An inconvenient association between familiarity and distinctiveness ratings of familiar faces

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Background

- Novel distinctive faces tend to be better recognised than typical faces (e.g. Wickham et al., 2000) but familiarity and distinctiveness would have independent effects when recognizing small sets of familiar faces (e.g. Valentine & Bruce, 1986).

- Using ratings from 35 judges on pictures of 96 familiar faces (i.e. more or less famous actors) and 96 unfamiliar faces, we found a strong association between perceived familiarity and perceived distinctiveness in the former ($r = .7512$) but not in the latter ($r = .1743$).

- This may represent an *illusion of distinctiveness* whereby the more familiar a face is, the more distinctive it looks, regardless of its actual appearance.
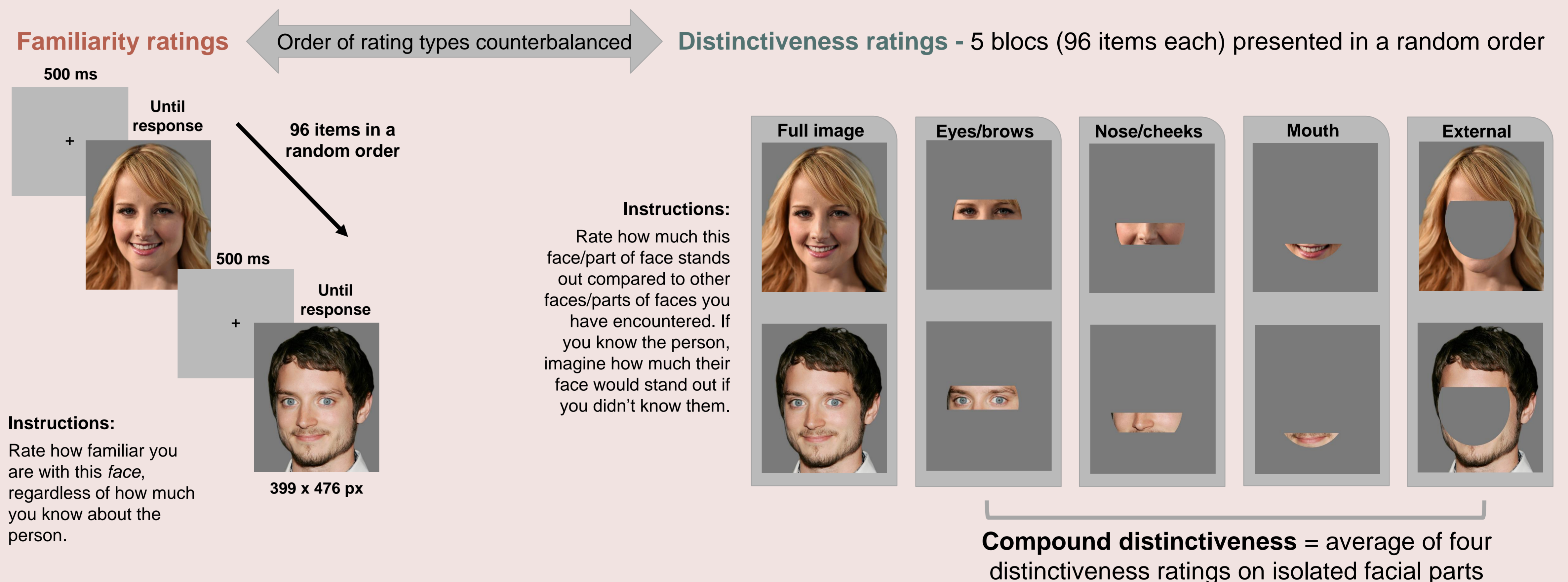

Popular / Less popular / Unfamiliar
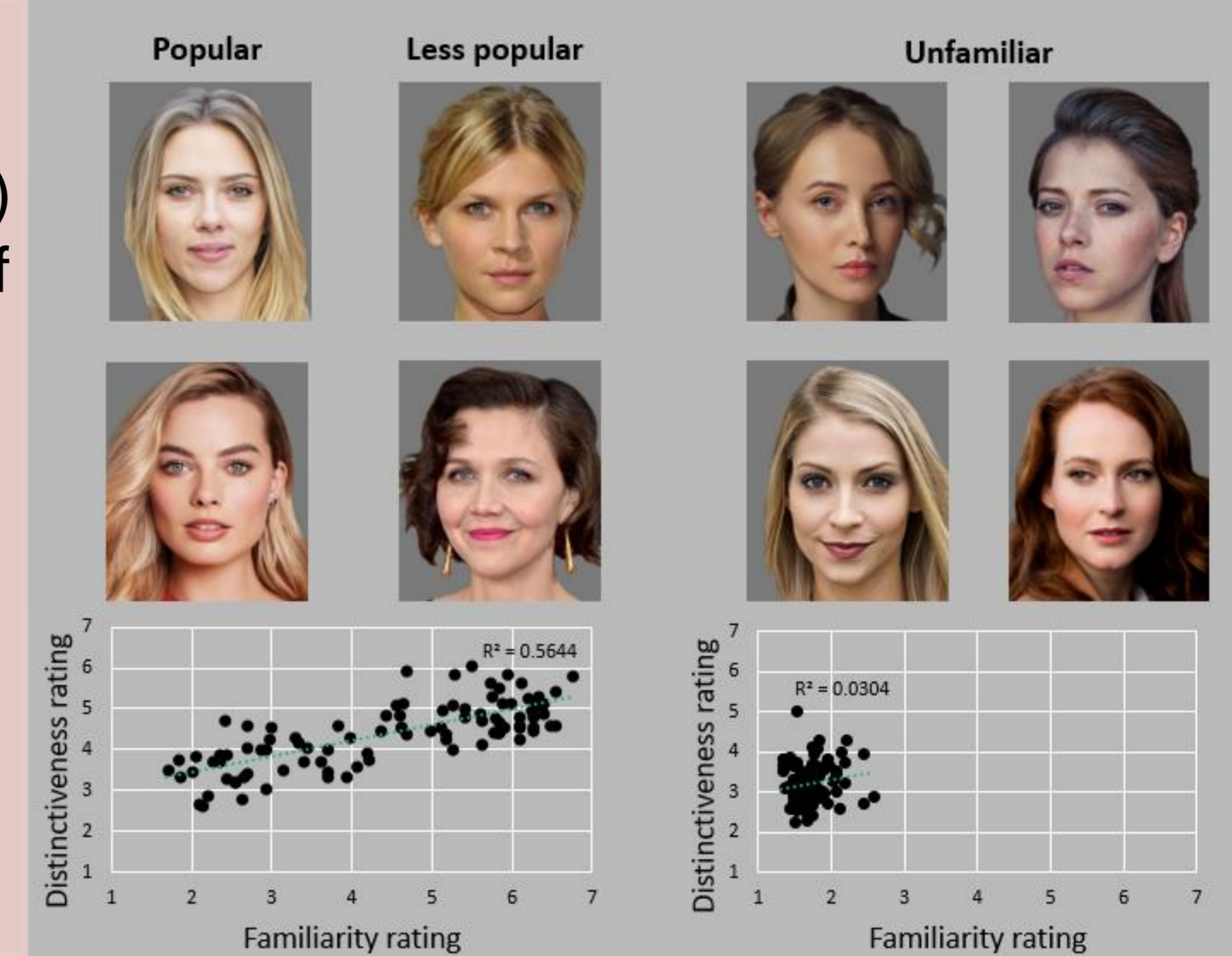
Aims & Hypotheses

- Test if the association between familiarity and distinctiveness ratings on famous faces is reproducible on a larger sample, as biased distinctiveness judgments would be an obstacle to the construction of well-controlled sets of famous faces to study familiar face processing.

- This association should be reduced by collecting distinctiveness ratings on isolated facial features, since recognition of facial features in isolation is more difficult than recognition in the context of a face (Tanaka & Farah ,1993).

- Distinctiveness ratings of isolated eyes should be higher than those of other isolated parts since the eyes are more diagnostic of facial identity than other features (e.g. Mohr et al., 2018; Nemrodov et al., 2014).
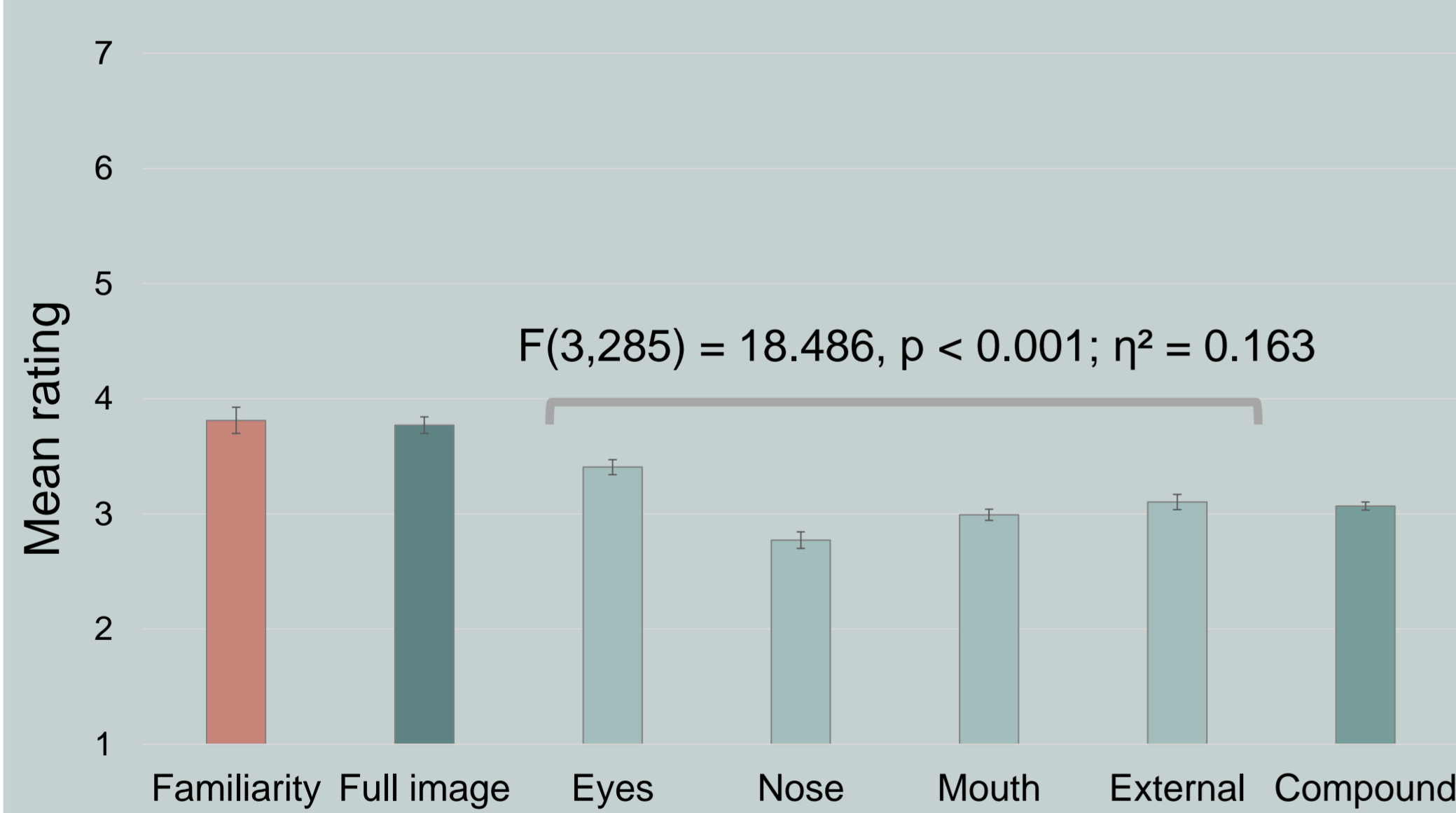
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Methods

Participants:

121 participants between 18 and 60 years old tested at ULiège by six bachelor students using the Testable platform.

Data of 20 participants were excluded due to incorrect data collection.

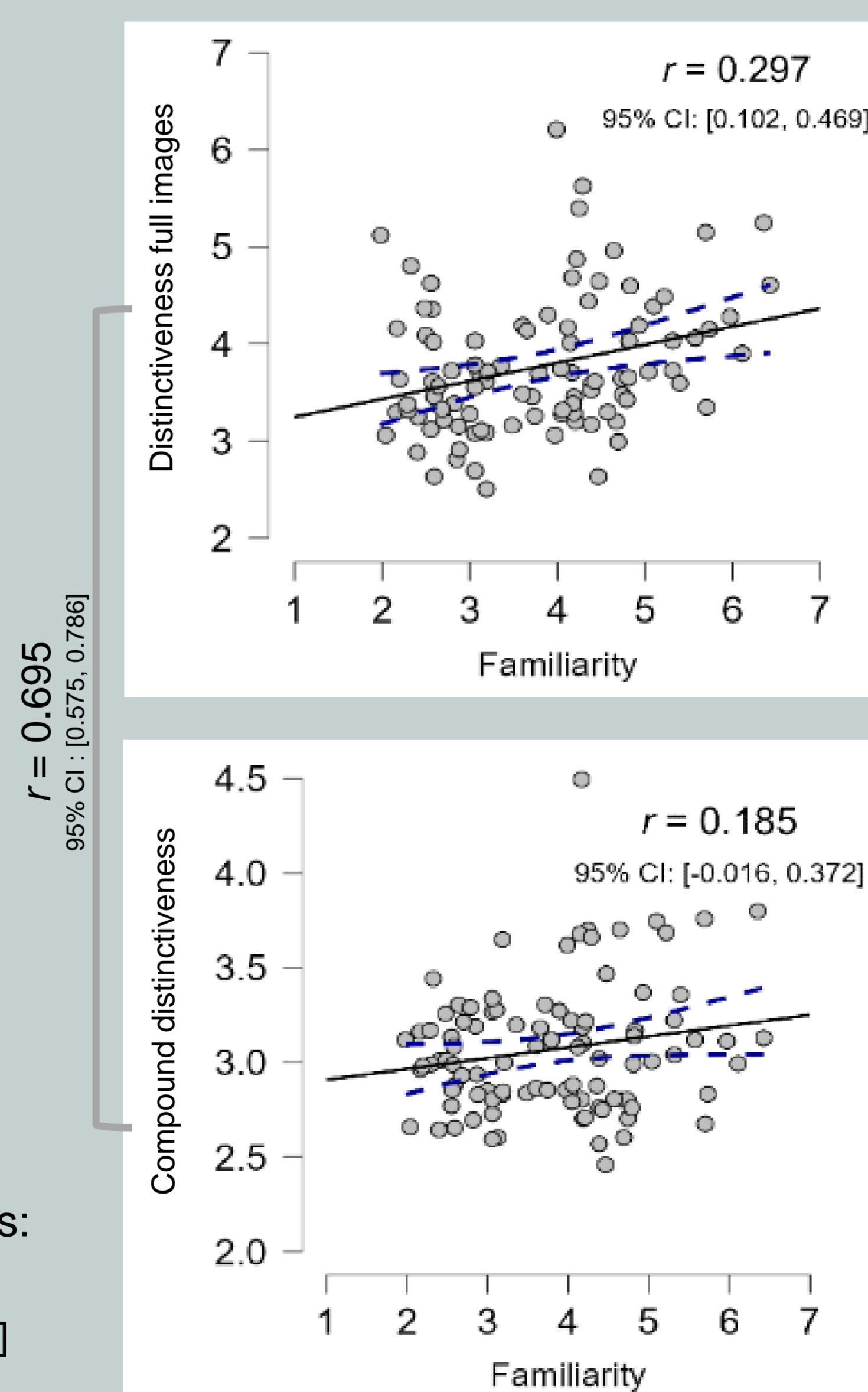The final sample includes 101 participants (72 women, Mean age = 23.6 years ± 7.9).

Familiarity ratings ← Order of rating types counterbalanced → **Distinctiveness ratings** - 5 blocs (96 items each) presented in a random order

96 items in a random order

500 ms / Until response / 500 ms / Until response

399 x 476 px

Instructions:
Rate how familiar you are with this *face*, regardless of how much you know about the person.

Instructions:
Rate how much this face/part of face stands out compared to other faces/parts of faces you have encountered. If you know the person, imagine how much their face would stand out if you didn't know them.

Full image / Eyes/brows / Nose/cheeks / Mouth / External

Compound distinctiveness = average of four distinctiveness ratings on isolated facial parts

Results & Discussion

Item (actor) level analyses

$F(3,285) = 18.486$, p < 0.001; $\eta^2 = 0.163$

Mean rating — Familiarity, Full image, Eyes, Nose, Mouth, External, Compound

Distinctiveness full images > Compound distinctiveness
$t(95) = 13.153$, p < 0.001, $d = 1.342$, 95% CI: [1.064, 1.617]

Perceived distinctiveness is reduced when judging isolated facial parts.

Eyes are judged more distinct than other isolated facial parts:
Eyes vs. Nose: $t(95) = 6.369$, p < 0.001, $d = 0.65$, 95% CI: [0.428, 0.869]
Eyes vs. Mouth: $t(95) = 5.241$, p < 0.001, $d = 0.535$, 95% CI: [0.32, 0.748]
Eyes vs. External: $t(95) = 3.431$, p < 0.001, $d = 0.35$, 95% CI: [0.143, 0.555]

$r = 0.297$
95% CI: [0.102, 0.469]
Distinctiveness full images vs Familiarity

$r = 0.695$
95% CI: [0.575, 0.786]

$r = 0.185$
95% CI: [-0.016, 0.372]
Compound distinctiveness vs Familiarity

We replicate the positive association between perceived familiarity and perceived distinctiveness, but it is weaker than in preliminary data (obtained with a different design and on a distinct population).

The positive association between perceived familiarity and distinctiveness is stronger with ratings of distinctiveness provided on full images than on isolated facial parts, but not significantly so.

Steiger's Z = 1.432, p = 0.152

Exploratory subject level analyses

Correlations between familiarity and distinctiveness ratings were calculated for each rater based on the set of 96 actors. Individual correlation coefficients are used as a measure of the illusion of distinctiveness in a given rater.

Mean $r_{\text{Distinctiveness full images / Familiarity}} = 0.185 \pm 0.236$
Mean $r_{\text{Compound distinctiveness / Familiarity}} = 0.099 \pm 0.180$
$t(100) = 5.216$, p < 0.001, $d = 0.519$, 95% CI: [0.310, 0.726]

At the individual rater level, the association between familiarity and distinctiveness is also larger when full images are used than when judgments on isolated parts are compounded.

Implications & Limitation

- Facial features that are the most diagnostic of individual identity might receive more representational weight (Devue et al., 2021), which may in turn enhance their perceptual salience/perceived distinctiveness with repeated exposure.

- Using ratings of isolated features helps mitigate the illusion of distinctiveness in familiar faces.

- Distinctiveness can also concern spatial relationships between facial features, which was not fully assessed here.

References

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