

# The Relationship Between Kindergarten Children's Vocal Performance and Recognition of Songs with and without Words

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## ABSTRACT

### Background

The ability to recognize songs has been of interest to researchers over the past decades (Racette & Peretz, 2007; Samson & Zatorre, 1991; Serafine, Davidson, Crowder, & Repp, 1986). Evidence on song perception has shown that melody and words are processed with different degrees of integration and separation (Nakada & Abe, 2009; Saito et al., 2012; Sammler et al., 2010). However, there are few studies investigating song recognition among children (Feierabend, Saunders, Holahan, & Getnick, 1998; Morrongiello & Roes, 1990; Rodrigues & Rodrigues, 2010).

Furthermore, how songs are taught both with words and without words, i.e., with a neutral syllable, and how words influence perception of melody and words have not been addressed in depth. Also, results from studies regarding the influence of teaching both types of songs on children's vocal performances were inconclusive and, in some cases, contradictory. For example, some researchers found that children sing better with words (Levinowitz, 1989; Phillips, 1989). In contrast, other investigations did not support these findings and showed no statistical differences between approaches (Jacobi-Karna, 1996; Lange, 2000; Smale, 1988). Within this context, it is unclear if vocal performance of songs with words and without words is related to the way children perceive melody and words.

### Aims

The purpose of this study was to investigate the nature of the relationship between children's decisions on recognition tasks based on a song with words and another song without words, both previously taught by rote, and the vocal performance of those songs. The specific goals of this study were (a) to find out how kindergarten children think when judging changes made on melody or words of two familiar songs, (b) to determine whether children sing better if a song is presented with words or without words, and (c) to determine if the means through which children perceive songs is related to its vocal performance.

### Method

Fifty-two kindergarten children (4-6 years old) attending a private school in Lisbon and belonging to families with medium/high income levels participated in this two-phase study.

In phase one (instruction phase), the first author taught the participants over a period of 5 weeks during their 30-minute weekly music sessions. Two unfamiliar songs were used: song A with words and song B without words (with the syllable "bá"). Songs were similar in tonality (major), meter (duple),

length and range (D<sub>3</sub>-A<sub>3</sub>). During this procedure, children were taught to associate a different gesture to each song: for song A, pulse was tapped with both hands over the head (gesture 1); for song B, pulse was tapped with one hand on the stomach (gesture 2). The purpose of this activity was to create a tool to use in the test phase.

In phase two (test phase), participants were individually asked to sing both songs and tested on three recognition tasks. The stimulus set was already recorded: i) song A without words (for task 1); ii) song B with words (for task 2); iii) song A with melody of song B (for task 3). Before each listening, the following instruction was provided: "Let's play a game. You are going to listen to me sing. After that, you have to say which gesture you think fits better for the melody you have heard: this one (the researcher exemplified gesture 1) or this one (with gesture 2)." After students chose the gesture, the researcher asked: "Why do you think that gesture fits better?". The average length of an interview was 10 minutes.

Three independent judges—music educators who work regularly with kindergarten children—rated children's performances using a researcher-developed performance rating scale for each song. Each scale comprised tonal and rhythm dimensions with five criteria each.

### Results

Children's responses revealed three different behaviors for song recognition tasks: word-based (13 participants), melody-based (11 participants), and both, depending on the task (26 participants). Different expressions were found to explain changes introduced in songs A and B: "it is like," "it reminded me of," "it sounds like," "it is the same," "it makes the same noise," "it is somewhat the same," "it has the same melody," "it has the same words." Also, researchers observed the same behavior with the choice of different gestures.

Cronbach's alpha was used to determine interjudge reliabilities. Coefficients were high, positive, and significant for both rating scales: for song A,  $\alpha_A = .959$ , and, for song B,  $\alpha_B = .932$ . T-test results for paired samples demonstrated that mean scores for song A were significantly higher ( $M = 1.75$ ,  $SD = 2.56$ ) [ $t = 4.829$  (49),  $p < .001$ ]. Also, results showed that eight participants performed better on song B, 29 performed better on song A, and 13 showed no relevant differences between both songs' performance. Results of a one-way ANOVA demonstrated that there was no significant relationship between age and the differences between vocal performances ( $F = 1.637$ ,  $p = .205$ ), although there was a tendency for the 4-year-old to perform song A better than B (4-year-old,  $M = 2.69$ ,  $SD = 0.48$ ; 5-year-old,  $M = 2.35$ ,  $SD = 0.81$ ; 6 year-old,  $M = 2.21$ ,  $SD = 0.89$ ).

Results showed no significant interaction between preferred criteria for recognition (words, melody, or both) and vocal performances on both songs ( $F = .575, \rho = .567$ ).

## Conclusions

This study demonstrated different ways of perceiving melody and words of a song. Although the results did not reveal a relationship between recognition of songs with and without words and its vocal performance, findings indicate that individual differences should be accounted for among kindergarten children. Therefore, it is important to consider songs without words in classroom activities. This is valid not only for vocal performance benefit, but also for helping students concentrate on the melody and not become distracted by words. Further studies should replicate these procedures with older children and different songs. Also, effects of teaching strategies should be considered in longitudinal studies regarding song perception and production.

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