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I recognise your name but I can't remember your face: an advantage for names in recognition memory

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Abstract

Forgetting someone's name is a common failure of memory, and often occurs despite being able to recognise that person's face. This gives rise to the widespread view that memory for names is generally worse than memory for faces. However, this everyday error confounds stimulus class (faces versus names) with memory task: recognition versus recall. Here we compare memory for faces and names when both are tested in the same recognition memory framework. Contrary to the common view, we find a clear advantage for names over faces. Across three experiments we show that recognition of previously unfamiliar names exceeds recognition of previously unfamiliar faces. This advantage persists, even when the same face pictures are repeated at learning and test - a picture-memory task known to produce high levels of performance. Differential performance between names and faces disappears in recognition memory for familiar people. The results are discussed with reference to representational complexity and everyday memory errors.

Key words: name recall; face memory; face recognition

Introduction

Forgetting people's names is a commonplace cognitive error. Many of us have experienced the embarrassment of thinking 'I recognise your face, but I can't remember your name'. This phenomenon was placed clearly into the context of general person recognition in a seminal study by Young, Hay & Ellis (1985). Participants were asked to keep diary records of all their person-recognition failures, resulting in a corpus of over 900 naturally-occurring errors. Subsequent analysis revealed instances of 'familiarity only' errors in which viewers knew they recognised a person but could not access any further information (a phenomenon which has come to be known as the 'butcher on the bus', Mandler, 1980). There were also errors in which viewers recognised a person along with rich personal details but failed to recall their name. However, there were no recorded instances in which a name was recalled in the absence of other personal information. It appears that names are peculiarly hard to recall, and our everyday experience seems to be consistent with this study.

This set of findings was important in constraining later models of face recognition, which hypothesised a sequential set of decisions when recognising a face such that familiarity is established first, followed by access to personal information, and only then a name (Bruce & Young, 1986). The process can fail at any of these points. Converging evidence from a wide variety of tasks seems to confirm this sequence. For example, when viewing a face, participants are faster to retrieve information such as occupation or nationality than information about names, even when task demands are carefully controlled (e.g. Johnston & Bruce, 1990; Young, Ellis & Flude, 1988). Similarly, it is harder to learn names than other personal information about somebody, even when the same verbal labels are used. For example, it is harder to learn "Baker" as a person's surname than as a person's occupation (McWeeny, Young, Hay & Ellis, 1987). The everyday intuition that remembering names becomes harder with age has also been confirmed in a number of studies (e.g. Burke et al, 1991; Cohen & Faulkner, 1986; James, 2004, 2006).

The difficulty of name retrieval attracted considerable attention from researchers interested in person recognition in the 1980s and 1990s – for example at least two books were dedicated to the topic (Cohen, & Burke, 1993; Valentine, Brennen & Brédart, 1996). A number of different theoretical proposals were made to account for these effects (e.g. Burton & Bruce, 1992; Cohen, 1990; Craigie & Hanley, 1993; Semenza & Zettin, 1988). However, none of these were without problems, and interest in the topic waned to some extent. While there have been some papers addressing the relationship between names and faces more recently, they have tended to focus on the integration of visual and symbolic representations (e.g. Gordon & Tanaka, 2011; Schwartz & Yovel, 2016) or on competition between candidate names (Deffler, Fox, Ogle & Rubin, 2016).

In this paper we return to the original problem underlying the phenomenon that 'I recognise your face but I can't remember your name'. Our experience of this phenomenon draws a contrast between memory for faces and memory for names, and common sense seems to tell us that one is generally easier than the other.

Here we suggest a different possibility. The stimulus classes of faces and names may not have inherently different levels of memorability. Instead, the testing characteristics usually employed may give a misleading impression. There are three aspects of the normal testing situation which suggest this. First, in typical social interactions, faces are recognised, whereas names need to be recalled. It is a fundamental property of memory that recognition is easier than recall (MacDougall, 1904) and so comparing stimulus classes across these memory tasks is an important confound. Second, in the embarrassing social situation where a name is forgotten, the face must already have been recognised. There is rarely an opportunity to recognise a name first and then fail to remember a face; instead the apparently poor memory for names is normally conditional on success in face recognition. Third, most experimental studies of face/name memory do not actually compare memory for faces and names. Despite often having titles reflecting the face/name social embarrassment, they almost always compare recall of names to recall of other personal information. While that is, of course, an interesting line of scientific enquiry, there are actually rather few studies available which make a direct comparison of stimulus classes. (Though see Craigie and Hanley, 1997, a study to which we return in the General Discussion).

In the following three experiments, we compare memory for faces and names directly. In each case we ask participants to engage in recognition memory tasks for faces and names, in a way that equates demand characteristics across conditions. To anticipate our results, these experiments show the converse of the typically-reported phenomenon. In a fair test, participants found it easier to remember the names than the faces of newly learned people.

Experiment 1

Introduction

In this first experiment we asked participants to view 40 unfamiliar face-name pairs. In a second phase we tested recognition memory separately for the faces and names. To separate effects of image memory, we also manipulated whether the test items were identical (same face photo or same-case name) or changed (different photo or different-case name).

Method

Participants

Twenty four participants (19 female; 5 male) with a mean age of 21 years (SD = 3, Range = 18-30) were recruited from the University of York Department of Psychology. All participants were naïve to the purpose of the study and received a course credit or monetary payment for their participation. The study was approved by the ethics committee of the Psychology Department at the University of York.

Stimuli

Two photos of 80 identities (40 Male/40 Female) were selected from the Glasgow Face Matching Test (Burton, White & McNeill, 2010). For each identity the two photos had been taken in the same sitting, in front-facing pose, but with different cameras. All images were presented in colour at a standard size of 350 x 270 pixels.

To generate realistic name stimuli, a set of 80 unfamiliar names (40 Male/40 Female) were selected from lists of students who had graduated from the University of York eight years prior to the experiment. This ensured name selection from a similar population to the participants.

A single face-name pair was presented on each trial in the learning task. The pairs were presented at the centre of the screen and set on a white background. Each name (first name and surname) was presented in black, Arial Narrow font, point size 72, and was positioned 10cm below the face photo (see Figure 1). All stimuli were presented on a 12-inch Hewlett Packard laptop using E-Prime 2.0.

Procedure

At the start of the task, participants were told that they would be shown a series of unfamiliar people comprising a photo of each person's face along with their name. Participants were asked to try to remember each of the people and to ensure that they memorise both the individual's face *and* their name, as a memory test would follow. Each participant was then shown 40 unfamiliar people (20 Male/20 Female) in a random sequence. For all learning trials, images were taken with the same camera (Camera 1 from GFMT, see above), and names were written in lower case. This learning phase was self-paced.

After completing the learning task, participants were then asked to complete two recognition memory test blocks; one for faces and one for names. The face recognition test contained 80 trials. All of the 40 identities that were presented during the learning task were shown in the memory test, half of the time (20 trials) the image was identical to the learned item (i.e. learned person-same photo), and half of the time (20 trials) the image was a photo taken with a different camera (i.e. learned person-different photo). A set of 40 foil face photos from the same database were also presented in the memory test; half of the time (20 trials) the foil photos had been taken with the same camera that was used for the learned face photos, and half of the time (20 trials) the foil photos had been taken with a different camera. The 80 trials were presented in random order, and participants were asked for each item whether they had seen this person in the learning phase.

The name recognition test mirrored the face recognition test procedure. There were 80 name recognition memory trials. All of the 40 names that were presented in the learning task were presented in the memory test, half of the time (20 trials) the name was presented in the same case as it was shown at learning (lower case) and half of the time (20 trials) the name was shown in a different case (upper case). A set of 40 foil names were also presented in the memory test, half in lower- and half in upper-case.

Learning trials were self-paced, and participants responded by button-press. The order of presentation of the face and name recognition test blocks was counterbalanced across participants. Counter-balancing stimulus sets ensured that, across the experiment each face and name was seen equally often as a target or foil identity.

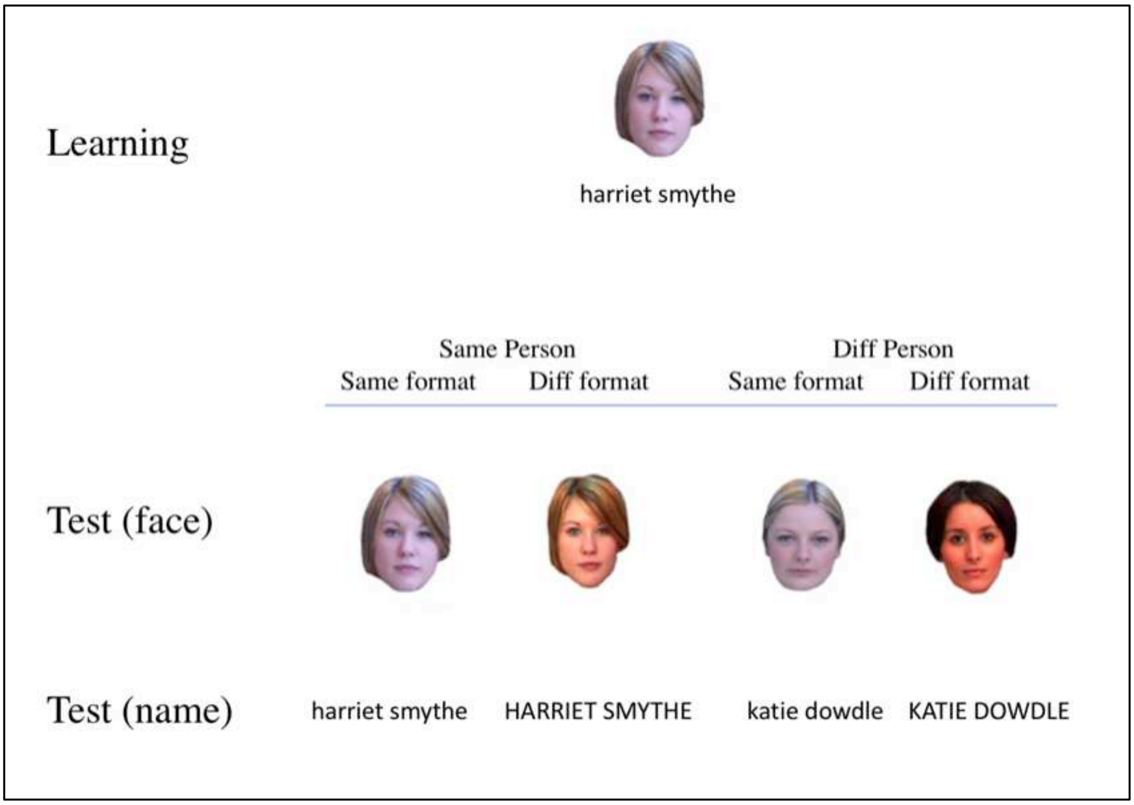

Figure 1 Example of a learning item and test items for each condition of Experiment 1.

Results and Discussion

Mean accuracy rates for faces were 73% and 64% (same and different photo respectively). For names, mean accuracy rates were 85% and 83% (same and different cases, respectively). Mean detection sensitivity (d') and criterion (C) scores are shown in figure 2. A 2x2 (stimulus type: face/name; stimulus format: same/different) repeated measures ANOVA was conducted for detection measures.

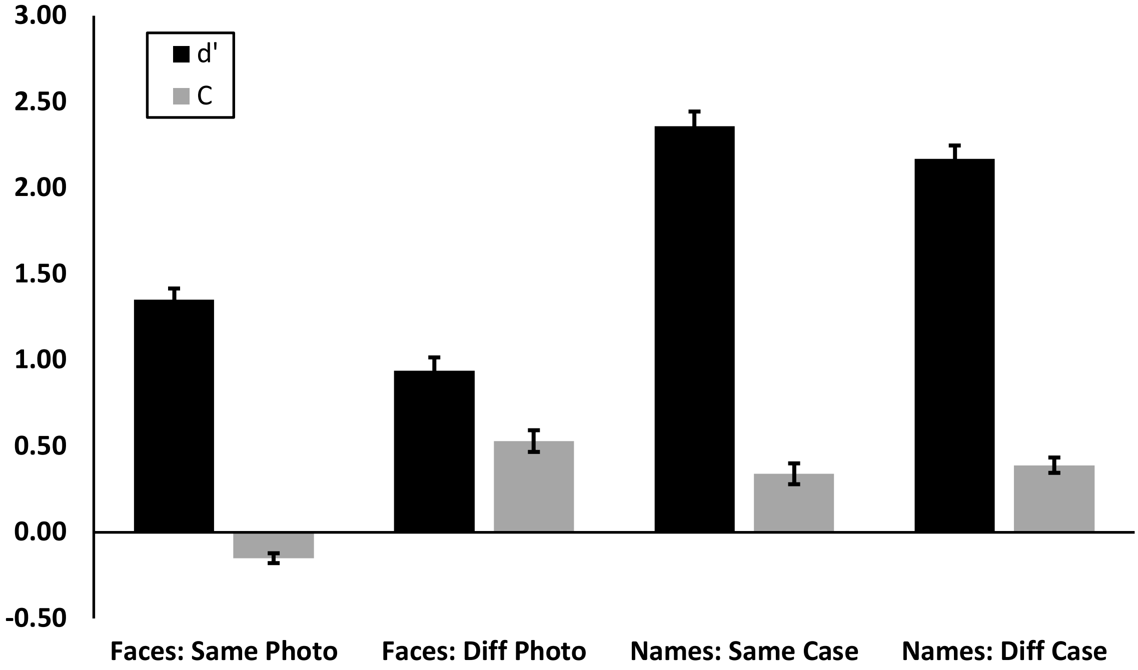

Figure 2. Mean detection sensitivity (d') and criterion (C) by condition for Experiment 1 (unfamiliar faces and names learned together). Error bars represent 95% confidence intervals, within subjects (Coustineau, 2005).

Detection Sensitivity (d'): ANOVA revealed significant main effects of stimulus type ($F(1, 23) = 139.5$, $p < 0.001$, $\eta_p^2 = .86$) and stimulus format ($F(1, 23) = 14.5$, $p < 0.001$, $\eta_p^2 = .39$), but no significant interaction ($F(1, 23) = 1.7$, $p = 0.21$, $\eta_p^2 = .07$). Name recognition was reliably better than face recognition and there was, unsurprisingly, a recognition advantage for unchanged over changed format.

Criterion C: ANOVA revealed significant main effects of stimulus type ($F(1, 23) = 6.3$, $p < 0.01$, $\eta_p^2 = .21$) and stimulus format ($F(1, 23) = 50.4$, $p < 0.001$, $\eta_p^2 = .69$), which were qualified by a significant interaction ($F(1, 23) = 53.5$, $p < 0.001$, $\eta_p^2 = .70$). Simple main effects showed no effect of changing case for names ($F < 1$), but a significant shift in criterion between same and different photo format ($F(1,46) = 102.9$, $p < 0.001$, $\eta_p^2 = .69$).

These results show better recognition memory for names than faces. There was also an effect of same/different stimulus format: information presented in the same format at learning and test was better recognised than information which had changed format. This latter effect is completely predictable, but it is interesting to observe it in the context of the face/name comparison. Note that image recognition memory is generally held to be excellent (Brady, Konkle & Alvarez, 2011; Standing, 1973). Despite this, recognition of the identical face image from learning to test phases was considerably worse than name recognition – even when the name was presented in changed case.

This result is perhaps somewhat surprising. When demand characteristics are equated, we see no evidence here that viewers are better at recognising faces than names – in fact there is strong evidence for the converse pattern. However, before concluding that these two classes of stimulus have inherently different memorability, we should note that the learning phase here required participants to learn faces and names together. It is possible that viewers chose selectively to focus on one of these two aspects of each learning item. For this reason, in the next experiment we present viewers with names or faces only, and examine recognition memory for each category separately.

Experiment 2

Introduction

In this experiment we used the same recognition memory method as in Experiment 1, with the exception that participants now took part in two blocks, one each for name and face learning. This eliminates any effect of learning face/name pairs on memory performance, and allows us to establish the memorability of faces and names in isolation.

Method

Participants

Twenty four participants (21 female, 3 male) with a mean age of 21 years (SD = 3, Range = 18-30) were recruited from the University of York Department of Psychology. All participants were naïve to the purpose of the study and received a course credit or monetary payment for their participation. The study was approved by the ethics committee of the Psychology Department at the University of York.

Stimuli and Procedure

The name and face stimuli were identical to those reported in Experiment 1. However, each learning item now comprised only a face or a name. Participants completed a names block (learning followed by test) and a faces block (learning followed by test). The order in which these blocks were completed was counter-balanced across the experiment. Furthermore, participants were not alerted to the fact that they would be completing two blocks at the start of the experiment, so those initially asked to remember names did not expect a subsequent face block, and *vice versa*.

Results and Discussion

Mean accuracy rates for faces were 76% and 67% (same and different photo respectively. For names, mean accuracy rates were 89% and 86% (same and different cases, respectively). Mean detection sensitivity (d') and criterion (C) scores are shown in figure 3. A 2x2 (stimulus type: face/name; stimulus format: same/different) repeated measures ANOVA was conducted for detection measures.

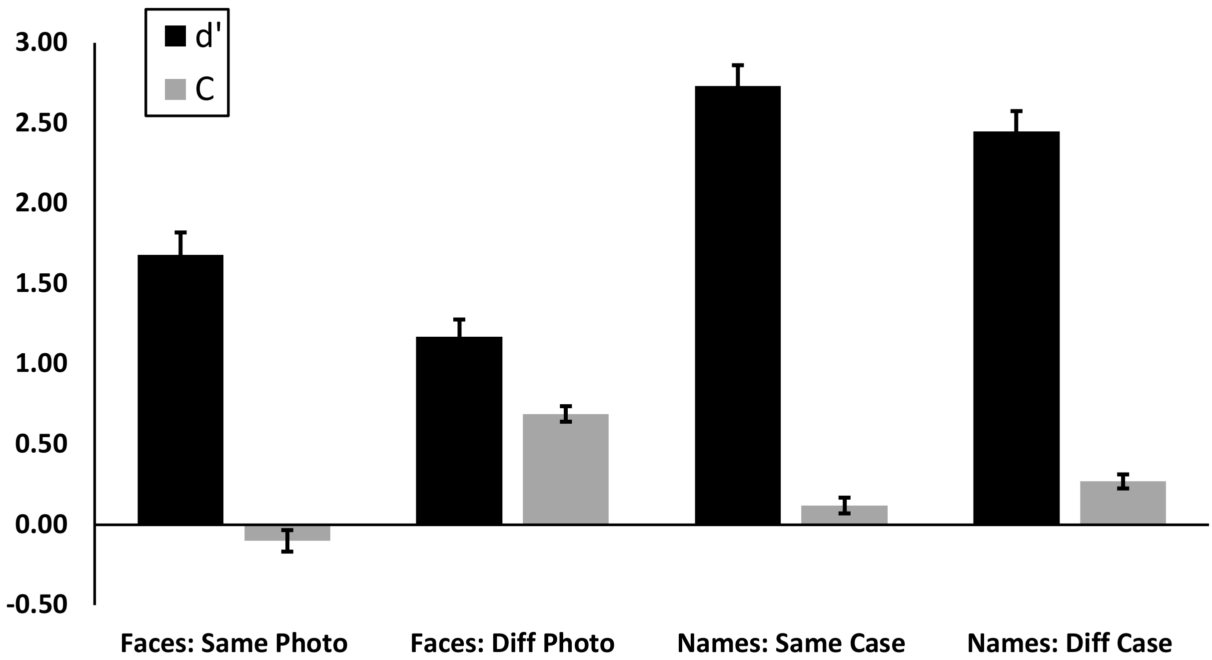

Figure 3. Mean detection sensitivity (d') and criterion (C) by condition for Experiment 2 (unfamiliar faces and names learned separately). Error bars represent 95% confidence intervals, within subjects (Coustineau, 2005).

Detection Sensitivity (d'): ANOVA revealed significant main effects of stimulus type ($F(1, 23) = 40.0$, $p < 0.001$, $\eta_p^2 = .64$) and stimulus format ($F(1, 23) = 14.9$, $p = 0.001$, $\eta_p^2 = .39$) but no significant interaction ($F < 1$). As in Experiment 1, name recognition was reliably better than face recognition, and there was an advantage for unchanged over changed format.

Criterion C: ANOVA revealed a significant main effect of stimulus format ($F(1, 23) = 60.3$, $p < 0.001$, $\eta_p^2 = .72$) but not stimulus type ($F(1, 23) = 2.6$, $p = 0.12$, $\eta_p^2 = .10$). These were qualified by a significant interaction ($F(1, 23) = 42.8$, $p < 0.001$, $\eta_p^2 = .65$). Simple main effects showed no effect of changing case for names ($F(1,46) = 3.8$, $p > 0.05$, $\eta_p^2 = .08$), but a significant shift in criterion between same and different photo format ($F(1,46) = 103.0$, $p < 0.001$, $\eta_p^2 = .69$).

These results are almost identical to Experiment 1 (compare figures 2 and 3). Once again, we observe a significant advantage for name recognition over face recognition, along with a predictable cost of changing format. However, once again, memory for a specific face image, while good, was nevertheless poorer than memory for a name. Before discussing the implications of this, we will describe a final experiment, in which we use familiar rather than unfamiliar faces – a manipulation which we expect to remove the advantage for name over face recognition.

Experiment 3

Introduction

Experiments 1 and 2 each show a clear recognition memory advantage for names over faces. In both experiments we used names and faces that were previously unfamiliar to participants. It is very well established that recognition memory for unfamiliar faces is poorer than recognition memory for familiar faces (e.g. Bruce, 1986; Klatzky & Forrest, 1984). Furthermore, changes in expression, lighting or viewpoint between learning and test is much more damaging to recognition of unfamiliar than familiar faces (Hill & Bruce, 1996; O'Toole, Edelman & Bülthoff, 1998). This effect is clearly visible in figures 2 and 3, in which changing photos results in poorer recognition. A change in case for names, by contrast, does not introduce such large detriment in memory for name, and we will return to this difference in the General Discussion.

In this final experiment, we ask whether recognition memory for faces and names differs for familiar identities. On the basis of previous research, we would expect that changing photo between learning and test would have rather little effect on face memory. However, the comparison between memory for faces and for names is not one which is typically made, and so it is important to establish whether the pattern observed with unfamiliar faces generalises familiar faces.

Method

Participants

Twenty six participants were recruited from the University of York, Department of Psychology. Five of these participants were excluded from the sample as they were familiar with fewer than 50% of the celebrity identities in the task. Therefore, the final sample consisted of twenty one participants (17 female, 4 male) with a mean age of 22 years (SD = 5, Range = 18-41). All participants were naïve to the purpose of the study and received a course credit or monetary payment for their participation. The study was approved by the ethics committee of the Psychology Department at the University of York.

Stimuli, Apparatus and Procedure

Two photos of 80 celebrity identities (40 Male/40 Female) were selected from a Google Image search. The images were presented in colour and were standardised to a height of 350 pixels. Each celebrity's photo was paired with their name and shown in the same location, font and size as described for the unfamiliar identities used in Experiment 1. All images were again presented on a 12 inch Hewlett Packard laptop using E-Prime 2.0.

The procedure for this experiment was identical to that described for Experiment 1. Participants were initially told to remember the set of consecutively presented celebrities and to ensure they focused on learning both the face *and* the name, as there would be a memory test at the end of the task. Following the face and name recognition memory tests, participants completed an additional familiarity check for each celebrity. As in Experiment's

1 and 2, all names were presented in lower case during learning, and the task was counterbalanced in an identical manner to that described in Experiment 1.

Results and Discussion

Following the celebrity familiarity check, recognition responses for celebrities unfamiliar to participants were removed from the data set regardless of whether they had been presented in the learning task or as a foil. In fact, celebrities were well-known across the experiment, with only 8.8% of trials being removed following the familiarity check.

Mean accuracy rates for faces were 88% and 85% (same and different photo respectively. For names, mean accuracy rates were 89% and 90% (same and different cases, respectively). Mean detection sensitivity (d') and criterion (c) scores are shown in figure 4. A 2x2 (stimulus type: face/name; stimulus format: same/different) repeated measures ANOVA was conducted for each measure.

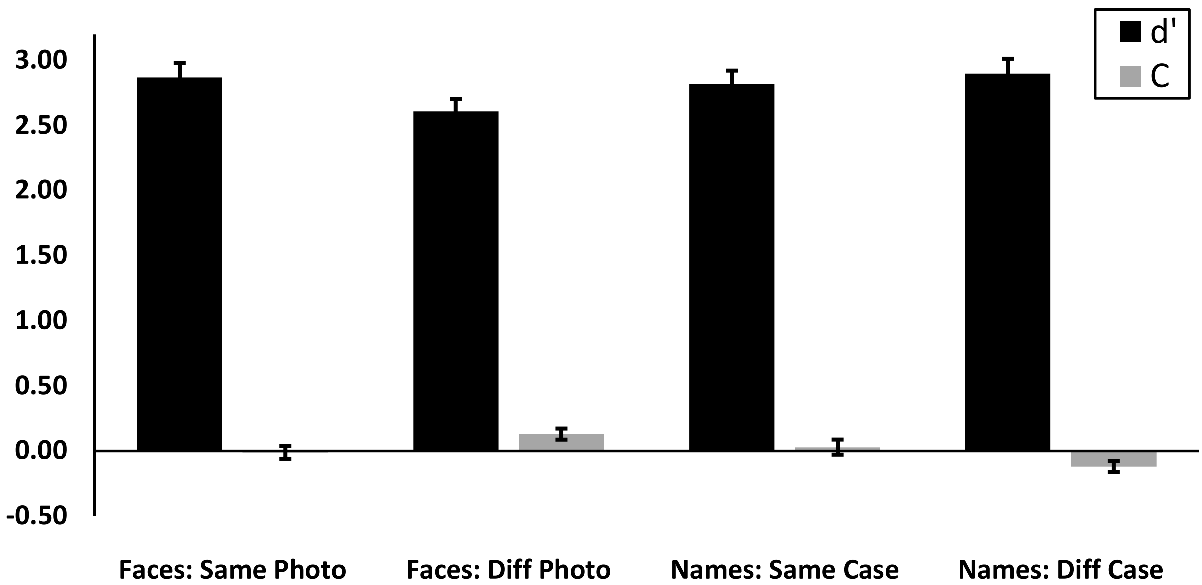

Figure 4 Mean detection sensitivity (d') and criterion (C) by condition for Experiment 3 (familiar faces and names learned together). Error bars represent 95% confidence intervals, within subjects (Coustineau, 2005).

Detection Sensitivity (d'): The ANOVA on detection sensitivity (d') scores revealed no main effect of recognition type or test item (both *F's* < 1), and no interaction ($F(1, 20) = 2.9$, $p = 0.11, \eta_p^2 = .13$).

Criterion C: The ANOVA on criterion (*c*) scores revealed no main effect of stimulus type ($F(1, 20) = 3.0, p = 0.1, \eta_p^2 = .13$) or stimulus format ($F < 1$). However, there was a significant interaction, $F(1, 20) = 10.0, p < 0.01, \eta_p^2 = .33$. Simple main effects showed an effect of changing case for names ($F(1,40) = 4.2$, $p < 0.05$, $\eta_p^2 = .09$), but no shift in criterion between same and different photo format ($F(1,40) = 3.1$, $p > 0.05, \eta_p^2 = .07$).

These results show very high performance levels, consistent with previous work on familiar person recognition. As predicted, the change in photo from learning to test phases produced no reliable reduction in recognition. Furthermore, the names and faces were recognised equally accurately. This suggests that the advantage for name recognition over face recognition observed in previous experiments is an effect limited to unfamiliar faces.

General Discussion

Our results show a clear recognition memory advantage for names over faces when these depict unfamiliar people – an effect which disappears for familiar people. What underlies these differences, and how do they relate to the general view that memory for faces is better than for names? As we noted in the introduction, typical comparisons of face and name memory confound recognition and recall. So, someone saying "I'm poor with people's names, but good with their faces" might more properly claim "I'm poor with recall but good with recognition". This second statement would, of course, be entirely unsurprising to any psychologist.

In the experiments reported here, we have unconfounded stimulus class (names/faces) from type of memory (recognition/recall) by testing recognition memory throughout. It is convenient to use recognition as we commonly recognise both forms of stimulus, for example when reading a newspaper. Recall, on the other hand, is routine for names, but not so straightforward for faces. There have been some attempts to operationalise recall of face information, using imagery tasks such as "Does Bill Clinton have a beard?" (Craigie & Hanley, 1993; Valentine, Brédart, Lawson & Ward, 1991), and in these cases authors have suggested parallel name and face routes for recognition and recall of information about people (Bruce and Young, 1986; Young & Bruce, 2011). Such models are not constrained by the efficiency of particular recognition routes, and so are consistent with the results here.

The advantage for name recognition over face recognition is consistent with other research on unfamiliar face processing. Names have both visual and phonological representations, whereas unfamiliar faces present only visual information. In contrast to a familiar face, which one may be able to name, an unfamiliar face does not carry a dedicated phonological association. The power of the phonological information is clear from the evidence across all experiments that superficial case-change has no effect at all on name recognition, either for familiar or unfamiliar names.

The contrast between familiar and unfamiliar faces is interesting. Whereas one can retrieve names and other personal information about a familiar face, the absence of this non-visual information seems to reduce recognition memory in experiments 1 and 2 – even in the case of repeated images at learning and test. The cost of changing photos of unfamiliar faces lends support to the notion that these are represented, to a large extent, at a superficial pictorial level (Hancock, Bruce & Burton, 2000; Burton, 2013; Megreya & Burton, 2006).

Could there be a more superficial explanation for our results? In particular, is there some characteristic of the stimulus sets which leads to an advantage for names over faces? One problem here is issue of stimulus similarity: It is difficult formally to equate the inter-stimulus similarity in a set of faces and a set of names. However, we note that all the faces and all the names used here were those of students – not stimuli contrived for experimental purposes. The faces and names were each drawn from within a single student-cohort, and so if the results reflect within-class similarities, then these are real world contingencies rather than experimentally-induced effects.

In fact, one of the few previous studies comparing memory for names and faces using a common test also suggests that faces are not necessarily easier to remember than names (Craigie and Hanley, 1997). These authors taught viewers face-name-occupation triplets ("This is Mr Monroe. He is a builder"). They then showed three cards simultaneously, one showing all the learned faces, one the learned names and one the learned occupations. They cued recognition by pointing to one stimulus item (e.g. a particular name) and asking subjects to point to the other two (e.g. face and occupation) they had learned to associate with the cued item. When cued with an occupation, subjects were able correctly to point to associated names and faces with similar levels of accuracy. This is rather a different task from the one we have described, and used experimentally contrived surname-only descriptors (e.g. Mr Williams) rather than naturally occurring names. Furthermore, overall performance was low (about 30% accuracy for both names and faces over 18 trials). Nevertheless, it is interesting to note that in this task, there was no hint of the standard “common sense” conception that faces are harder to remember than faces.

Finally, we note that we have not addressed the problem of why it is so hard to retrieve people’s names. This problem received most attention in the 1990s, and has since become less popular with researchers (for recent reviews see Brédart, 2017; Hanley, 2011). The experiments presented in this paper do not solve the problem that people have actually studied (why is retrieving names harder than retrieving other information about a person), but they do resolve the problem that inspired those studies (having recognised your face, why can't I remember your name?). The reason is not a categorical change in stimuli from faces to names, but a categorical change in memory tasks from recognition to recall.

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