SURPRISE, SURPRISE – HOW MUSICAL SURPRISES MIGHT BENEFIT LANGUAGE LEARNING IN CHILDREN AND ADULTS

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LANGUAGE, ATTENTION, MUSIC & AUDITION

BACKGROUND

- Child-directed speech promotes language development [1,2,3].
- Sung words enhance foreign language learning in children and adults [4,5].
- No research on songs being on- or off-beat impacting word learning.

Predictions

Models of surprise expect less predictable input should stand out more, resulting in better learning [6].

Dynamic Attending Theory predicts that on-beat input should be learned better than off-beat input [7].

METHODOLOGY

Participants

- 4-year-olds (n = 20)
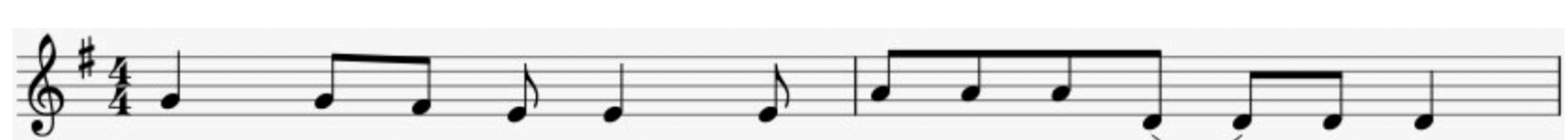- Undergraduate students (n = 20)

Stimuli

- **4 blocks**: Adult-directed speech (ADS), child-directed speech (CDS), On-beat and Off-beat Song.
- German sentences recorded by a native German female speaker.
- Songs sung to the melody and rhythm of traditional German children's songs with a 4/4-time signature and target words being on- and off-beat.

On-beat

Off-beat

Familiarization Phase:
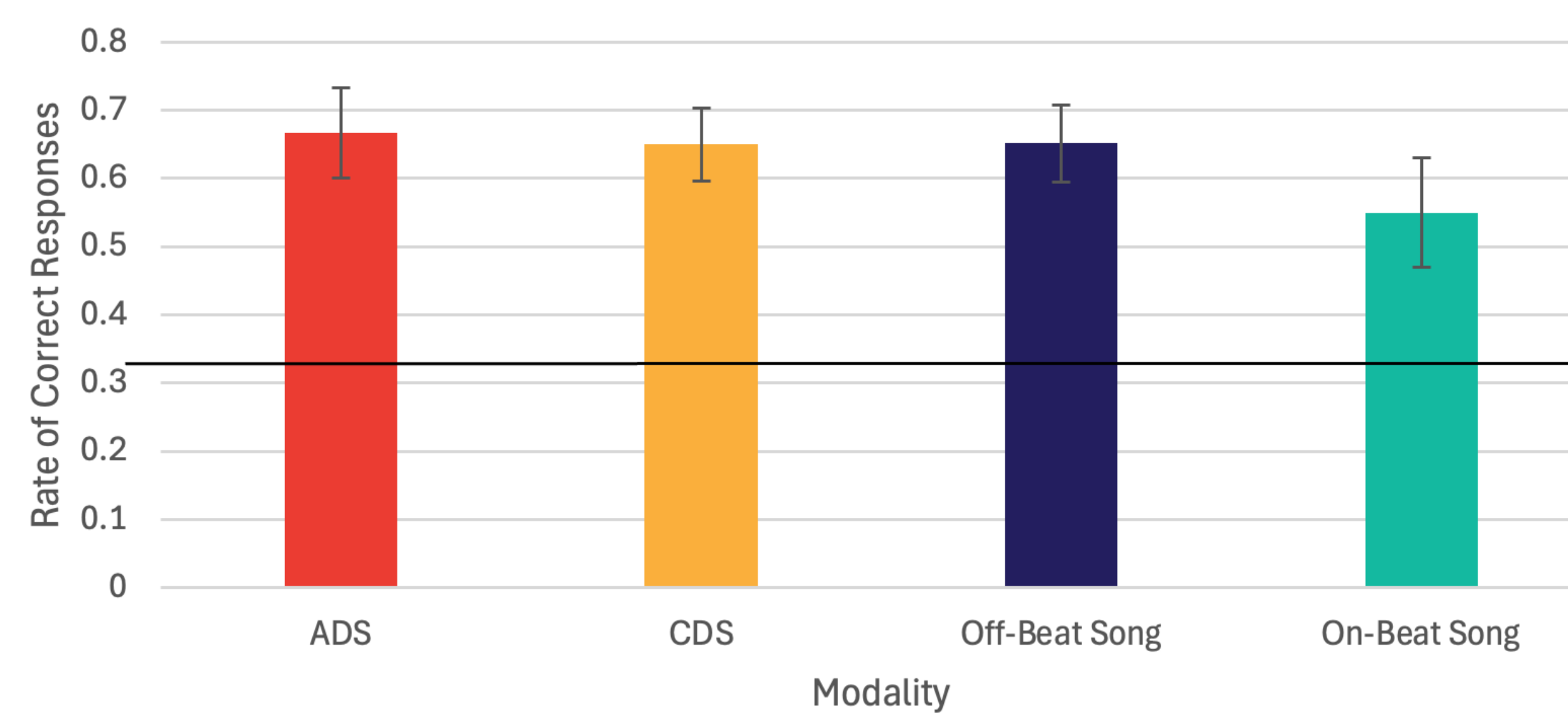
Each stimuli presented for ≈ 15 seconds

Testing Phase:

Play

RESULTS

Chance Level = 0.33

Adult Performance

Rate of Correct Responses vs Modality (ADS, CDS, Off-Beat Song, On-Beat Song)

- Performance with ADS ($p = 0.025$), CDS ($p = 0.033$), and Off-Beat Song ($p = 0.022$) **significantly above chance**, while performance with On-Beat Song ($p = 0.085$) condition is not.
- **No significant difference** in correct response rates between conditions ($F(3, 9) = 0.328$, $p = 0.805$).
- **No statistically significant difference** between the correct response rates for words presented on-beat and off-beat ($p = 0.577$).

Child Performance

Rate of Correct Responses vs Modality (ADS, CDS, Off-Beat Song, On-Beat Song)
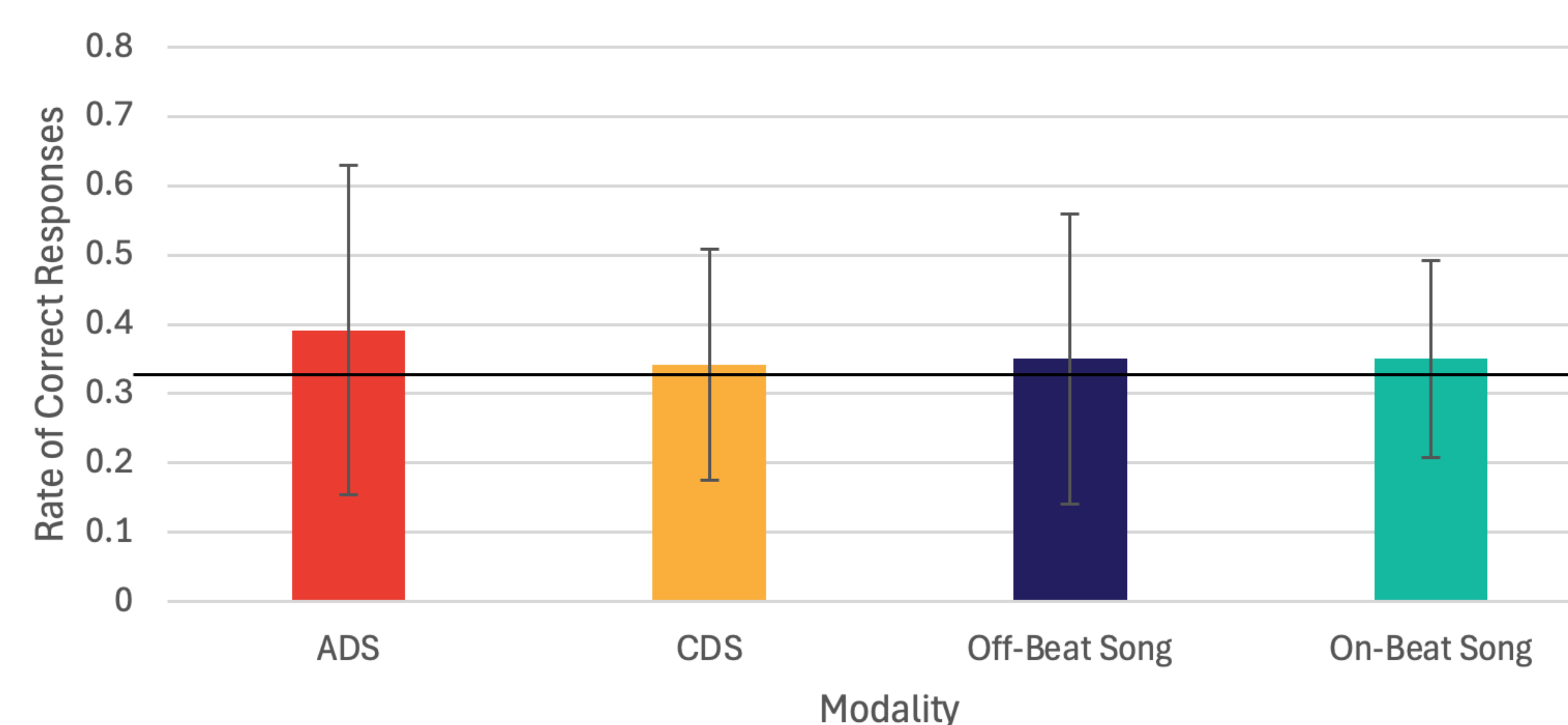
- Performance with ADS ($p = 0.031$) **significantly above chance**, while performance with CDS ($p = 0.757$), Off-Beat Song ($p = 0.575$), and On-Beat Song ($p = 0.575$) are not.
- **No significant difference** in correct response rates between conditions ($F(3, 9) = 0.673$, $p = 0.590$).
- **No statistically significant** difference between the correct response rates for words presented on-beat and off-beat ($p = 1$).

IMPLICATIONS

- Expand the research of Ma et al. (2020;2024) from adults to young children and using on/off-beat songs [3,8].
- Contribute to our understanding of how young children acquire languages and how songs might offer an easy way for parents and teachers to promote language learning in children.

FUTURE DIRECTIONS

- Likeness scale to rate how song-like or CDS-like the stimuli are.
- Repeat stimuli to see if performance improves for children particulary [9].

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