Clarity of Language Input to Toddlers across Child Care Settings

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Introduction

- A child’s language environment plays an important role in their language development, which in turn affects their future success.
- Use of formal child care has grown, yet little is known about the language environment of these settings.
- Of particular concern is a child’s ability to understand and learn from speech under noisy conditions.
- To date: no systematic comparisons of language environments across child care settings exist.
- The current study examined the quality of the sound environment of toddlers in homes versus daycares.

Participants

- Child Care Settings of toddlers 13-31 months old
  - 12 Daycare Centers
  - 7 Home Daycares
  - 14 Homes
- 2-6 multi-hour recordings per participant

Data Collection

- LENA:
  - Small, lightweight recording device worn by child
  - Automated analysis divides recording into segments
- Extracted activity level data using LENA’s ADEX tool, creating a table for each recording
  - Tables included name, duration, and start time of each segment
- PRAT:
  - Wrote script to interface with output from LENA
    - Extracted part of wave file based in information in associated table
    - Determined intensity and duration of child/segment
    - Averaged intensity (summed duration) of segments across a recording
  - For each participant
    - Averaged intensity of each segment across all recordings
    - Summed duration of each segment across all recordings and divided by total recording length

In what ways are daycare settings different from homes?

- Daycare Centers provide more noise, not louder noise.
- Intensity of Target Child Speech and Female Adult Speech is affected by child care setting despite no differences in quantity.

Mean Intensity of Audible Sounds

- Daycare centers had more noise, not louder noise.
- Reduced vocal intensity is associated with less intense noise, not overlapping speech, and more distant noise in the environment.

Louder Speech is Associated with Louder Noise: an example of the Lombard reflex

- Reduced vocal intensity is related to less intense noise, less overlapping speech, and more distant noise in the environment.

Discussion

- The Lombard reflex: We reflexively speak louder to compensate for noise in the environment.
  - e.g., people speak loudly when they are listening to music wearing headphones
- The amount of overlapping speech, but not the amount of non-verbal noise affects how loud we speak.
  - The more we speak up, the more other people speak up as well.
  - Inanimate objects don’t respond to how loud we speak.
  - More distant noise means less near (loud) noise and a reduced need to speak in a loud voice.

Conclusion

- Clear, effective communication occurs in all environments.
- For clear, effective communication to occur in a Daycare Center speech must frequently be loud to compensate for noise levels in the environment, thus providing few opportunities to communicate in a typical “indoor voice”.

Future Directions

- Immediately after noise stops we continue to produce speech according to the perceived (inaccurate) noise level.
  - Predict a positive relationship between the intensity of noise and the intensity of meaningful speech that follows it.
- The type of noise affects how loud we speak.
  - E.g., the intensity of meaningful speech that follows overlapping speech will be louder than meaningful speech that follows non-verbal noise.
- Disentangle distant speech from distant non-verbal noise.
  - Predict that the intensity of distant speech will affect the intensity of meaningful speech, whereas the intensity of distant non-verbal noise will not have an effect.

References


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