Study aim

Music: Play provides vocabulary growth along with an increase in multi-
physical and mental well being

By age two, most children with typical development experience a burst in
language development:

- Consonant music: Typically pleasing to the ear; associated with
  sweetness, pleasantness or acceptability
- Dissonant music: Typically displeasing to the ear; associated with
  harshness, unpleasantness, unacceptable

Music and language
- Both rely on prosody (e.g., stress, rhythm, intonation and pitch) for
  expression
- Facilitate social closeness and bonding

Play and language
- Play develops simultaneously with language
- By age two, most children with typical development experience a burst in
  vocabulary growth along with an increase in multi-word utterances
- At the same time, they transition from simple play behaviors like
  exploration of toys to more complex pretend play schemes.
- Play provides opportunities for young children to practice and form
  symbolic relationships used in language

Study aim
- Add to empirical body of knowledge regarding potential use of music in
  therapeutic setting for SLPs
- Address association of music type with observed language and play skills

Research Questions
- Is there an association between type of music (upbeat, major and
  mostly consonant music versus subdued minor and mostly dissonant
  music) for two-year-olds with typical language development on
  communicative behaviors observed during a 20-minute play sample?
- Is there an association between type of music (upbeat, major and
  mostly consonant music versus subdued minor and mostly dissonant
  music) for two-year-olds with typical language development on type of
  play skills observed during a 20-minute play sample?

Method

Participants
- \( n = 3 \); Ages 24 months to 28 months (\( M = 26.33, SD = 2.08 \))
- Identified typical development:
  - Standard score >15th percentile on the Language Development Survey (LDS)

Procedures

<table>
<thead>
<tr>
<th>Procedure/Participants</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (months)</td>
<td>28</td>
<td>27</td>
<td>26</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>PLS: Aud (LS)</td>
<td>106 (86)</td>
<td>86 (65)</td>
<td>12 (60)</td>
</tr>
<tr>
<td>PLS: Exp (LS)</td>
<td>113 (87)</td>
<td>72 (75)</td>
<td>110 (110)</td>
</tr>
<tr>
<td>Total Ave length</td>
<td>6.280 (4)</td>
<td>4.70 (70)</td>
<td>2.6 (30)</td>
</tr>
<tr>
<td>Total Exp Voice</td>
<td>269 (70)</td>
<td>241 (75)</td>
<td>158 (50)</td>
</tr>
</tbody>
</table>

- Stages of play:
  - Exploratory (earliest, infancy - 24 months of age, peaks: 9 months)
  - Simple pretend (‘symbolic’ or ‘representational’ play, 18 – 30 months of age, simple play
    schemes not linked to larger theme)
  - Complex pretend (24 months – 5 years+, connecting pretend play acts into themes like going
to school, making breakfast, etc.)
- Each sample was analyzed for # of words used, total # of words used, and resulting type-token
  ratio (TTR)
- The 60-minute samples from each participant were coded for play using the Play in Early
  Childhood Evaluation System (PIECEs) (scale) (Kelly-Vance & Ryalls, 2005, 2008)
- The 1st author trained an independent coder (senior undergraduate student in speech-language
  pathology) on the PIECES coding available from http://www.plaisuro.com

Results and Discussion

Total number of words and different words

- Consonant music was associated with the highest number of words and highest number of
  different words for all three participants
- This finding was consistent with Trainor and Heinmiller (1998) in that participants may have
  preferred consonant music over dissonant music and felt less inhibited with consonant music
  playing in the background, which resulted in more communicative interactions
- Sallat & Jentschke (2015) concluded that music perception skills may contribute to language
  learning. Findings support the possibility that pleasant music may be correlated
  more to language production

Highest Level of Play
- No music condition was associated with the highest level of play acts for all three participants

- Three 20-minute play-based conversational samples (60 minutes total) obtained from each
  child while interacting with his parent and researcher-supplied age-appropriate toys (e.g.,
  farm set, toy groceries)
- Three different counter-balanced conditions:
  - no music, consonant music, and dissonant music
  - Consonant music: J.S. Bach: Goldberg Variations (selections)
  - Dissonant music: Schoenberg: String Quartet No. 3 (selections)
- Music conditions may have split the participants’ attention, leading to
  basic overall engagements in play behaviors under those conditions
- Findings may support Brandt et al. (2012) definition of music as “creative
  play with sound” (p. 3) in that the presence of background music may
  have affected the play levels as the participants were also “playing” by
  listening to music and participants could focus more on play with objects
  under no music condition
- When compared with findings from Kim et al. (2008), it illustrates a
  potential difference in interactive experiences with music versus music as
  a background feature

- For two out of three participants, the consonant music condition was
  correlated with over twice as many individual play acts as
  the dissonant music condition
- Participants played in more complex ways without music
  present, but played more overall with pleasant music present
- Findings aligned with Hedon and Bohon (2008), who found music therapy
  sessions utilizing pleasant music to be more enjoyable than play sessions
  without music

Limitations and Future Directions
- Larger sample size
- Modifications to type and volume of music and/or active participant
  interaction with music stimuli
- Both the consonant and dissonant music selections were fairly complex,
  a future comparison could contrast simple versus complex music
- Standardize time in-between sessions for all participants

Selected References
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