Binary Musical Bias in Irregular Meters

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**Background**

- Simple and binary meters are more prevalent in Western music literature than compound and ternary meters (Huron, 2006).
- Infants can better detect changes in melodic and harmonic sequences when they are in duple meters rather than triple meters (Bergeson & Trehub, 2006).
- Both children and adults can reproduce binary rhythms better than ternary rhythms (Drake, 1993).

**Method**

- Examined 7 musical sources
  - 4 sight-singing books (Berkowitz, Fontrier, & Kraft, 1997; Hoffman, 2009; Karpinsky & Kram, 2007; Ottman, 1956).
  - Anthology of Music: Non-European Folklore and Art Music (Schneider, 1972)
  - Anthology of Music: European Folk Song (Wiora, 1966)
  - A Dictionary of Music Themes (Barlow & Morgenstern, 1948)
- Counted examples with 5-beat metrical patterns and 7-beat metrical patterns
- To be counted, the example had to stay in the same meter for the first four measures

**Preference Study**

- A follow-up study was conducted to investigate if listeners prefer rhythms in 5-beat patterns over rhythms in 7-beat patterns
- Participants were played 28 1-measure rhythms (each repeated 4 times) in various time signatures (7 of each of the following: 3/4, 4/4, 5/4, and 7/4)
- After hearing each rhythm, participants marked their preference on a 7-point Likert scale (1 = strongly dislike; 7 = strongly like)
- Preliminary results were skewed in the predicted direction with a stronger preference for 5-beat patterns (M = 4.03, SD = 0.54) over 7-beat patterns (M = 3.62, SD = 0.63).
- This result may indicate an extension of the binary bias into irregular meters
- Further analysis of other factors, including musical background of participants and various musical features (syncopation, pitch, and number of notes) will be required.

**Results**

- In this corpus, 5-beat metrical patterns occur more frequently than 7-beat metrical patterns, $\chi^2 (1, N = 144) = 30.25, p < 0.001, \phi = 0.46$

**Discussion**

- This corpus of music showed a dominance of 5-beat over 7-beat meters
- The finding could be viewed as an extension of the binary bias seen in regular meters; 5-beat patterns might be comparable to binary meters, and 7-beat meters might be comparable to ternary meters
- Mostly Western-based sources were reviewed; future studies might look at music from a wider variety of cultures

**References**


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