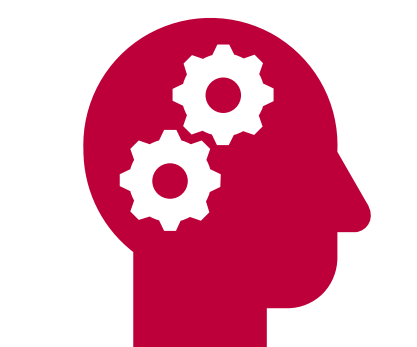


Quantifying motor and cognitive engagement: A multidisciplinary examination of drumming across the lifespan

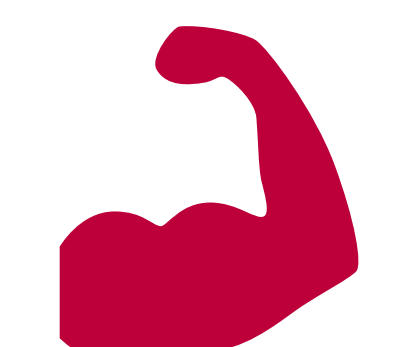
Emily Pivovarnik, MM, LPMT, MT-BC, Marcelo Rosales, PhD, & Jill Heathcock, PhD, MPT

emily.pivovarnik@osumc.edu

BACKGROUND AND PURPOSE



Music supports cognition and motor coordination^{2, 10}



Many developmental disabilities (e.g. cerebral palsy) affect upper extremity coordination⁴³



Drumming offers a unique modality to address auditory-motor integration^{3, 8, 9, 13}

The purpose of this study was to combine art with scientific techniques to analyze drumming patterns to determine the feasibility of behavioral coding to quantify motor and cognitive behaviors across the lifespan.

METHODS

- Quantitative observational content analysis
- N = 100 individuals aged 1-100
- An art film by Lenka Clayton and James Price of individuals across the lifespan drumming
- Coded using Datavyu software

Key variables:

- Upper extremity technique (unilateral versus bilateral)
- Grasp type
- Latency between vocalization and drum strike

Data Analysis

- Analyzed using MATLAB
- Descriptive statistics (Frequency, proportion, distribution)
- Pearson's correlation
- Linear regression model

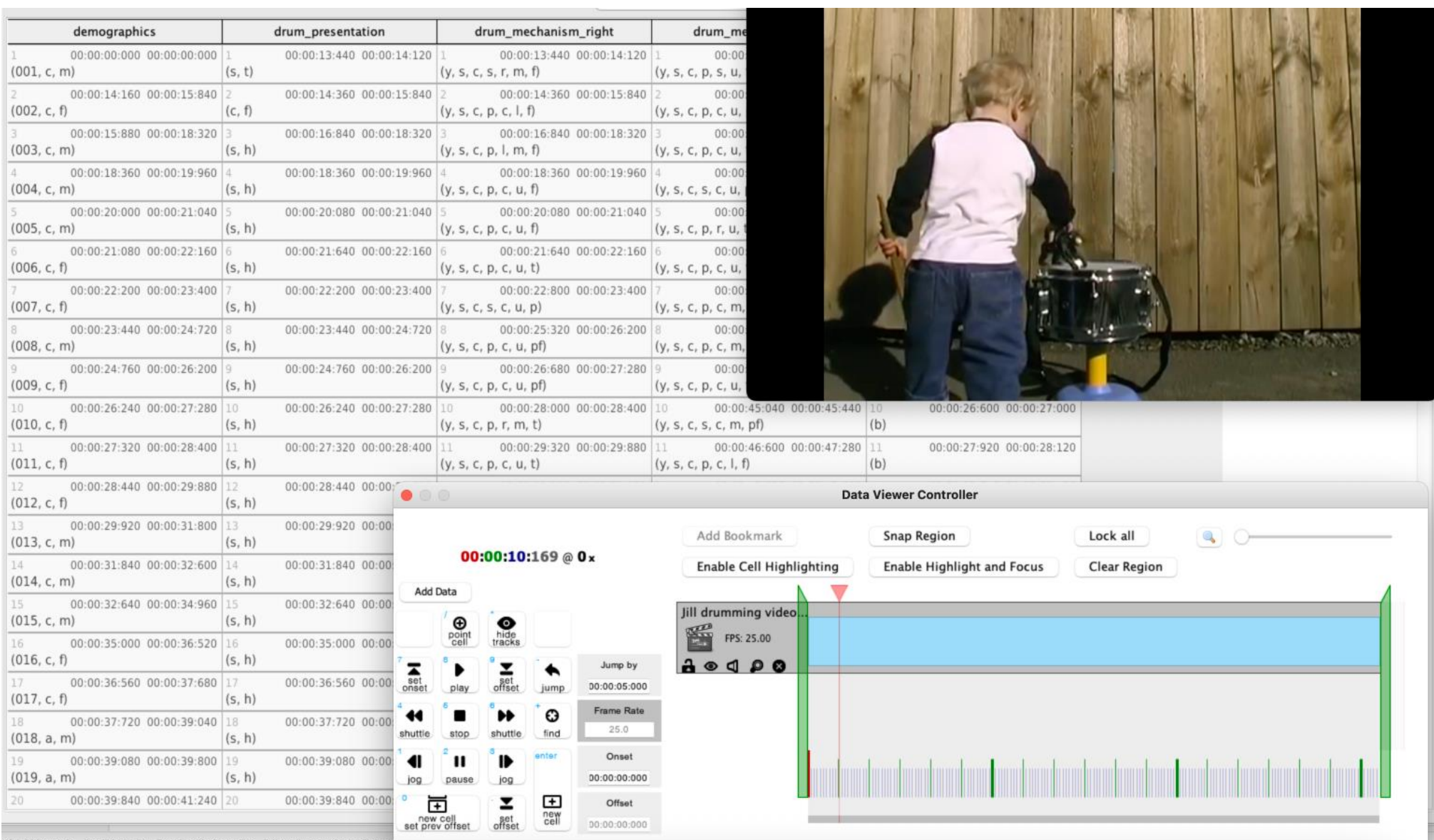


Figure 1. Datavyu coding scheme of drumming art video

Grasp Type	Left (%)	Right (%)
Fist	11.5	25.5
Thumb	21.5	24.5
Pointer Finger	13.5	3
Pincer	36.5	27
Between Finger	17	19

Table 1. Frequency of grasp type during drumming among participants

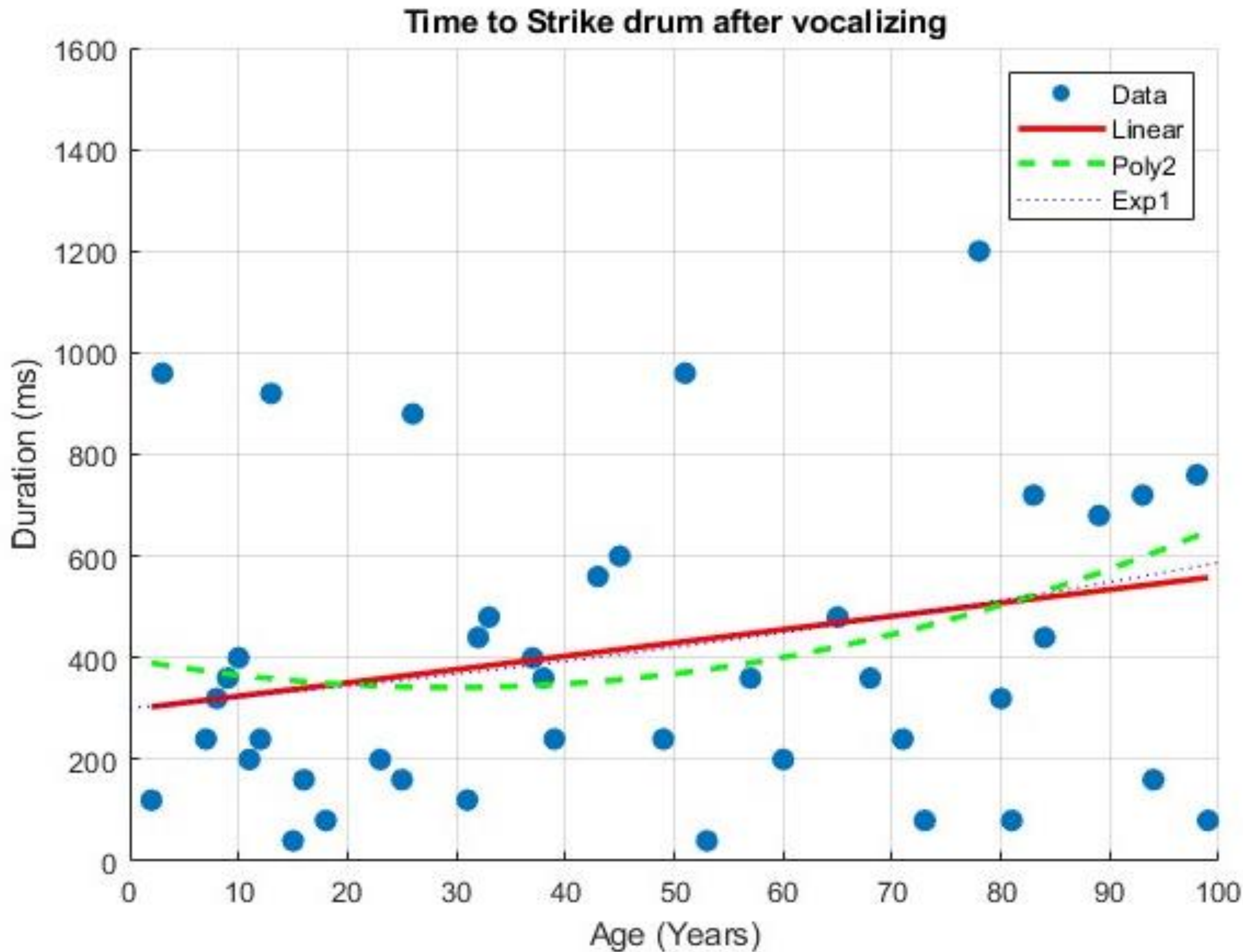


Figure 2. Latency between vocalization and drum strike by age among participants

RESULTS

- Coding of drumming was feasible at all ages
- Drum strike strategy:



- 93% struck with their right hand
- Vocalization analysis showed



- The range of latency to drum hits was 0.2 - 7 seconds.

LIMITATIONS

- Use of art film limits author's knowledge of instructions given to participants
- Small sample size representation per age group

FUTURE DIRECTIONS

- Prospective analysis of behavioral coding drumming activities
- Larger, more representative sample sizes
- Longer time sampling of drumming

KEY TAKEAWAYS

- Behavioral coding methodologies are feasible across the lifespan and may enhance the rigor of music therapy research for those with motor or cognitive impairments.
- The combination of artistic and scientific modalities is an effective research method to support therapeutic assessment and intervention

REFERENCES



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