., Corrina, M. and Stephanie, S. Z. (2012). *The Zambian Early Childhood Development Project 2010 Assessment Final Report*.
- Fowler, A. E. (1991). How early phonological development might set the stage for phoneme awareness. In: Brady S. A. Shankweiler D. P. editors. *Phonological processes in literacy: A tribute to Isabelle Liberman*. Hillsdale, NJ: *Lawrence Erlbaum Associates*, pp. 97–117.
- Geers, A.E., Nicholas J. G., Sedey A. L. & Ear Hear. (2003). Language skills of children with early cochlear implantation, *J Speech Lang Hear Res*, 24(1 Suppl):46S-58S.
- Goswami, U. (2001). Early phonological development and the acquisition of literacy. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 111–125). New York: Guilford Press.
- Hoff, E. & Naigles, L. (2002). How children use input to acquire a lexicon. *Child Dev*, 73(2):418-33.
- Kuo, L. J. & Anderson, R. C. (2006). Morphological awareness and learning to read: A cross language perspective. *Educational Psychologist*, 41, 161–180.
- Lonigan, C.J. (2006). *Conceptualising phonological Processing Skills in Prereaders*. In D. K. Dickinson & S. B. Neuman (Eds.), *Handbook of Early Literacy Research* (Vol. 2, pp. 77–89). New York: Guilford.
- Matafwali, B. (2010). *The role of Oral Language in the acquisition of Early Literacy Skills: A case of Zambian Languages and English*. Unpublished PhD Thesis. Lusaka: University of Zambia.
- Metsala, J. L., & Walley, A. C. (1998). Spoken vocabulary growth and the segmental restructuring of lexical representations: Precursors to phonemic awareness and early reading ability. In J. L. Metsala & L. C. Ehri (Eds.), *Word recognition in beginning literacy* (pp. 89–120). Mahwah, NJ: Erlbaum.

Metsala, J. L. (1999). Young children's phonological awareness and nonword repetition as a function of vocabulary development. *Journal of Educational Psychology*, 91, 3–19.

Munson, B., Edwards, J. & Beckman, M. E. (2005). Relationships between nonword repetition accuracy and other measures of linguistic development in children with phonological disorders. *Journal of Speech, Language, and Hearing Research*. 48:61–78.

Mwanza-Kabaghe, S. (2015). *Preschool, executive functions and oral language as predictors of literacy and numeracy skills in first grade*. PhD thesis, University of Zambia. Lusaka.

Phillips, B. M. & Torgesen, J. K. (2006). Phonemic awareness and Reading: Beyond the Growth of Initial Reading accuracy. Pp. 101-112. In Dickinson, D. K. & Neuman, S. B. (Eds) (2006) *Handbook of Early Literacy Research*. Vol. 2. London: The Guilford Press.

Poe, M. D., Burchinal, M. R. & Roberts, J. E. (2004). Early Language and the development of children's reading skills. *Journal of School Psychology*, 42, 315-332.

Rachel, A. & Friedman, N. (2006). Teaching Phonological Awareness with Deaf and Hard-of-Hearing Students. *Teaching Exceptional Children*, Vol. 38, No. 4, pp. 53–58.

Schatschneider, C., Francis, D. J., Foorman, B. R., Fletcher, J. M. & Mehta P. (1999). The dimensionality of phonological awareness: An application of item response theory. *Journal of Educational Psychology*, 91:439–449.

Shankweiler, D., Liberman, I. Y., Mark, L. S., Fowler, C. A., & Fischer, F. W. (1979). The speech code and Learning to read. *Journal of Experimental Psychology: Human Learning and Memory*, 5,531-545. Shankweiler D.P. editors. Phonological processes in literacy: A tribute to Isabelle Liberman. Hillsdale, NJ: *Lawrence Erlbaum Associates*, pp. 67–83.

Stahl, S. A & Murray, B. A. (1994). Defining phonological awareness and its relationship to early reading. *Journal of Educational Psychology*. 86:221–234. doi:10.1037/0022-663.86.2.221.

Studdert-Kennedy, M. (2002). Deficits in phoneme awareness do not arise from failures in rapid auditory processing. *Reading and Writing: An Interdisciplinary Journal*. 15:5–14. doi:10.1023/A:1013812219382.