

# The influence of the rhythm discrimination skill on phonological awareness

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# The influence of the rhythm discrimination skill on phonological awareness

## INTRODUCTION

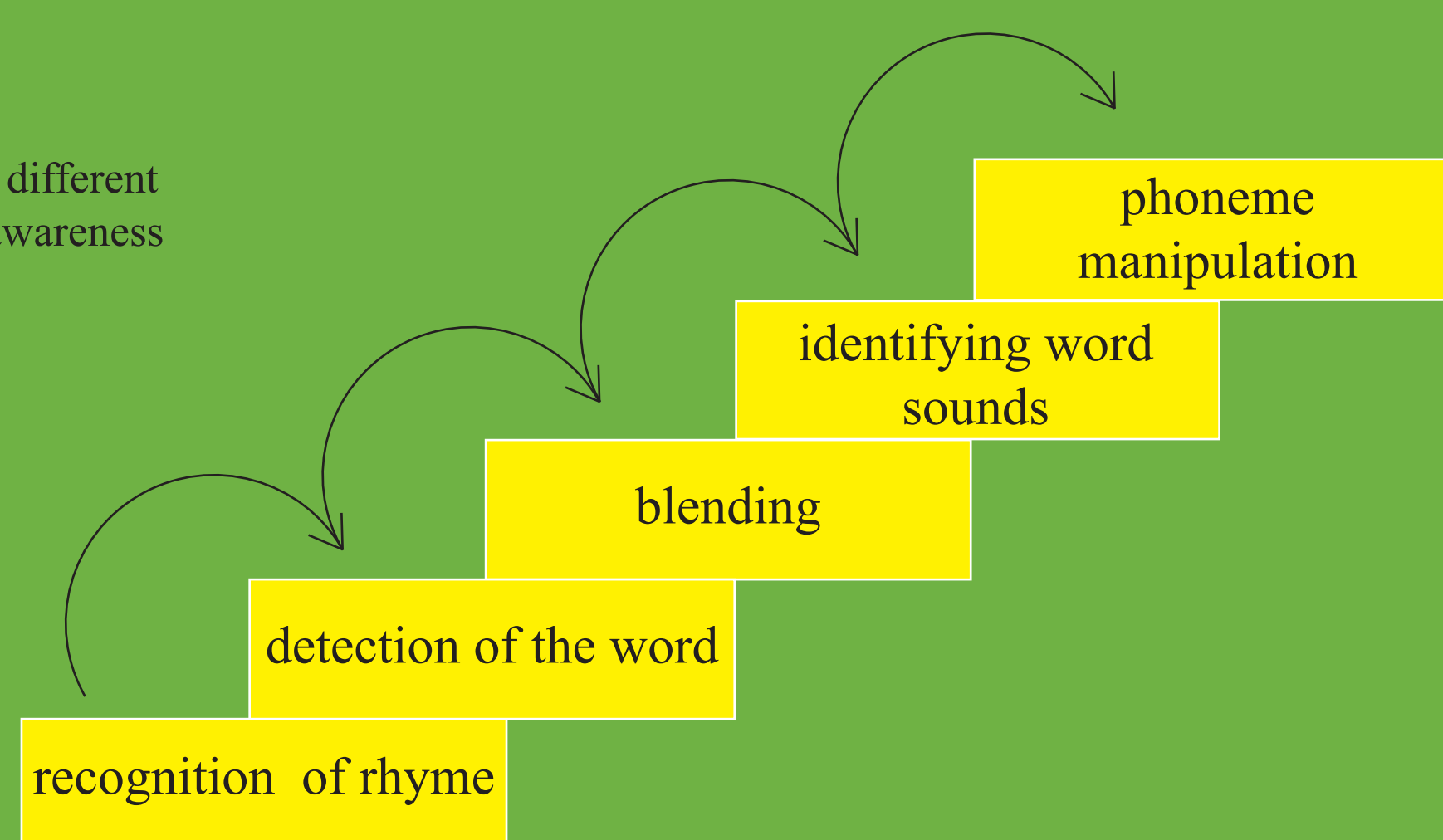
There is a considerable number of longitudinal studies which indicate a strong relationship between the early development of phonological awareness and later reading skills.

Reading skills development model suggests two components (Lundberg, 2002):

- development of understanding (language growth of vocabulary, syntax and general knowledge about the world)
- word recognition skills (phonological awareness)

Phonological awareness assumes the knowledge that words are composed of interrelated smaller elements (phonemes).

Adams (1990) specifies different levels of phonological awareness development.



Research of phonological awareness (Höien, 1995) has shown that components of phonological awareness: rhyme, syllable and phoneme recognition, might have a different predictive value of reading and that the ability to recognize phonemes, which develops last, has the best predictive properties.

Considering that music and language are systems determined by elements connected by certain rules, they are linked in a number of ways (Anvari et al., 2002). Phonological awareness and rhythm discrimination imply certain auditory processing mechanisms and the question is whether those mechanisms are connected.

The impact of musical therapy and the connection of musical and language processing, have been the topics of interest in numerous researches (Thomson, Fryer, 2006; Ross, Putnam, 2006) but rarely within the preschool children population. Since the preschool period is crucial when the phonological awareness development is concerned, and it is also a time when children enjoy musical activities, the evidence on the impact of a certain musical component on the development of phonological awareness, also have a pragmatic value.

## PURPOSE

The purpose of this study is to investigate whether there is a connection between phonological awareness and the rhythm discrimination skill in preschoolers.

## HYPOTHESIS

1. Group A will have better achievement in rhythm discrimination.
2. Group A will have better achievement in phonological awareness tasks.
3. There is a connection between phonological awareness and rhythm discrimination.

## PARTICIPANTS

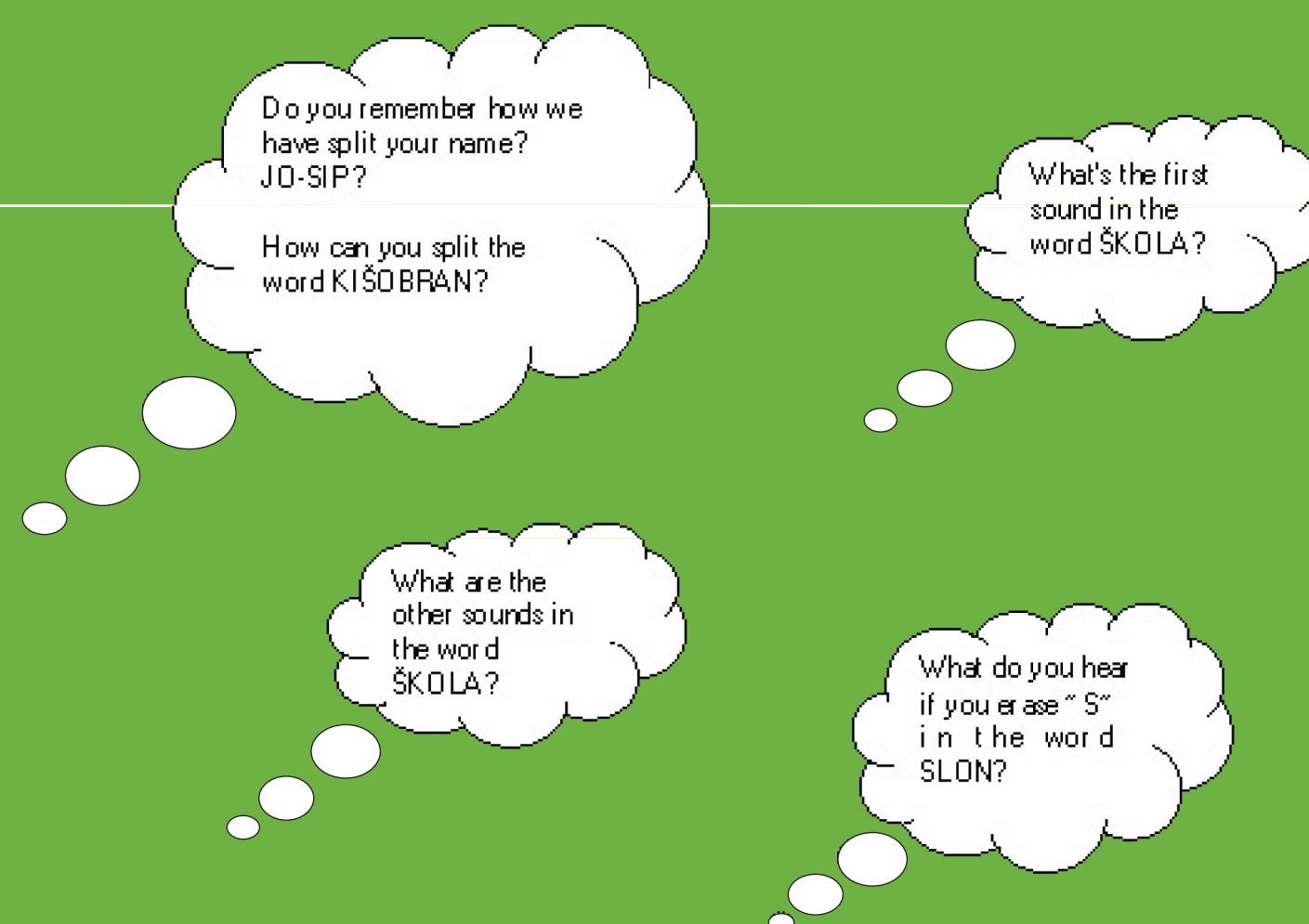
Group A: 14 children with normal language development  
 Group B: 14 children with language impairment

- born 2003.
- no hearing impairment
- normal nonverbal abilities

## MATERIALS

### PHONOLOGICAL AWARENESS TASKS

1. syllable perception – words were differentiated by:
  - structure CV-CV vs. VC-CV
  - number of syllables
  - compound words
2. first phoneme perception
3. identifying word sounds (phonemes)
4. phoneme deletion



### RHYTHM DISCRIMINATION TASK

- There were 8 items differentiated by:
- rhythm length - 4 items in 2/4 measure - 4 items in 3/4 measure
  - the position of rhythm modification: at the beginning, in the middle, at the end of bar
  - the scope of modification: 1 bit or 2 bits

Two smiles are talking.



Are they saying the same?



## RESULTS AND DISCUSSION

### 1st HYPOTHESIS

There is statistically significant difference between group A and group B on the variable phonological awareness.

		Levene's Test for		Mean		Std. Error		95% Confidence Interval of the		
		F	Sig.	t	df			Lower Bound	Upper Bound	
Fonološka svjesnost	Equal variances assumed	3.613	.068	-4.962	28	.000	-10.29	2.07	-14.55	-6.02
	Equal variances not assumed			-4.962	23.758	.000	-10.29	2.07	-14.57	-6.00

Table 1. Difference in achievement on tasks of phonological awareness between groups

### 2nd HYPOTHESIS

There is statistically significant difference between group A and group B on the variable rhythm discrimination.

		Levene's Test for		t-Test for Equality of Means		Mean		Std. Error	
		F	Sig.	t	df	Sig. (2-tailed)	Difference	Difference	Difference
Razlikovanje ritmova	Equal variances assumed	4.178	0.051	3.13	26	0.004	7.36	2.35	
	Equal variances not assumed			3.13	22.931	0.005	7.36	2.35	

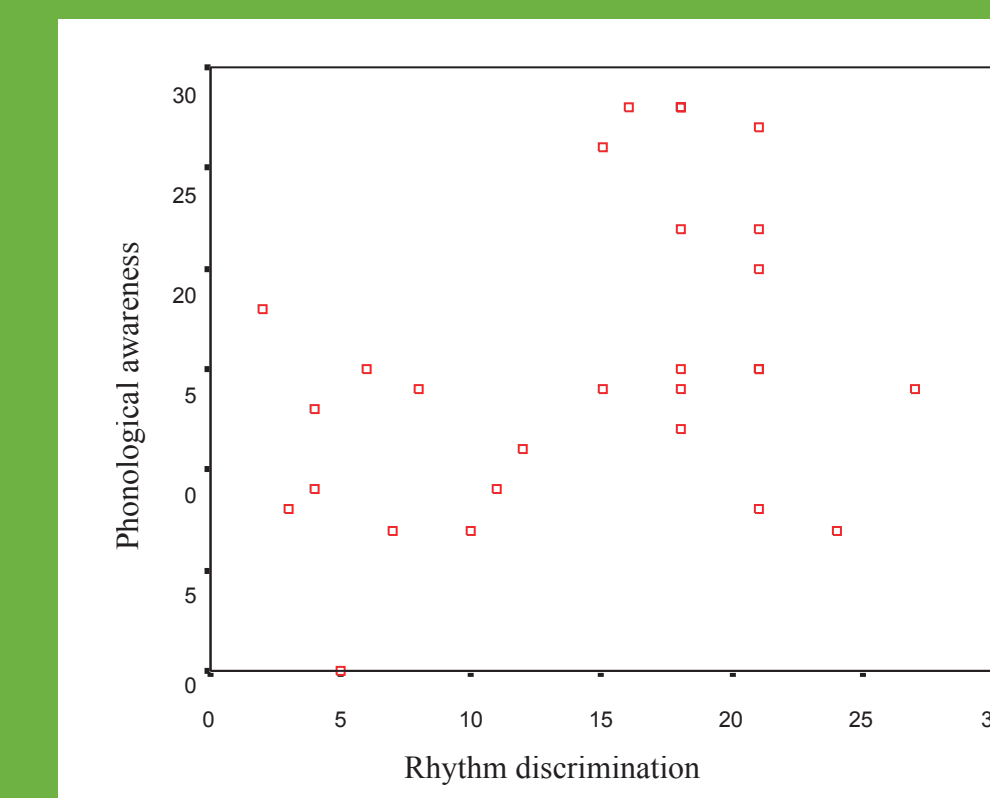
Table 2. Difference in achievement on rhythm discrimination tasks between two groups

These findings support results of similar studies (Anvari et al., 2002) which show that some individuals with difficulties in language understanding also have problems perceiving music. This suggests that music and speech may depend on the same basic auditory process.

### 3rd HYPOTHESIS

Correlations		Rhythm discrimination	Phonological awareness
Rhythm discrimination	Pearson Correlation	1	0,380*
	Sig. (2-tailed)	.	0,046
	N	28	28
Phonological awareness	Pearson Correlation	,380*	1
	Sig. (2-tailed)	0,046	.
	N	28	28

Table 3. Correlation between rhythm discrimination and phonological awareness



Rhythm discrimination was found to correlate significantly with phonological awareness.

There are numerous studies indicate a connection between auditory and speech processing (Anvari et al., 2002, Lones et al., 2009). Recent studies support thesis that mechanisms responsible for auditory and speech processing are located in similar parts of the brain (Levitin and Menon, 2002, according to Lones et al., 2009).

Some studies (Cardillo, 2008) provide evidence that musical pitch processing and rhythm are predictive of phonological awareness. This suggests that musical training of pre-readers may confer benefits in early reading skills. Understanding the phonological awareness predictors is important because it is one of the main prerequisites for the development of reading skills. Children, who are better in auditory perception of phonemes and in individual phonemes and syllables manipulation, are more successful in adopting a grapheme – phoneme connection (Shakweiler and Fowler, 2004, according to Cardilo, 2008).

## CONCLUSION

Researches that study the interconnections of musical and speech processing are as important theoretically as they are clinically. Encouraging the development of musical skills through various rhythmical games in education and in therapy, is an important factor in the development of prereading skills. The connection of music and language skills on a cognitive and neural level has not yet been fully explained. Since this study has shown that the skill of rhythm discrimination is associated with the development of phonological awareness, we consider it a small contribution to a large body of existing research that could explain the background of these processes.

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