**Effect of Timbre on Voice Recognition in Two-voice Counterpoint Music**

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Timbre saliency refers to the attention-capturing quality of timbre [Chon & McAdams, 2012, J. Acoust. Soc. Am., 131(4), 3433]. It turned out to be related to the spectral distribution of harmonic energy, based on an experiment with 15 instrument timbres. It also showed a negative correlation with the perceived degree of blending with other timbres, verifying that something salient tends not to blend well with its neighbors [Chon & McAdams, 2012, Proc. ICMPC, 222-223].

To explore the effect of timbre saliency and timbre dissimilarity in a more realistic setting, voice recognition in two-voice counterpoint music has been studied. Excerpts were selected from J.S. Bach’s Trio sonatas for Organ, BWV 525 – 530. They were realized with six sets of timbres chosen according to timbre saliency (similar or different saliency) and timbre dissimilarity (identical, close, far) conditions. The excerpt was followed by an isolated voice, which was either identical or had the pitches of two notes changed. Listeners without absolute pitch were asked to judge whether the isolated melody was the same or different as the one in the two-voice excerpt.

Average percent correct ranged from 58.9% to 92.9% per participant, with a global average score of 75.6%. There were no significant differences observed from these per-participant averages according to the age, gender, or self-identification as either professional or amateur musicians. The only significant factor was the voice type (high or low), and neither timbre saliency nor timbre dissimilarity condition was significant in a three-way ANOVA. In two-way ANOVAs per voice, there was no effect of timbre saliency or dissimilarity for the high voice, but for the low voice there was a significant effect of timbre dissimilarity (easier to recognize with dissimilar timbres on the two voices), but not of timbre saliency. This result suggests that having highly dissimilar timbres on the voices helps recognition of the low voice, probably due to stream segregation by timbre difference.