General Methods

From 2D to 3D

Stimuli

From Static to Moving

5 motion patterns: swing, jump, rotation, vibration, abrupt motion

Visual Masks

Individual object masks to reduce induced motion

Procedure

Similarity ratings task - paradigm

Participants were instructed to focus on the object shape only and ignore any other information.

- Fully within-subject design
- 3 motion conditions: static, same motion and different motion

Analysis

1. Data normalisation through Min-Max Normalisation Function.
2. Linear mixed effects regression fit on similarity ratings and RTs, predicted by object pairings (same or different) and motion conditions (static, same motion, different motion).
3. Conversion of similarity ratings into a Similarity-Correlation matrix for each motion condition.
4. Non-metric Multidimensional Scaling (NMDS) analysis applied to reconstruct object’s shape through a 2-dimensional space for each motion condition.

Conclusions

- Motion affects objects’ psychological space, even when the physical space is constant.
- Objects are perceived as less similar when they move in an incongruent manner, and more similar when moving in a congruent way. The effect of different motion is also reflected by effects on reaction times (slower).
- NMDS reconstruction: for same motion condition it showed slightly closer distances for middle objects compared to different motion, which appear to be spread to the outer edges of the stimuli set.
- Critical role of inherent motion object on perceptual similarity of novel objects.

Future steps

To assess the role of sound on perceptual similarity (1) and categorisation performance (2) for audiovisual moving 3D novel objects.

Representation Similarity Analysis (RSA) on the behavioural and future fMRI data.

References


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