

Background

- Individuals consistently differ in how they look at faces, some preferring eyes while others look closer to the mouth region¹
- These biases are individually optimal for recognition performance¹ and generalize from picture viewing to real life interactions²
- **Two competing hypotheses: vertical fixation biases are face specific** (e.g. due to shifted face templates or social preferences) **vs. domain-general** (e.g. due to idiosyncratic visual field geometry)
- We juxtapose these by asking: **Do fixation biases generalize from faces to objects?**

Methods

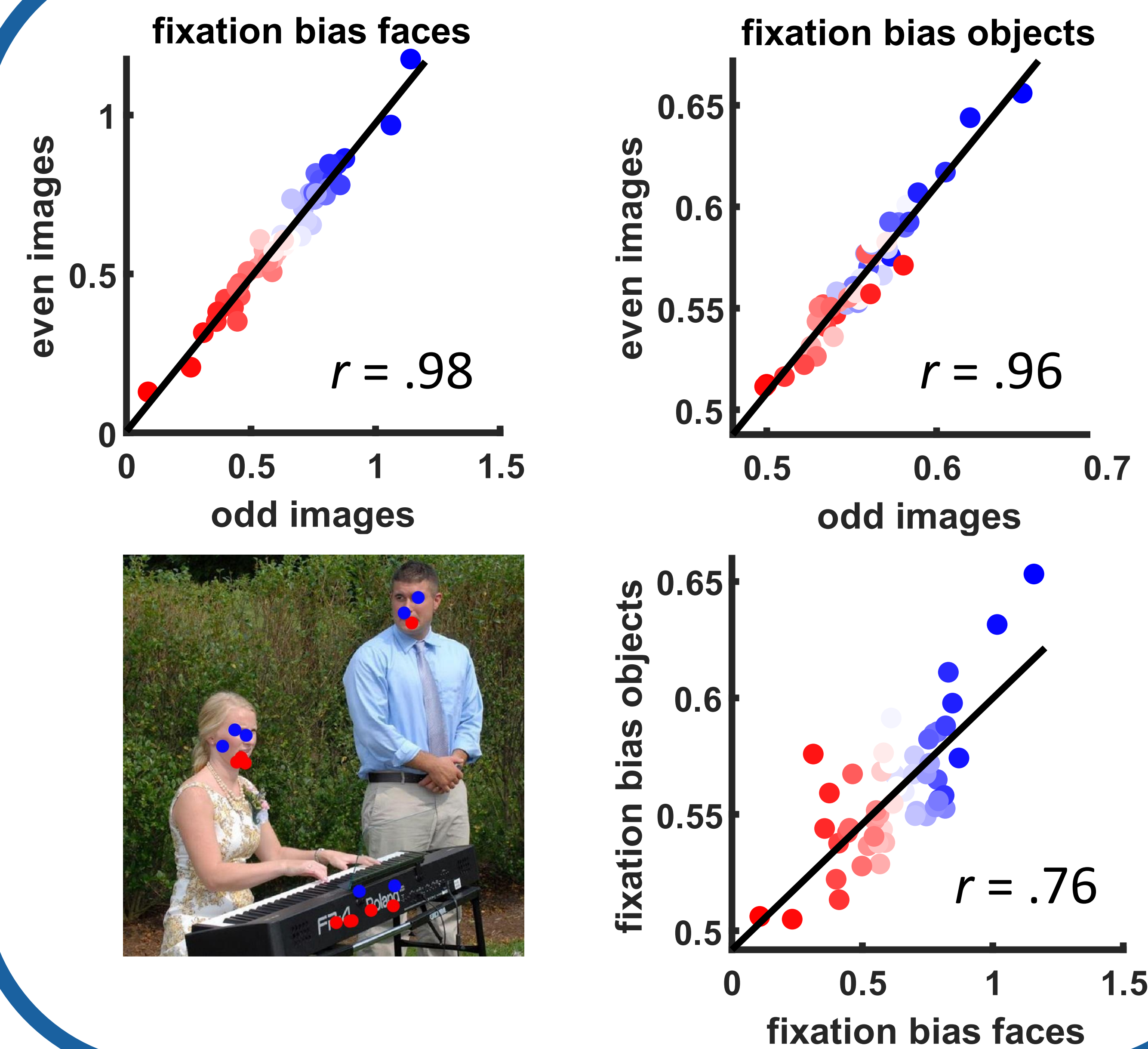
Stimulus Set & Eye-Tracking Data

The stimulus set contains **700** images of complex everyday day **scenes** with labels and pixel masks for a total of 3474 inanimate objects³. We created 640 additional, hand-drawn pixel masks for inner faces, eyes and mouths⁴. Participants ($n = 52$) freely viewed each image for 3 seconds from 55 cm distance at 47.3x35.5 degrees visual angle (dva)

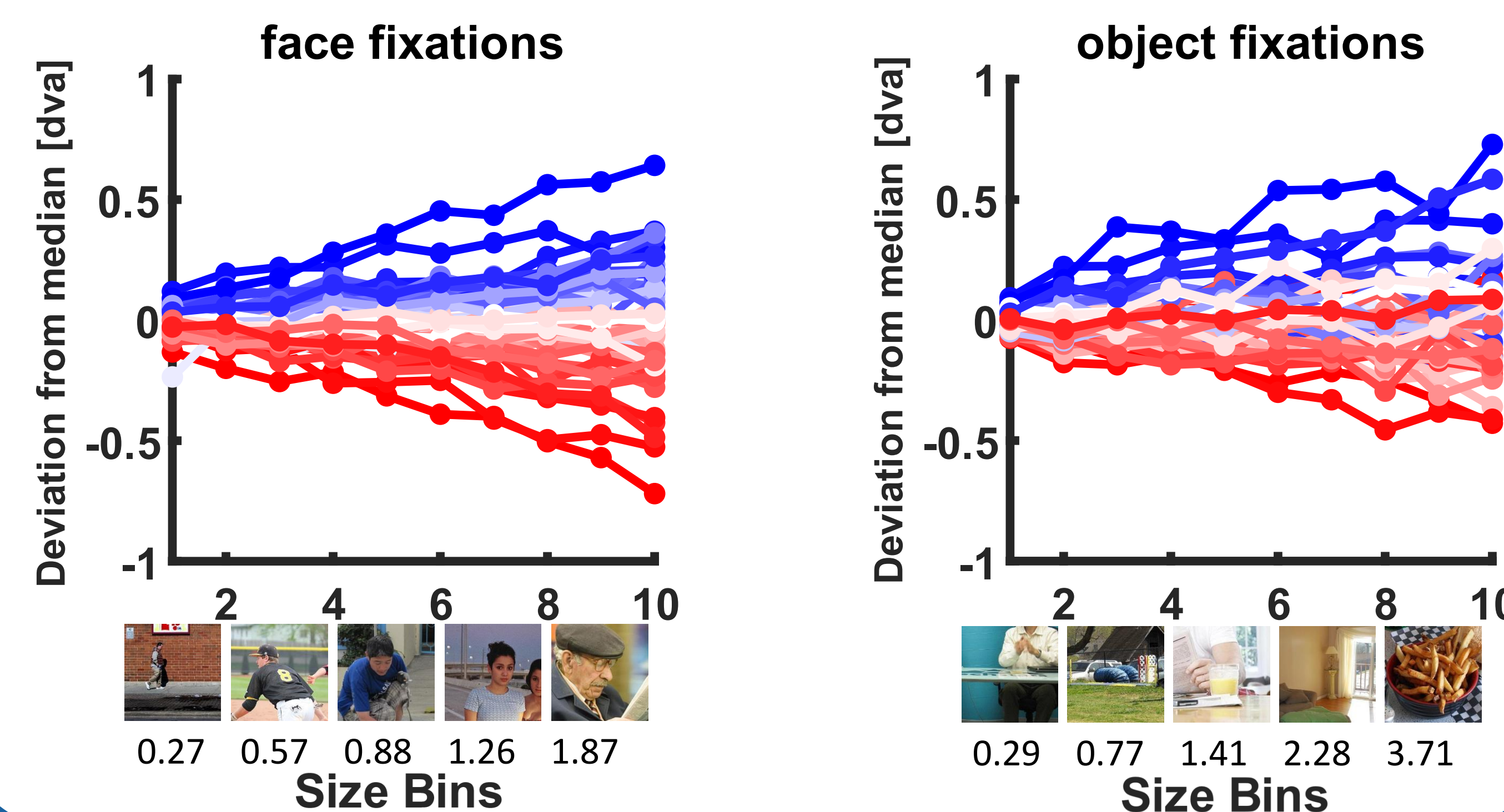
Data Analysis

- We excluded fixations with latency or duration < 100 ms
- Fixations were labeled when they fell on a face or inanimate object.
- **Fixation height was defined relative to the mouth (0) and eyes (1) for faces**, and relative to the **bottom- (0) and top- (1) most pixels for inanimate objects**.
- Additionally, we binned fixation heights for different face / object sizes.

Fixation Biases



Size Bins



Results & Conclusion

- Our results replicate previous findings showing **consistent individual differences** for the vertical height of **face fixations**
- these **biases extend to inanimate objects**, with >50% of individual face fixation height explainable by fixation height on inanimate objects
- **Control analyses** show that this relationship is robust and unlikely to be explained by calibration artefacts. It
 - holds for different image eccentricities and quadrants
 - holds when only considering the first fixation landing on a given object or face
 - replicates in an independent sample ($n = 103, r = .7$)
 - is preserved and scales across face and object sizes
- Nevertheless, individual biases are close to eye-tracker accuracy limits
- We are currently collecting data to see whether fixation biases on objects also correlate with face recognition performance in forced fixation designs

¹Peterson, M. F., & Eckstein, M. P. (2013). Individual differences in eye movements during face identification reflect observer-specific optimal points of fixation. *Psychological Science*, 24(7), 1216-1225.

²Peterson, M. F., Lin, J., Zaun, I., & Kanwisher, N. (2016). Individual differences in face-looking behavior generalize from the lab to the world. *Journal of Vision*, 16(7), 12-12.

³Xu, J., Jiang, M., Wang, S., Kankanhalli, M. S., & Zhao, Q. (2014). Predicting human gaze beyond pixels. *Journal of Vision*, 14(1), 28-28.

⁴Broda, M. D., & de Haas, B. (2022). Individual differences in looking at persons in scenes. <https://doi.org/10.31234/osf.io/xyz9u>.

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