Abstract

Is a child’s prosody, or how one speaks, affected by the rate of what they hear? The primary goal of this study is to determine if 4 to 5 year-old native English-speaking children’s speech rate will be affected by rhythmic sequences. For 15 trials, the participants will alternate between hearing rhythmic sequences and describing a picture. It is anticipated that the rate of the rhythmic sequences will affect the rate of children’s speech, with faster sequences leading to faster speech. Also, there will be an effect of a faster reaction time for the faster primed than the slower primed.

Hypothesis

Rate of Speech- Children will have a faster rate of speech when primed with a faster rhythmic sequence compared to a slower rhythmic sequence.

Reaction Time- Children will display a faster reaction time to a change when listening to the faster sequences compared to the slower sequences.

Introduction

Priming in adults can change how one speaks, more specifically their prosody.

• Prosody can refer to the pitch, rate and timing at which words are said (Cutler et al. 1997; Leitman et al. 2010; Szczepak Reed 2011).
• Before they are one year old, children are already undergoing prosodic distinction (Weber, Hahne, Friedrich, & Friederici, 2004).
• Priming can affect the rate of speech production when adults are describing an unscripted image (Jungers & Hupp, 2009).
• When listening to a fast music prime, adults tend to speak faster than when listening to a slow music prime (Jungers, Hupp & Dickerson, 2016).

Research Question- Is a child’s prosody affected by the rate of a priming sequence?

Experiment 1: Rate of Child’s Speech

• Fast-long condition will have an average of 6 syllables per second, the Fast-short will have an average of 4 and the Slow-long will have an average of 3.
• There will be a significant difference between the fast-long’s syllables per second and the Slow-long’s syllables per second.

Method

Participants: 120 children, age 4 to 5 years old

Procedure:
• There will be 12 practice trials and 15 test trials
• The children will listen and press a button for any changes in a rhythmic sequence and then describe a cartoon picture out loud.

Example stimuli 1:
• “The boy is eating the pizza”
  Cowbells (60 bpm, 8 items )

Example stimuli 2:
• “The girl is blowing the bubbles”
  Pings (120 bpm, 16 items)

Independent variable: Different rhythmic sequences.

Dependent Variables: Participant’s rate of speech and the reaction time to a change.

Experiment 2: Reaction Time

• The Fast-long will have an average time of 700 ms, the Fast-short will have an average of 400 ms, and the Slow-long will have an average of 800 ms.
• There will be a significant difference between the time it takes to hit the button on the Fast-short and the Slow-long conditions.

Discussion

• The rate of the prime will affect the children’s speech production rate.
• Priming stimuli, even with music, has been shown to affect the rate of speech in adults (Jungers & Hupp, 2009) (Jungers, Hupp & Dickerson, 2016).
• Children will have a faster rate of speech in the faster conditions than the slow condition.
• Speech rate has been shown to become faster after listening to fast primes compared to slow primes (Tooley, Konopka & Watson, 2018).
• When comparing the Fast-Long and Slow-long conditions there will be a visible difference in how fast the children press the button. Children will take a longer time to press the buttons in the slower condition than the faster conditions.

References


