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LAST BUT NOT LEAST

Famous faces as icons. The illusion of being an expert in the recognition of famous faces

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Abstract. It is a common belief that we are experts in the processing of famous faces. Although our ability to quickly and accurately recognise pictures of famous faces is quite impressive, we might not really process famous faces as faces per se, but as 'icons' or famous still pictures of famous faces. This assumption was tested in two parallel experiments employing a recognition task on famous, but personally unfamiliar, and on personally familiar faces. Both tests included (a) original, 'iconic' pictures, (b) slightly modified versions of familiar pictures, and (c) rather unfamiliar pictures of familiar persons. Participants ($n = 70 + 70$) indeed recognised original pictures of famous and personally familiar people very accurately, while performing poorly in recognising slightly modified, as well as unfamiliar versions of famous, but not personally familiar persons. These results indicate that the successful processing of famous faces may depend on icons imbued in society but not on the face as such.

When looking at the famous picture of Che Guevara (figure 1) most of us have the immediate feeling of knowing Che's face very well. This feeling emerges from thousands of encounters with this picture, which is in fact a well-established icon nowadays. In this article, this feeling is revealed to be an illusion. Although it is obvious that we can recognise familiar portraits of famous people very fast and very accurately, this impressive performance should not be interpreted as expert face processing, but as 'iconic processing'. The term 'iconic processing' will be used to stress this simple and shallow mode of processing, which is for the most part pictorially rather than structurally based.

Face research has proven that humans are, despite exceptions due to prosopagnosia (Behrmann and Avidan 2005; Carbon et al 2007a; Grüter et al 2008), 'experts' (Schwaninger et al 2003) or at least 'specialists' (McKone et al 2007) in the processing of faces familiar to them. This can be shown by various data: for example, strong memories for familiar faces even after 50 years (Bahrick et al 1975), fast and accurate processing of briefly presented familiar faces (Carbon and Leder 2005), and impressive abilities of matching familiar faces even under very restricted quality conditions (Bruce et al 2001). The recognition (Burton et al 1999) and matching (Bruce et al 2001) of faces not familiar to us is, in contrast, much harder, if not impossible, in some cases (for an overview see Hancock et al 2000).

Yet, beside personally familiar and unfamiliar faces, we frequently process another class of faces: famous facial pictures. Concerning the latter, there is an interesting dissociation between the face itself and the picture portraying such a face. These depictions are highly familiar to us as pictures, whereas the real faces or the actual individuals behind the pictures are not. Such pictures will be encountered multiple if not thousands of times by the beholders over a lifespan. Pop icons, TV and movie stars, politicians, super models (all used in Carbon et al 2007b), and famous paintings such as the Mona Lisa (Carbon and Leder 2006a) are typical representatives of this class. For face researchers, the following question is quite essential: do we process faces that we have never encountered on a personal basis on an expert level as a result

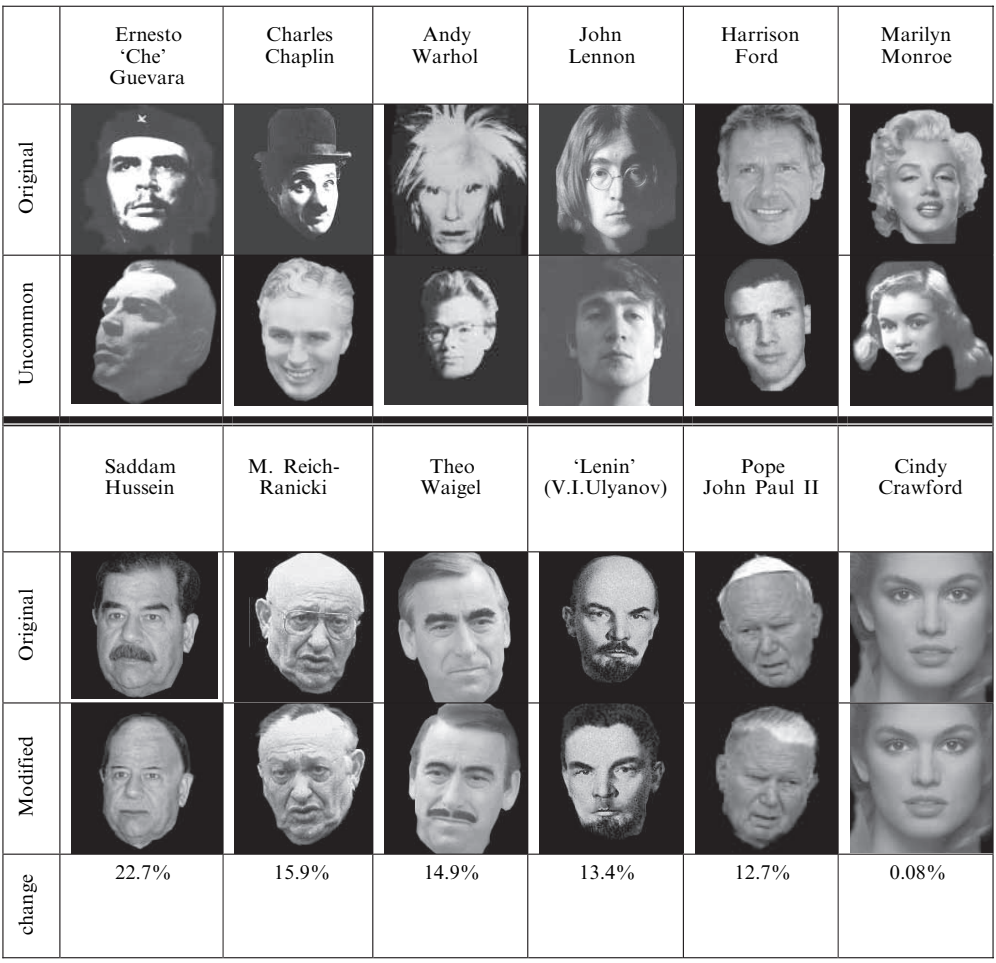

Figure 1. Stimuli of famous persons used in experiment 1. The upper two rows show original, 'iconic' versions plus uncommon versions from eras less known to typical test persons in German-speaking countries; the lower two rows show original, 'iconic' versions plus the modified versions of them (with the percentage of total change shown at the bottom).

of the high frequency of exposure, or do we only refer to the icons of these faces. In the case of icon-based processing, the performance in recognition tasks should break down once famous pictures are altered in a way that makes them atypical compared with the well-established popular portrayals.

Back to Ernesto 'Che' Guevara: in figure 1 we can see one of the presumably best-known 'icons' of the 20th century, shot by photographer Alberto Korda in 1960. Compared with this famous picture, the alternative Che face is far less known. This can be illustrated with the picture in figure 1, in the row below the famous version, portraying him in an unfamiliar pose. Simply by adapting his hairstyle and gesture to that of a typical businessman, Guevara easily managed to travel incognito to South America despite his worldwide fame (Anderson 1997).

Even though we fall for the illusion of knowing Che's face very well, we are not able to recognise him in this portrait, mainly because it deviates too much from the iconic representation we have in mind. In addition, owing to the complexity of the given task, direct pictorial evaluation, which involves analytical strategies, is ineffective. Only familiarity with this picture, given his identity, would successfully integrate this idiosyncratic

version of his face into the associative network of Guevara, and thus would enable us to recognise him from resembling pictures in the future. Similar examples of problematic identification of famous persons by uncommon pictures of these persons from different eras in which they were not so famous can be found in the top two rows of figure 1. For example, the actress Marilyn Monroe is typically shown with platinum-blonde hair, a beauty spot on her left side, heavy usage of mascara, and a lascivious look. Although we know various versions of these iconic portraits of Marilyn, we find it rather difficult to recognise her in an ordinary photograph, depicting her in a more natural way without (accentuating or emphasising) her iconic attributes.

Iconic processing of famous faces can also be demonstrated by simple modifications of very famous 'iconic' versions. Such versions, in which only attributes were changed, which could easily be done by a barber or a make-up artist within minutes, are hardly identifiable as being of familiar faces (see bottom row in figure 1).

Based on these ideas, the following hypothesis is proposed: the ability of humans to identify familiar persons by portraits is hardly corruptible by presenting unknown or modified photographic versions (pictures which originate from eras that beholders are not familiar with, and pictures which have been manipulated, respectively)—but only if these persons are personally familiar to the beholder. If these persons are famous, but not personally familiar to the beholder, this impressive ability is lost, as pictures of such persons are processed like 'icons', which are quite rigid and rather limited in respect to their memory representations.

To test this hypothesis experimentally, pictures of famous (experiment 1) and of personally familiar persons (experiment 2) were selected. For the pool of famous faces, highly familiar faces, in terms of German standards, from the press, TV, and the cinema were chosen. Beside the famous face pool, a pool of personally familiar faces was created. To ensure high rates of familiarity with simultaneous consideration of sets of identical pictures across participants, face images of personally familiar persons could not be recruited on an idiosyncratic basis (eg from participants' families or friends). As an alternative approach, personally-familiar-face images were gathered from university lecturers teaching courses and lectures in which the participants were typically involved. Pictures of both face pools were put in three different sets: (a) original: highly familiar pictures of (potentially) familiar persons, (b) modified: slightly modified versions of the original versions (modifications to famous and personally familiar faces were carried out to a comparable degree), (c) uncommon: uncommon pictures of familiar persons (eg from an unknown/unfamiliar era of these persons) (figure 2).

Each pool of familiar faces consisted of 12 original, 6 modified, and 6 uncommon pictures. The modified versions were slightly modified by changing distinctive attributes that could also realistically occur in real life (eg changes in hairstyle; changes in the style of the moustache; omitting a characteristic head cover, for instance the Pope without his 'Pileolus'; removing Cindy Crawford's beauty spot). To assure comparability between famous and personally familiar face manipulations, modifications to the personally familiar face set were made by carrying out a similar degree of pictorial changes. Therefore, the pictorial difference, defined by the number of pixels resulting from the different pictures of original and modified versions, was held nearly constant across both stimulus sets. A comparison between the average number of pixels changed in the famous face set ($M = 13.27\%$) and the personally familiar set ($M = 16.07\%$) revealed no significant differences (two-tailed t-test: $t_5 = 2.1$, $p = 0.089$, ns). For the uncommon face set, pictures that are commonly not as popular and well-known were used. For each experiment (experiment 1 dealt with famous faces, experiment 2 with personally familiar faces), 24 additional photographs of 24 unfamiliar individuals (unknown) were included, yielding a sum of 48 pictures per experiment altogether.

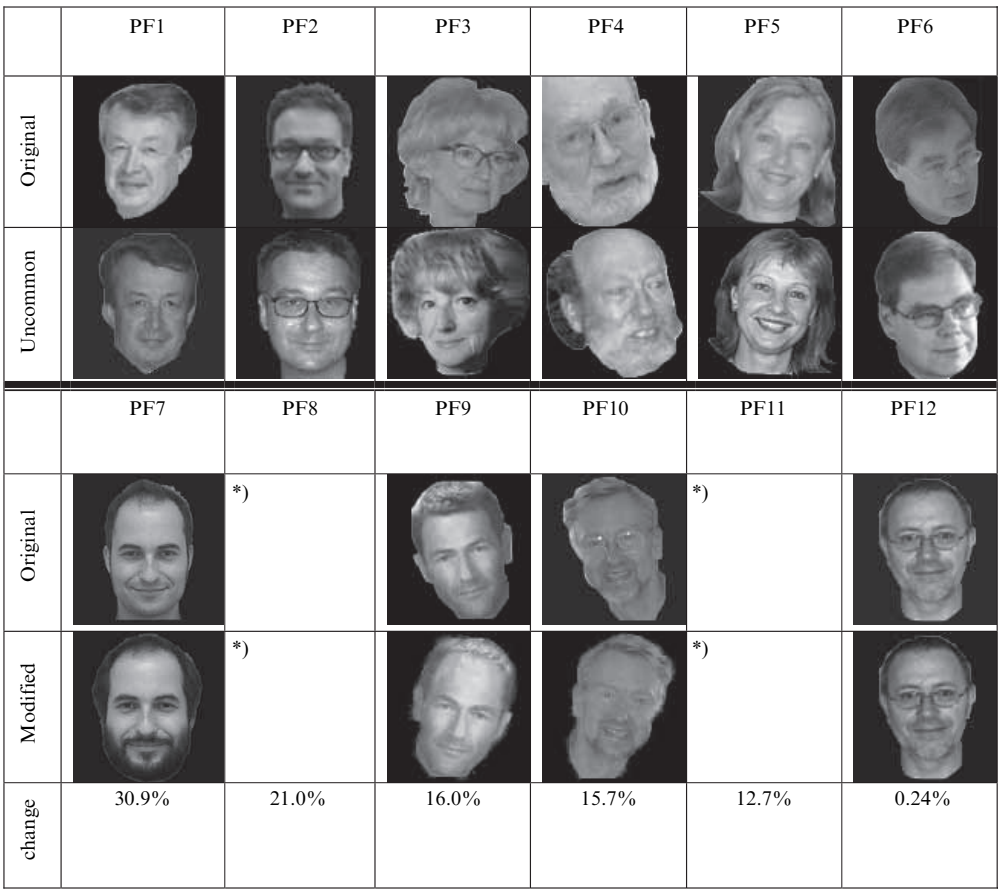

Figure 2. Stimuli of personally familiar (PF) persons used in experiment 2. The upper two rows show original, 'iconic' versions plus uncommon versions from eras less known to typical students at the Faculty of Psychology/University of Vienna; the lower two rows show original, 'iconic' versions plus the modified version of them (with the percentage of total change shown at the bottom).

In both experiments, pictures from both face pools were assigned to two different face blocks: an original + distractor block (OD) including 12 original pictures plus 12 distractors and a modified/uncommon + distractor block› (MUD) including 6 modified and 6 uncommon pictures plus 12 alternative distractors.

In each experiment, 70 participants took part (experiment 1: 54 female; mean age: 22.7 years; experiment 2: 55 female; mean age 23.1 years); none of the participants of experiment 2 participated in experiment 1. Each of the participants was tested individually by presenting the pictures in a random order within each block and counterbalancing the order of blocks (OD → MUD, MUD → OD) across participants. For each picture, the participants first had to make two yes–no familiarity decisions; if the person was familiar to them, they were asked to name the person (recognition task).

Data of the recognition task will be analysed below. Note that the participants had to name the target persons, so the base rate of the recognition task was 0%. To test differential effects of type of familiarity (famous versus personally familiar) on the recognition of different face sets (uncommon, modified, original), an overall ANOVA integrating both experiments was conducted as a mixed-design with the between-subjects factor experiment (famous versus personally familiar) and the within-subjects

factor facial set (uncommon, modified, original). The dependent variable was recognition performance (percentage of correctly identified faces in the recognition task).

There was a significant main effect of facial set ($F_{1,138} = 266.9$, $p < 0.0001$, $\eta_p^2 = 0.727$), qualified by an interaction between experiment and facial set ($F_{1,138} = 239.7$, $p < 0.0001$, $\eta_p^2 = 0.635$). The interaction, further analysed by testing simple main effects of facial set for both experiment levels, showed a very small effect of facial set for personally familiar faces ($\eta_p^2 = 0.053$), but a very large effect for famous faces ($\eta_p^2 = 0.837$) (Cohen 1988).

Although participants' recognition performance of famous portraits (original) of famous persons was quite impressive, this efficient processing turned out to be highly penetrable by using less-known or slightly modified versions (see figure 3). This is even more astonishing as some of the modifications to the pictures were rather minimal (in Cindy Crawford's case, only the beauty spot was omitted which accounts for a pictorial change of only 0.08% of the whole image area); nevertheless, all of these changes resulted in significantly lower recognition rates. When participants had to assess familiarity of uncommon versions that depicted famous faces in an uncommon way, performance decreased even more.

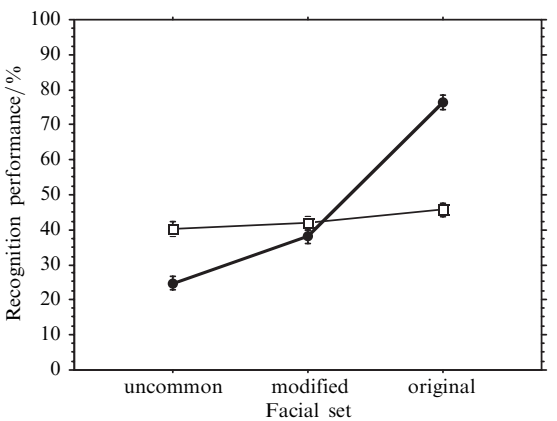

Figure 3. Recognition performance (correctly naming the target person) split by experiment, ie type of familiarity (experiment 1: famous faces; experiment 2: personally familiar faces), and facial set (uncommon, modified, original). Error bars indicate 95% confidence intervals of the two-way interaction between these two factors according to Loftus and Masson (1994).

When the participants were confronted with pictures of personally familiar faces, recognition performance was much more robust. Neither modifications to the pictures nor presentation of uncommon versions decreased performance in a substantial way.

In sum, these results indicate that very frequent processing of pictures of famous faces leads to fast and accurate processing of almost exclusively these pictures, without transferring 'face knowledge' to different versions depicting the same face. To conclude, humans seem to be experts in dealing with personally familiar faces and the very pictures of them, but humans have only limited 'iconic' processing skills when it comes to highly familiar pictures of famous faces which they are not personally familiar with. Dynamic cues (Lander and Chuang 2005) and multiple views (Carbon and Leder 2006b) alone do not seem to be sufficient to trigger more structural kinds of processing which enable nonrigid and robust processing. Intense 1 : 1 observations, social interactions, and direct eye contact (Langton et al 2000) might be the basis of that type of 'face expertise', which cannot be achieved via media alone.

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