Two's company, three's a crowd: Inverse other-race categorization advantage in a ternary categorization task.

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Context.

- When performing race categorization, we respond faster to other-race compared to own-race faces[1,2,3]
- The so-called other-race categorization advantage (ORCA) is also accompanied by a category boundary shift resulting in participants needing less other-race signal (i.e. prototypical characteristics) to categorize a face as such[4].
- However, a large majority of ORCA studies have relied on a binary (i.e., own- vs. other-) race categorization task.

Methods.

- In this study, we examined whether the typical category boundary shift still occurs when participants have to classify morphed faces into one of three categories.
- For each of the two gender profiles (i.e. Male, Female), 108 stimuli were generated by morphing triads of face images of different races (i.e. 2 Black, 2 White, 2 Asian), with race prototypicality ranging from 2% to 86%.
- A total of 286 participants (94 Black [South-African], 96 White [Canadian], and 96 Asian [Chinese]) each completed 432 trials using online platforms (Prolific and Pavlovia).

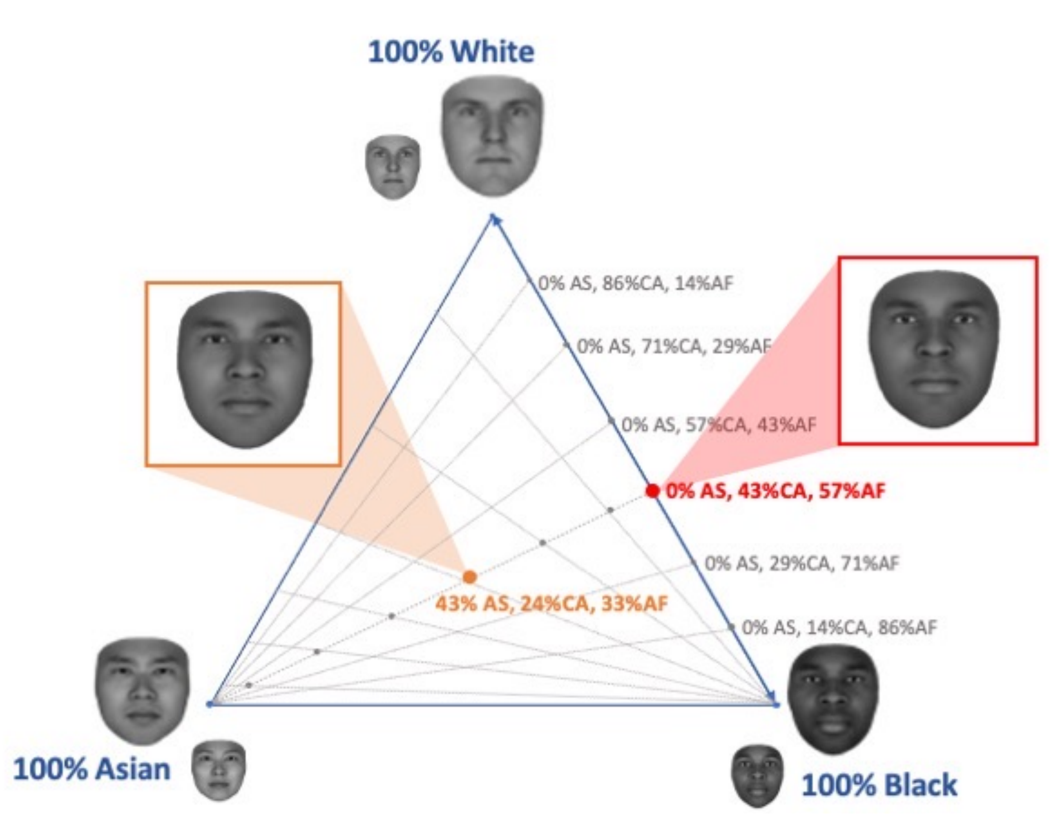


Figure 1. Morphing technique used to generate the 108 stimuli. Each location within the triangle represents a morph of varying proportions

Results

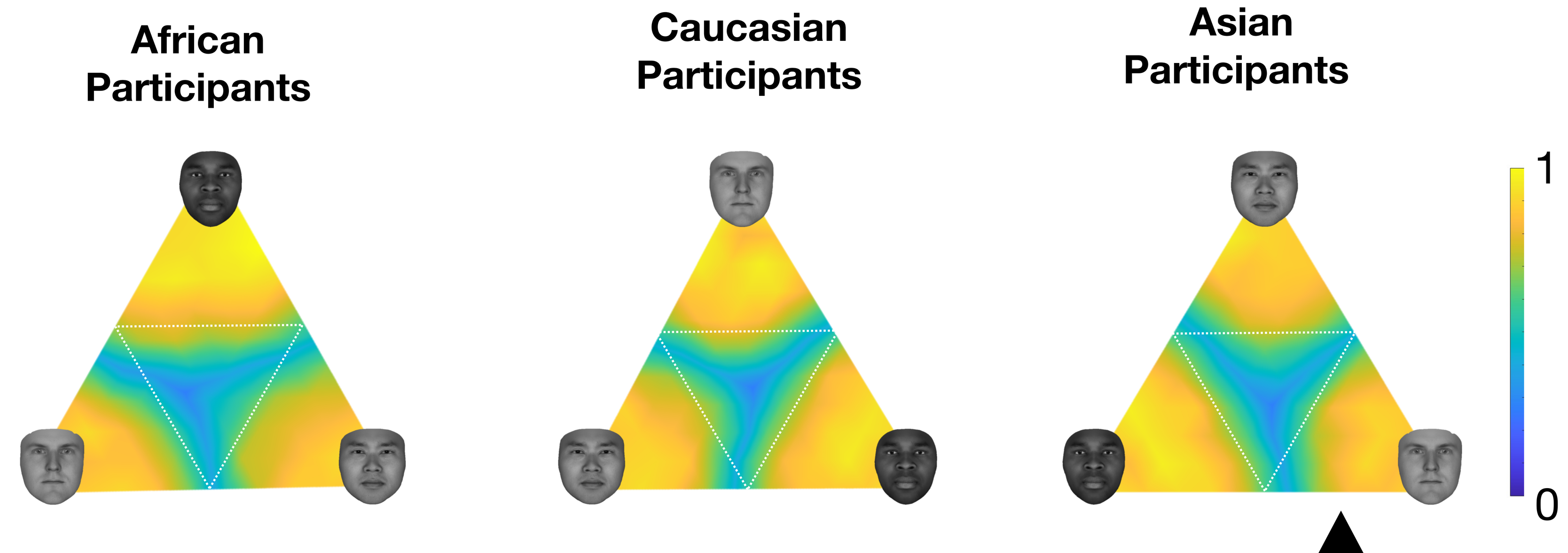


Figure 2
Ternary distributions of the averaged categorization probabilities for each culture. Regions in yellow have more probabilities to be categorized as one of the three main racial profiles. The own-race profiles are at the top of each graph.

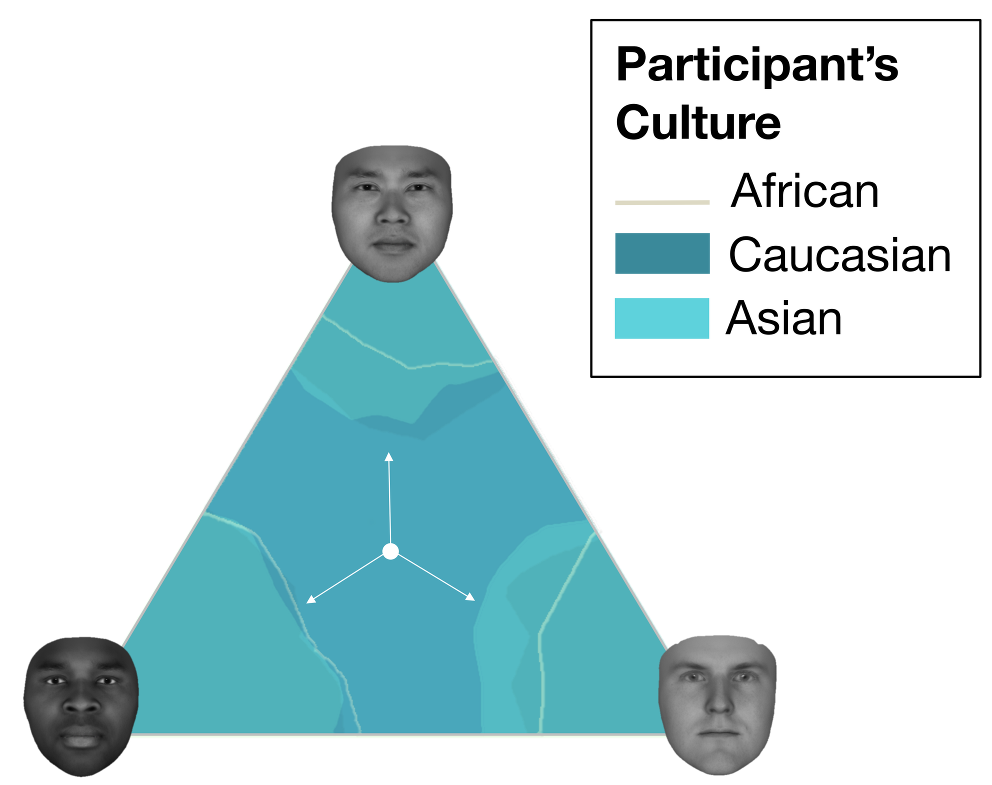
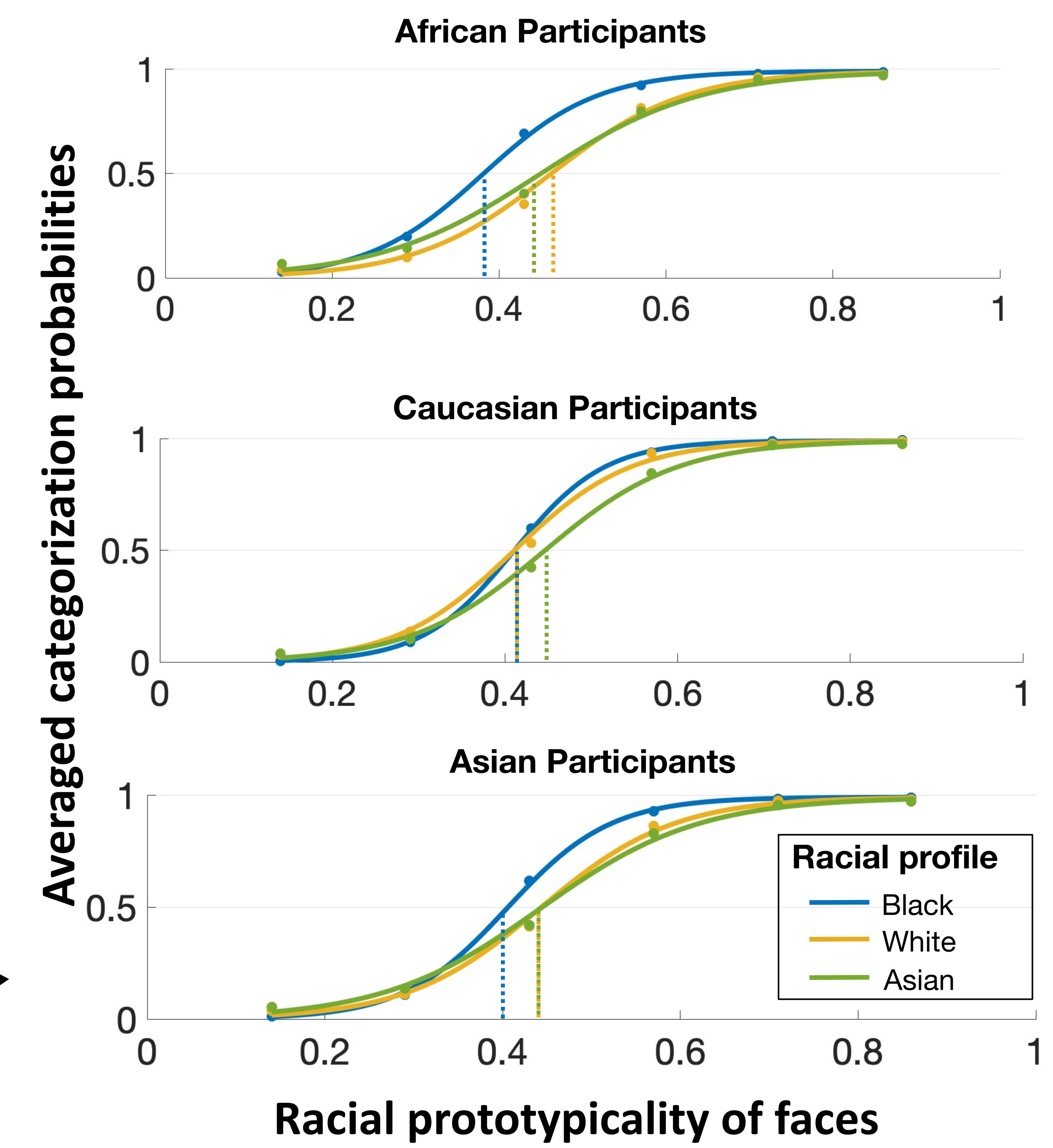


Figure 3
Overlapped distributions boundaries. Boundaries of Africans are depicted by the grey line. Boundaries of Caucasians are depicted in dark blue. Boundaries of Asians are depicted in light blue.

Figure 4
Binary categorization distributions of probabilities (one profile vs the average of the two others) for each culture. Categorical boundaries for each racial profile (50% of probability) are identified by the dotted lines.



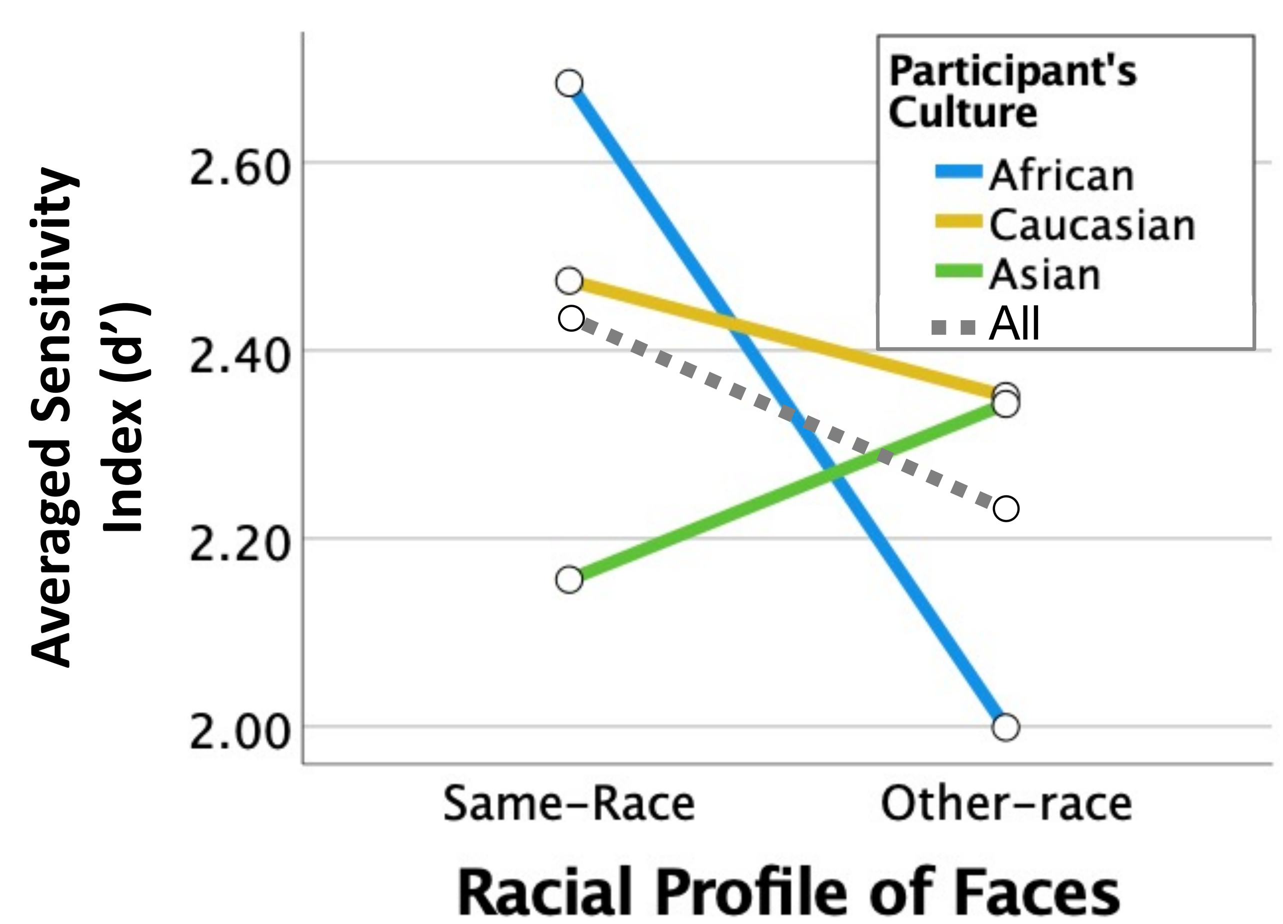


Figure 5. Averaged dPrime for Same-Race vs Other-Race for the three cultures and for all cultures combined.

- Categorical boundaries (i.e., the threshold at which a face is categorized as e.g., Black, with a 50% probability) were defined separately for each stimulus and participant race. Other-race thresholds were averaged on a participant basis (e.g., [White + Asian]/2 for Black participants).
- A 2 (stimulus race: own, other) x 3 (participant race) mixed ANOVA was carried. Results show a main effect of stimulus race [$F(2, 277)=22.12$, $p<0{,}001$, $\eta^2=0.07$] which interacted with participant race [$F(2, 277)=33.58$, $p<0{,}001$, $\eta^2=0.20$].

- Strikingly, there was a generalized inverse-ORCA: that is, participants were globally more sensitive to own- vs. other-race information [$t(279)=4.14$, $p<0{,}001$, $d=0.25$].
- However, the interaction revealed that this effect was largely driven by the African subsample, and also marginally by the Caucasian subsample.
- The Asian subsample, on the other hand, showed the typical categorical boundary shift.
- This highlights the influence of task parameters on social cognition measures.

References

1. Valentine, T., & Endo, M. (1992). Towards an exemplar model of face processing: The effects of race and distinctiveness. *The Quarterly Journal of Experimental Psychology*, *44*(4), 671-703.
2. Levin, D. T. (1996). Classifying faces by race: The structure of face categories. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *22*(6), 1364.
3. Caldara, R., Rossion, B., Bovet, P., & Hauert, C. A. (2004). Event-related potentials and time course of the 'other-race'face classification advantage. *Neuroreport*, *15*(5), 905-910.
4. Benton, C. P., & Skinner, A. L. (2015). Deciding on race: A diffusion model analysis of race-categorisation. *Cognition*, *139*, 18-27.

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