

Context

In the literature on same and other-race face processing, recent studies have suggested that White participants pay less attention to the eye region of Black faces compared to White faces¹⁻³. Although these eye-tracking studies are interesting, they do not provide information on the specific facial features that participants use while processing same or other-race faces. To address this gap, we used psychophysical methods to investigate and compare visual strategies used by Black (African or Caribbean origin) and White (European origin) participants in two face perception tasks involving expressivity and gender recognition.

Method

- The experiments were run on Pack&Go (using Matlab/Psychtoolbox3⁴).
- 60 participants (15 Black and 45 White) took part in the experiments (for a total of 4000 trials per participants).
- Participants completed an adapted version of a contact questionnaire⁵ to measure their degree of exposure to White and Black individuals.
- Participants completed two different tasks assessing 1) facial expressivity (Expressive or not; Exnex) and 2) gender discrimination (male or female). The same set of stimuli (10 different identities per ethnicity with both neutral and smiling poses) were used for both tasks.
- The experiments were conducted using the Bubble's method⁶ (see Fig. 1.). Therefore, thousands of stimuli were generated in real time, allowing to randomly sample the visual information in faces on a trial-by-trial basis.
- The number of bubbles was set to 30 and adjusted using QUEST⁷ to maintain an accuracy rate of 75% (i.e. midway between a perfect (100%) and random (50%) performance).

Analyses

- Since the number of bubbles was modified online according to participants' responses, we calculated the final number of bubbles for each participants, as it reflects an index of performance⁸. At this stage, outlier scores (more than +/- 3.29 standard deviations from the mean) were removed (tasks were performed sub-optimally for 3 participants).
- Group performance levels were controlled by matching individual Black participants with White participants according to their final average number of bubbles in both tasks. This approach allowed us to form two groups of 15 participants that were comparable in terms of performance (see Results section).
- Classification images (CI) were produced by calculating a weighted sum of the bubbles mask, using the trial-by-trial accuracy transformed into z-scores as weights. Pixel tests from the Stat4Cl⁹ toolbox revealed significant pixels associated with performance (p < .05; $Z_{crit} = 3.53$).

Does Observers' Ethnicity Influence Visual Strategies for Gender and Expressiveness Judgments ?

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Bubbles filters

Original

Figure 1. Procedure and examples of stimuli created with the **Bubbles method.**

This data-driven method samples visual information on a trialby-trial basis using small gaussian windows (i.e. bubbles) in order to reveal the most useful information in any visual task.

• Classification images analyses (see Fig. 3, right panel) revealed that participants relied on different facial information depending on the task (Exnex or Gender). Most importantly, Black and White participants made use of the same visual information for both race stimuli.

70 H v 60 bubble: 05 **n** 30 Final 50

region for gender processing and the mouth area in an expressive or not task. Our results also indicate that some information in the eye region can contribute to the efficient discrimination of an expressive face. Most importantly, we observe a very similar pattern of facial information utilization between Black and White participants which argues for universal mechanisms regarding these type of processes. compared to White faces, our results suggest that White participants extract visual information from this region even when it is not task-relevant, as evidenced by our findings in the Exnex task.

• Our results with White participants are consistent with previous studies^{6,10} revealing the importance of the eye • In conclusion, although previous studies have reported less attention (fewer fixations) to the eyes of Black faces

Results

• After controlling for performance levels, two-tailed independent t-tests revealed no significant differences between Black (N=15) and White (N=15) participants regarding their final number of bubbles in any of the conditions (Exnex: t(28) = 0.41, p = 0.69, Cohen's d = 0.14, 95% CI [-4.80, 7.20], Gender: t(28) = 0.0809, p = 0.94, *Cohen's d* = 0.02, 95% CI [-12.97, 14.03]). See Fig. 2. (left panel) for details. As expected, Black participants reported having more contact with Black (M= 57.55% of the time) than with White individuals (M= 30.59%), while the opposite pattern was observed for White participants (Exnex : M= 7.77% with Black and M= 80.71% with White individuals; Gender : M= 6.56% with Black and M= 80.72% with White individuals).



Figure 3. Final number of bubbles across experimental conditions (left panel) and classification images from Black and White participants across conditions (right panel). On the right panel, significant areas (associated with performance) are delimited in white.

Discussion and conclusions

References

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