Peer J Review of Familiar Face + Novel Face = Familiar Face? Morphed Face Recognition in Chimpanzees

The authors were interested in investigating chimpanzees' abilities to distinguish between novel faces, familiar faces, and intermediate faces (50% familiar face and 50% novel face). The question they sought to address was how chimps would react to faces that resembled a familiar individual, but were still novel in nature. They predicted three possible behavioral outcomes when viewing the intermediate faces: 1) they might react similarly to human adults and treat the intermediate faces like familiar faces; 2) they could react with a bias towards the novel aspects in the intermediate face, treating them like novel faces; or 3) closer to the reactions of human infants, they could recognize the familiarity in the intermediate face, but react with less interest due to it not being close enough to the familiar face. This research could lead to a better understanding of how facial recognition has evolved in primates.

A preferential looking paradigm (with an eye-tracker) was used to measure the differences in fixation count (frequency they looked at the faces), fixation duration (how long they spent looking at a face), and saccade length (how thoroughly they scan the face). They presented the eight chimps with four pairs of stimuli: 1) familiar versus novel faces, 2) familiar versus intermediate faces, 3) novel versus intermediate faces, and 4) novel versus morphed faces of two novel chimps. The fourth condition was added to test for the possibility of detecting the morphed features in the intermediate faces (a confound they ruled out with testing showing they did not recognize the morphed features in the morphed faces). The chimps were shown each pair for sixty seconds. No face was shown more than once to prevent any learning effects. They found support for the first behavioral outcome as the chimps treated both the familiar and

intermediate faces in the same way, only reacting differently to the novel faces. These results tie back to work done with adult humans showing “a bias in favor of a feeling-of-familiarity” when presented with a face that resembles someone who is familiar to you.

The summary and introduction are clearly written and the introduction provides a clear, well-informed conceptual path to the methods section. The question under study is well-constructed based on previous knowledge in the field. I find it important that the authors point out the ability of the facial morphing software to allow for various ranges of similarity between images due to the fact that, as they point out, chimps have been shown to be sensitive to category boundaries – too familiar and they can tell, too novel and they can also tell. They, for lack of a better description, appear to have found the “Goldilocks point” in this study, using 50% familiar and 50% novel faces. The introduction also clearly justifies the methods utilized.

The methods are clear, providing detailed, yet concisely written, descriptions of all aspects of the study. I especially appreciate the detail provided regarding the nature of the stimuli and the control techniques utilized to build the test sets. The authors address the possible methodological concern of three of participants’ faces being used as stimuli, discussing EEG studies showing no differences in reactions to familiar faces and their own faces. Overall, I am impressed by the degree of control exerted by the authors in their methodology.

The data analyses appear to be appropriate for the data and are explained well. The figures are informative, clearly present the results, and are, overall, nicely done. The results are presented in a concise, informative manner. All the conclusions drawn appear to be valid based on the results of the data analyses. The discussion clearly supports the results and relates back to the literature in a logical and appropriate manner. Overall, the manuscript is carefully and clearly written, making sure to connect findings to previous work and not draw over-arching conclusions

in terms of comparisons with results in human infants. Too many researchers in our field (broadly speaking, comparative psychology) draw comparisons between their work and results with other species without considering the methodological, ontological, evolutionary, and cognitive differences that could be present. These authors took these possibilities into consideration while discussing their conclusions, indicating an understanding of the pitfalls of drawing comparisons when too many factors are left uncontrolled.

It is the recommendation of this reviewer that the article be accepted for publication as submitted.

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