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Cognitive representations of form in pop music: A probabilistic grammars approach

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Abstract: Cognitive representations of musical structure have long been of interest to psychologists and musicians. This project addresses comprehension of and long-term memory for musical form, a debated topic in music cognition. We use three methods: a corpus of Billboard magazine's top 10 songs for each of the last 20 years; a probabilistic grammar derived from this corpus; and an experiment testing predictions of the grammar. Two statistical analyses of the corpus are presented here, dealing with its zero- and first-order Markov properties. These provide a probabilistic grammar of form in popular songs. We have tested this grammar by prompted recall of listeners' memory for popular songs they claim to know well. Recalls average over 70% correct; errors in these recalls most often correspond to low-frequency 2-tuples in our networks. Our results show that listeners learn statistical regularities of form in popular music, much as they learn melodic and harmonic structure.