Consequences of visual production training for neural object representations

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Abstract

Intro sentences go here.The current study directly evaluates how practice drawing objects affects their underlying representation in ventral temporal cortex using fMRI. All three phases (pre, training, post) of the study were scanned. During training, participants alternately drew two objects (e.g., table, bed) on an MR-safe tablet. Before and after training, they viewed these and two other control objects (e.g., chair, bench), so that we could obtain estimates of the neural representation of each object. More methods and results sentences go here.

Keywords: communication; drawing; learning; perception and action; objects

Introduction

Methods

Stimuli

Task and procedure

Recognition task

Production task

fMRI data acquisition and preprocessing

Measuring object representation during recognition and production

Connectivity pattern similarity analysis

Searchlight analysis

Results

Shared representations during recognition and production

Sustained selection of target object during drawing within early visual, parietal, frontal regions

Sustained selection of target object during drawing between regions

Relationship between target selection and representational differentiation

Distinct dynamics in target object representation in visual and frontal regions during drawing

Discussion

Code availability

The code for the analyses presented in this article will be made publicly available in a Github repository upon acceptance of this manuscript.

Data availability

The data presented in this article will be made publicly available in a figshare repository upon acceptance of this manuscript.

Acknowledgements

This work was supported by NSF GRFP DGE-0646086, NIH R01 EY021755, R01 MH069456, and the David A. Gardner '69 Magic Project at Princeton University. Thanks to the Computational Memory and Turk-Browne labs for helpful comments.

Author contributions statement

J.E.F., D.L.K.Y., N.B.T.-B., K.A.N. designed the study. J.E.F. performed the experiments. J.E.F., J.D.W., J.B.G., R.S.L. conducted analyses. J.E.F., J.D.W., J.B.G., R.S.L., K.A.N., and N.B.T.-B. planned analyses, interpreted results, and wrote the paper.

Additional information

The authors declare no competing interests.

References