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Association of Music with Young Children's Language Use and Play Skills

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Background and Significance

Music:

- Long acknowledged for universality, power and influence
- Plato referred to music as "medicine for the soul"
- Growing body of research is addressing the association of music with physical and mental well being
- Music characteristics:
  - -*Consonant music*: Typically pleasing to the ear; associated with sweetness, pleasantness or acceptability
  - -*Dissonant music:* Typically displeasing to the ear; associated with harshness, unpleasantness, unacceptability

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 opportunity 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: (1) Standard score >85 on *The Preschool Language Scale-5th edition* (PLS-5). (2) Standard score > 15th percentile on the *Language Development Survey* (LDS)

Procedures

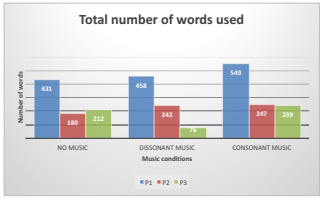
Descriptor	Participants		
	P1	P2	P3
Age (months)	28	27	26
Gender	Male	Male	Male
PLS-5: Aud (SS %ile)	106 (66)	36 (88)	32 (66)
PLS-5: Exp (SS %ile)	113 (81)	42 (99)	30 (50)
PLS-5: Total(SS %ile)	110 (75)	78 (98)	62 (58)
LDS: Ave phr length	6.2(80+)	4 (70)	2.6 (30)
LDS: Exp Vocab	269 (75)	241 (75)	158 (50)

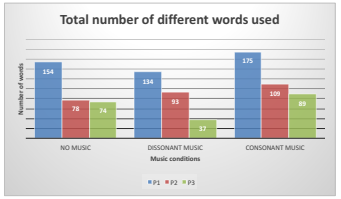
- Three 20-minute play-based conversational samples (60 minutes total) obtained from each child while interacting with his parent and researcher-supplied age-appropriate toys (e.g., farm set, toy groceries)
- Three different counter-balanced conditions: no music, consonant music, and dissonant music
  - -Consonant music: J.S. Bach: Goldberg Variations (selections)
  - -Dissonant music: Schoenberg: String Quartet No. 3 (selections)
- 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.plaisuno.com
- The 1st author coded 100% of recorded data; independent coder re-coded 20% of recorded data; reliability: 100-87%

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 were 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 to more language production



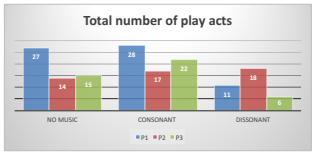


Highest Level of Play

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

Participant	No music	Dissonant music	Consonant music
P1	Complex pretend play	Complex pretend play	Simple pretend play
P2	Complex pretend play	Complex pretend play	Complex pretend play
P3	Complex pretend play	Simple pretend play	Exploratory play

Total number of play acts



- 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

Brant, A., Gebrian, M., & Slevc, R. (2012). Music and early language acquisition. *Frontiers in psychology, 3*, 1-17.

Davis, W.B., Gfeller, K.E., & Thaut, M.H. (2008). *An introduction to music therapy theory and practice - third edition*. Silver Spring, Maryland: American Music Therapy Association, Inc.

Hedon. C & Bohon, L.M. (2008). Hospitalized children's mood differences during play and music therapy. *Childcare, health and development, 34*, 141-144.

Kim, J., Wigram, T., & Gold, C. (2008) The effects of improvisational music therapy on joint attention behaviors in autistic children: a randomized controlled study. *Journal of Autism and Developmental Discord, 38*, 1758-1766.

Owens, R.E. (2012). *Language development: An introduction - eighth edition*. New York: Pearson Education.

Sallat, S. & Jentschke, S. (2015). Musical perception influences language acquisition: melodic and rhythmic melodic perception in children with specific language impairment. *Behavioural Neurology, 2015*, 1-10. Retrieved from: http://dx.doi.org/10.1155/2015/606470.

Trainor, L.J., & Heinmiller, B.M (1998). The development of evaluative responses to music: infants prefer to listen to consonance over dissonance. *Infant Behavior Development, 21*, 77-88. Retrieved from: http://www.sciencedirect.com/science/article/pii/S0163638398900558

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