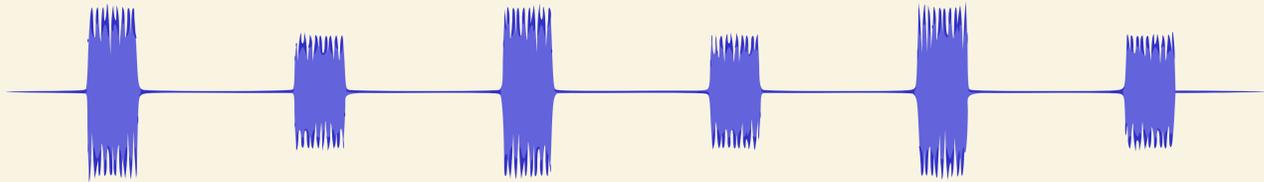
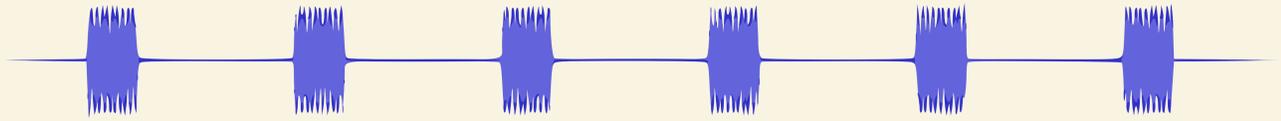


A New Look at Subjective Rhythmisation

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Subjective rhythmisation (SR) is the phenomenon that when presented with a sequences of isochronous, identical sounds ...

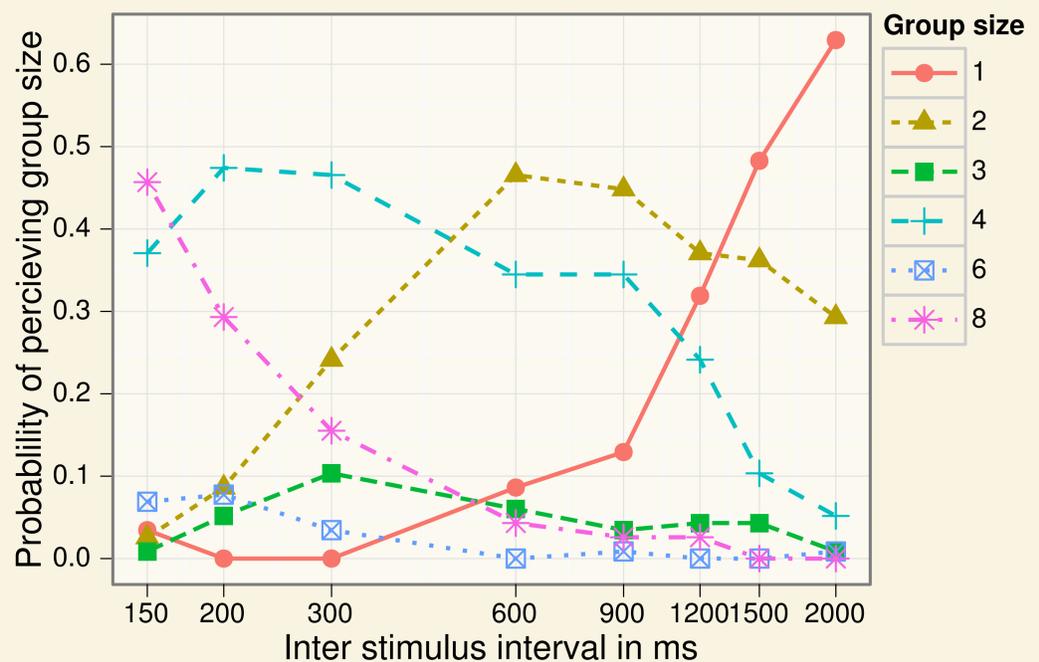


... one can experience a pattern of accents that groups the sounds, often in groups of two, three or four (Bolton, 1894; Vos, 1973).

The present study aims at extending the scope of earlier studies by including sequences from a wider range of inter stimuli intervals (ISI). A second aim is to investigate how perceived grouping relates to tempo.

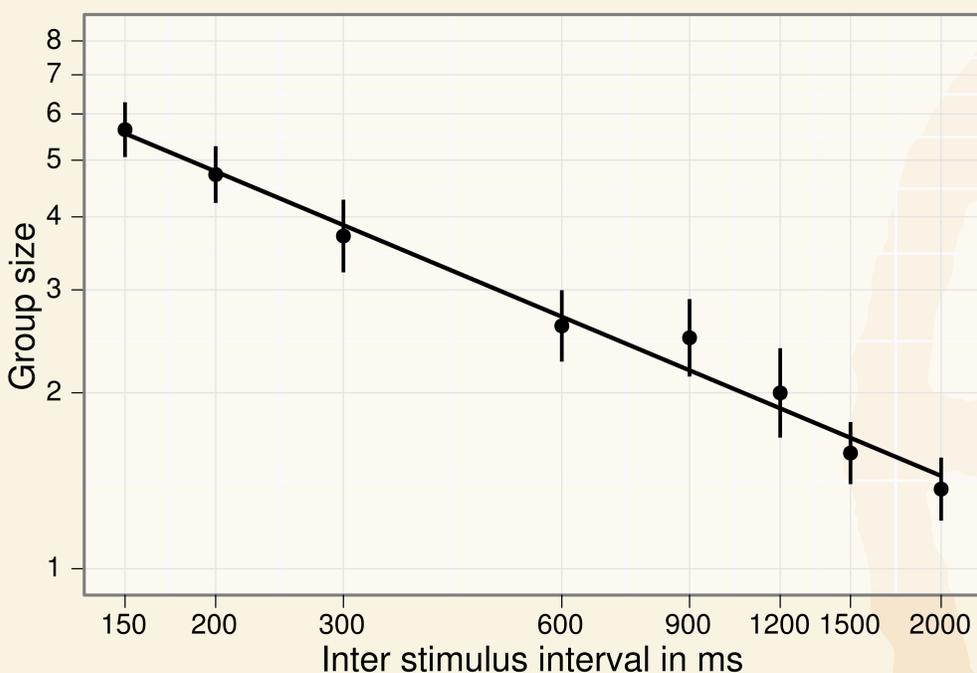
Thirty participants were asked to listen to 32 metronome sequences of different tempi. For each sequence the participants were to indicate if they felt a grouping of the sounds on a scale ranging from “No grouping/groups of one” to “Groups of eight”.

All participants managed to carry out the task and for all participants, but one, there was a significant negative correlation between ISI and perceived grouping. The figure to the right shows the distribution of the probability of perceiving a grouping as a function of ISI.



Subjective rhythmization has been explained using a model of rhythm perception based on neural oscillation (Large, 2008). Using a simple model of neural oscillation gives that the relation between grouping and ISI should follow a power-law distribution which should appear linear on a log-log plot. The figure to the left shows a log-log plot of the mean of the perceived groupings as a function of ISI. The superimposed line shows the linear regression fit to the log-transformed data ($R^2 = 0.63$, $p < 0.001$).

This study replicates two of the findings of earlier subjective rhythmization studies which are that perceived grouping tend to increase as ISI decreases and even groupings are much more common than odd. From ISI 900 ms to 2000 ms there is a steep increase in the probability of perceiving no grouping, with a peak probability of 63% at ISI 2000 ms. This is in accordance with the notion of there being an upper limit to subjective rhythmisation but is discordant with an often proposed upper limit in the range of ISI 1500 ms to 2000 ms (Fraisse, 1982; Bolton, 1894).



References

- Vos, P. (1973). Waarneming van metrische toonreeksen. *Nijmegen: Stichting Studentenpers.*
- Fraisse, P. (1982). Rhythm and tempo. *The psychology of music*, 149–180.
- Large, E. W. (2008). Resonating to musical rhythm: Theory and experiment. *The psychology of time*, 189–231.
- Bolton, T. (1894). Rhythm. *The American Journal of Psychology*.