

**Tel-Aviv University**  
**The School of Philosophy, Linguistics and Science Studies**  
**Department of Linguistics**

**THURSDAY INTERDISCIPLINARY COLLOQUIUM**

**Thursday 29.4.2021**  
**16:15-17:45**

**Udi Wahrsager**  
**Tel Aviv University**

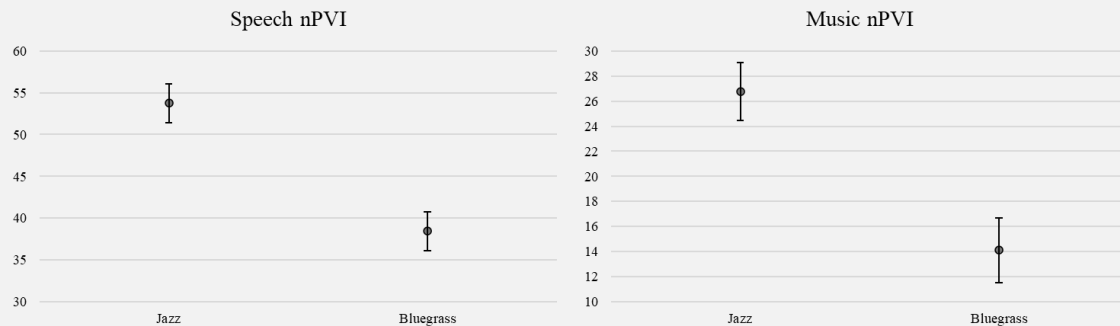
**Rhythmic similarities between language and music:**  
**Jazz and bluegrass musicians as a case study**

My work joins a body of research on the relationship between speech and musical rhythm. A comparison of spoken utterances and musical phrases produced by individual musicians corroborates previous evidence for rhythmic correlation between the domains.

Following Patel & Daniele (2003), the Normalized Pairwise Variability Index (nPVI) has been used as a comparable rhythmic measure for durational variability in language and music. In speech, nPVI measurements have shown greater variability of vowel durations in languages traditionally classified as "stress-timed" (e.g., English, Dutch, Thai) compared to languages classified as "syllable-timed" (e.g., French, Spanish) (Grabe & Low, 2002; Ramus, 2002). By applying the nPVI to note durations in English and French classical musical themes, Patel & Daniele found a correlated pattern with significantly higher nPVI values in English themes. Similar patterns were found in studies focusing on spontaneous speech and musical performance by individual musicians, distinguished by different regional dialects of English and different musical styles (McGowan & Levitt, 2011; Carpenter & Levitt, 2016).

I follow these studies by comparing utterances and musical phrases produced by musicians of two distinct American musical styles – jazz and bluegrass. Unlike previous studies, I calculated speech nPVI values based on syllable durations rather than durations of vocalic intervals. This was based on the view that the syllable is the basic rhythmic unit of speech and most comparable to musical tones (Patel, 2008). To minimize subjective judgement in syllabification, I relied on criteria used by automatic syllabification

models (Bartlett et al., 2009). On the musical domain, my focus was on durational nuances of real-time performance. For this purpose, I restricted my musical data to phrases with no structural variation on the underlying metrical level (consecutive eighth note phrases). The main results of my study are compatible with previous findings, showing a correlated pattern of higher nPVI values for jazz musicians in both music and speech:



Lower nPVI values for bluegrass musicians, speaking Southern American English (AE), are incompatible with previous findings showing significantly higher durational variability in Southern AE compared to other regional dialects of AE (Clopper & Smiljanic, 2015; Reed, 2020). While syllable durations pose difficulty for objective measurement, my findings seem promising in this respect. Overall, my work supports Patel & Daniele's assertion that "there is an empirical basis for the claim that spoken prosody leaves an imprint on the music of a culture".

Click [here](#) to see the colloquium program for the Spring semester

**YOU ARE ALL INVITED**