

Adding syncopation to simple melodies increases the perception of groove

Guy Madison (1)*, George Sioros (2), Matthew Davies (2), Marius Miron (2), Diogo Cocharro (2) & Fabien Gouyon (2)

(1) Department of Psychology, Umea University. Umea, SWEDEN

(2) Sound and Music Computing Group, INESC TEC, Porto, PORTUGAL

* =Guy.Madison@psy.umu.se

This study addresses the relationship between syncopation and groove in simple piano melodies. The principal motivation is to test whether creating syncopations in simple melodies increases the perception of groove in listeners. The basic stimuli comprised 10 simple piano melodies (around 20 s in duration), synthesized using MIDI at a fixed tempo of 100 BPM. Each melody was accompanied by a simple rhythmic pattern to provide a metric reference. These basic melodies were selected on the basis that they contained no syncopating events, and no note events at metrical levels below the quarter note. Each melody was transformed to create four different conditions: (1) "anticipation-syncopation" in which events at weak metrical positions were made one 8th note early, (2) "delay-syncopation" in which events at weak metrical positions were made delayed by one 8th note; iii) "max-syncopation", in which all events were one 8th note early, and (4) "density-transform", in which each event was halved in duration and the number of events doubled. The stimuli were presented to participants in a random order and ratings were collected for the following scales: movement inducing (i.e., groove), swinging, naturalness, preference and familiarity. Ratings were collected anonymously through a web-based experimental setup. Analysis of the data collected revealed a highly significant increase (Cohen's $d' = 0.4$) in the groove ratings for the syncopated melodies compared to the original quantized condition. A smaller effect size was observed (Cohen's $d' = 0.25$) when comparing groove ratings for the density and max-syncopation transformations to the quantized condition.