Naming very familiar people: When retrieving names is faster than retrieving semantic biographical information

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Naming very familiar people:

When retrieving names is faster than retrieving semantic biographical information.

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Introduction

There is converging evidence that personal names are more difficult to retrieve than semantic information about people. Experiments have shown that participants are slower to name familiar faces than they are to categorise the same faces with respect to occupation (Kampf, Nachson, & Babkoff, 2002; Sergent, 1986; Young, McWeeny, Ellis, & Hay, 1986). Response latencies are slower in a name classification task [e.g. Is the person's first name Michael or not?] than a semantic classification task [e.g. Is the person a politician or not?] (Young, Ellis, & Flude, 1988). Participants are quicker to determine whether two simultaneously presented faces are those of people sharing a semantic property (e.g. occupation in Young et al., 1988; nationality and dead/alive decisions in Johnston & Bruce, 1990) than those of people sharing the same first name.

Besides these mental chronometry studies, participants find it harder to learn people's names than other information about them (Cohen, 1990; Cohen & Faulkner, 1986). This result is obtained even when the *words* learned are the same: it is more difficult to learn that someone is called "Baker" than to learn that someone is a baker (McWeeny, Young, Hay, & Ellis, 1987). Participants in studies of everyday person recognition commonly reported incidents in which they were unable to retrieve a person's name, even though they could recall biographical information (Young, Hay, & Ellis, 1985). However, no participant reported the reverse problem, in which a person's name could be recalled without any semantic information. The same result was obtained in a laboratory version of this observational study (Hanley & Cowell, 1988; Hay, Young, & Ellis, 1991).

Several explanations have been proposed for the difficulties with name retrieval relative to other biographical information. In the Bruce and Young (1986) model, name retrieval takes place in a separate processing stage that follows, and is contingent upon, the

retrieval of semantic information about the person. Therefore, the relative difficulty of name retrieval is the consequence of a serial architecture. Burton and Bruce (1992) proposed that names and semantic information can be accessed in parallel. Their model consists of an Interactive Activation and Competition (IAC) network that includes three kinds of units: Face Recognition Units (FRUs), Person Identity Nodes (PINs) and Semantic Information Units (SIUs). FRUs contain structural descriptions of faces. PINs contain no biographical information but are simple cross-domain, modality-free gateways to semantic information and names. Finally, the pool of SIUs contain both semantic biographical information about people, and names. So, semantic information and names are stored in the same pool. In this model, the difficulty of name retrieval is the consequence of name uniqueness: whereas most semantic properties like occupation or nationality are shared by many people, names are unique to one person (see also Brédart, Valentine, Calder & Gassi, 1995; Stevenage & Lewis, 2002). The serial/parallel debate remains unresolved. However, some recent studies have presented behavioural and brain-potential evidence supporting parallel rather than serial access models (e.g. Schweinberger, Burton and Kelly, 2001; Abdel Rahman, Sommer, & Schweinberger, 2002).

Scanlan and Johnston (1997) reported that on being shown famous faces, children produced their names more quickly than the occupations, and matched the faces more quickly to names than to occupations, in a reversal of the normal pattern found with adults. Abdel Rahman, Sommer and Olada (2004) showed that children showed the normal pattern when tasks and labels familiar to them were used, and furthermore that Scanlan and Johnston's pattern was observed in adults, when relatively unfamiliar semantic facts were used in the categorisation task.

These results suggest that as far as recall of information about people is concerned, the importance of frequency and recency of use may have been underestimated in theoretical

accounts of person identification, notwithstanding the centrality of frequency in mechanisms of priming and learning in IAC models (see e.g. Burton, Bruce & Hancock, 1999). By contrast, Burke and her colleagues have stressed the importance of non-recent use and infrequent use in the occurrence of name (and word) retrieval difficulties (Burke, MacKay, Worthley & Wade, 1991; Burke, Locantore, Austin & Chae, 2004). Burke et al.'s (1991) model predicts that proper names should generally be harder to retrieve than common nouns but does not rule out the possibility that very frequently used proper names could be recalled more easily than biographical properties.

Most published studies involve celebrities, or more generally people known through the media. In everyday experience, we name famous faces less frequently than personal acquaintances. Indeed, we presumably encounter faces of close colleagues, friends or relatives much more frequently than faces of famous people. In addition, when we encounter a personal acquaintance, we often use her or his name during the interaction. Names are used to greet, to address or to call, and they are also inserted in conversations for emphasis or attention holders (Cohen, 1994). In comparison, when we encounter a famous face on a TV screen we do not need to name that person. Because we use them frequently, names of personally familiar persons might be expected to be retrieved rather easily i.e. with no more difficulty than pieces of semantic biographical information such as their occupation.

As far as we know, there is only one study (Sergent, 1986) that compared semantic categorization and naming of personally known faces. Sergent showed that graduate students were faster at classifying members of their department as being professors or non-professors than in naming these people. Although the report of this study is not very detailed, it is explained that participants had known the target persons for at least three years. However, the degree and the kind of familiarity of the target persons are not described. It is possible, for example, to know someone for several years without naming him or her regularly, and this for

several potential reasons, e.g. because we do not frequently interact with the person or because when interacting with the person we use generic terms such as Doctor, Miss or Sir. It remains an open question whether the difficulty of name retrieval holds for highly familiar persons whom we name frequently. In the present study, this question was investigated further by comparing categorisation and naming of familiar co-workers. These were all known to the participants for at least two years and interacted regularly with them, using first names.

Experiment 1

In this experiment, participants were presented with their own face and faces of close co-workers. On some trials these faces were to be named, while on the other trials, they were to be classified (vocally) with respect to an occupational feature: the person's highest academic qualification. This is a salient characteristic amongst the academic colleagues who took part in the experiment at the University of Liège. The fact that the feature is salient is critical with regard to testing serial models. This is because it is not necessary to recall all stored semantic information when naming someone. Occasionally after recalling someone's name, even if we know who the person is and why we know them, we may still struggle to retrieve some personal details (Young, Hay and Ellis, 1985). For example, seeing Nelson Mandela's face, one might name him and know that he is a symbolic figure of the fight against apartheid and was elected President of South Africa, but be temporarily unable to recall specific details, such as the name of the national organisation of which he was president, or when he received the Nobel Peace Prize. Therefore, in this experiment, naming was compared to a semantic task of particular relevance and importance to the participants.

Method

Participants

Fifteen members (8 female) of the Department of Cognitive Science of the University of Liège participated. Their ages were between 23 and 36 (mean age = 27.5 years). They had normal or corrected-to-normal vision.

Stimuli

The set of faces was tailored for each participant, such that each person saw 9 faces; their own and those of 8 close colleagues (known for at least 3 years, who shared the same office, collaborated on research or socialised with the participant). Overall, 30 different faces were used. The least used faces were presented to one participant only, the most frequently used faces were presented to 13 participants. On average each face was presented to 4.5 participants. Stimuli were full face frontal colour photographs taken using a digital camera. Photographs were cropped at 450 X 405 pixels and measured 15.9 X 14.3 cm. Models were photographed in front of the same beige wall with a neutral facial expression. Stimuli were presented on a computer monitor and responses were recorded using a voice key. The experimenter noted trials on which there were voice key failures or incorrect naming responses.

Design and Procedure

Participants were seated approximately 80 cm from the monitor. They were informed that faces of members of the Cognitive Science Department would be presented on the screen and that their task would consist of naming these faces (using the first name) on some trials or categorising them (vocally) in others: before a naming trial the cue “NAME” was presented in

the middle of the screen, while before a categorisation trial the cue "STATUS" was presented (Font Garamond 60). It was also explained that, on categorisation trials, they would have to classify the person as having a "licence" degree (degree obtained after 5 years of study), a "DEA" degree (a qualification taken after the "licence" by those who intend to engage in research or work for a doctorate), or a PhD. They were requested to respond as quickly and as accurately as possible.

Each trial started with a cue (NAME or STATUS) presented in the middle of the screen for 1500 ms followed by a fixation cross. After 500 ms the fixation cross disappeared and a portrait was displayed until the voice key was triggered by the participant's response. The interval from the participant's response to the display of the next cue was 3 sec. An initial practice phase was performed in order to train participants to produce responses which would activate the voice key appropriately. The faces used for the 6 practice trials were not used in the experimental trials. The stimulus set was presented four times in a different random order each time. Although the presentation was organised into four "blocks", the stimuli were presented as one list of 72 trials. The first block served as a further pre-experimental phase during which participants could familiarise themselves with the items (many participants were, at first, surprised and amused by our stimuli). Thus, RTs from the first block were not used in the statistical analyses that follow.

The design was 2 (*Condition: naming a semantic property vs naming the person*) X 3 (*Experimental Block*), with both factors manipulated within-subjects. The block was taken as an independent factor to assess that the pattern of results was constant across repeated presentations of the same items.

Results

Long RTs (over 2 SDs from the participant's mean), erroneous RTs and voice key failures were excluded and treated as missing data (a total of 12.7% of trials). Errors were mistakes in classifying the target person's degree as well as cases in which the participant produced the name of the target person instead of naming her/his degree, or vice-versa. There were no cases in which a wrong personal name was produced.

Table 1 shows mean RTs for correct responses. A 2 (condition) X 3 (block) ANOVA with repeated measures on both factors was carried out on these responses. This analysis revealed a main effect of the condition, $F(1,14) = 44.62$, $p<.0001$, a main effect of the block, $F(2,28) = 4.64$, $p<0.02$, but no significant interaction effect, $F <1$. The main effect of condition was due to shorter RTs in naming people than in naming their educational level. Post-hoc analyses indicated that RTs from the first block were slower than RTs from the third block. Other comparisons (Tukey HSD) between blocks revealed no significant differences.

TABLE 1 HERE PLEASE

Discussion

Results from Experiment 1 indicate that RTs for naming a very familiar person are significantly faster than RTs for naming an occupational property of that person. This pattern of results is opposite to that reported in all previous studies of familiar adult face naming (with the exception of Abdel Rahman et al., 2004). The present data represent the first demonstration in neurologically normal participants of apparently-defining semantic characteristics of people being accessed more slowly than the same people's names. There are reports of a similar phenomenon in the neuropsychological literature, e.g. Brennen, David, Fluchaire and Pellat (1996), Papagno and Muggia (1999). These patients would, on occasion,

name faces to confrontation but appeared unable to report any semantic information about the people, even in a multiple choice line-up of professions. Both patients appeared however to be aware that they did not know the celebrities personally, which might represent limited semantic access and thus could be seen as consistent with the serial model (see Hodges & Greene (1998) and Brennen (1999) for more discussion of this point). In any case, this phenomenon is different to that observed in Experiment 1 because the participants here were able rapidly to access both the appropriate semantic information and the name: They just were quicker on average to access names, and the phenomenon reported here clearly poses an explanatory problem to serial access models of face identification, e.g. Bruce and Young's (1986) model, because in such models, one would expect salient personal information to be accessed prior to names, and produce the (normally reported) disadvantage for name retrieval.

Since this is an unusual result, contrasting with rather a large literature showing the opposite pattern, it is important to replicate it. In Experiment 2 we repeat the experiment with a number of (relatively) minor changes, in order to rule out the possibility that the results of Experiment 1 are somehow artefactual. The main changes are (i) A different subject population is used, with new stimulus faces; (ii) decision type was presented in blocks; (iii) a different semantic classification (nationality) was used against which to compare naming; (iv) word reading latencies were also measured for the names and nationalities used in the study, in order to check for differences in articulation-onset time between the response words themselves.

Experiment 2

Method

Participants

Fifteen members (9 female) of the Department of Psychology at the University of Glasgow participated. All had normal or corrected to normal vision.

Stimuli

The critical stimuli were sets of 6 faces, belonging to very close colleagues of the participants. The participants and target people all shared the same workplace, had known each other for at least two years, and met every working day. (The six target people were tested as participants, but since there were no differences between these and the remaining subjects, this manipulation will not be reported further.) The forenames of the target people were: *Allan, Lesley, Mike, Rob, Beate* and *Markus*. These people were chosen on the basis that an easy nationality decision can be made for each: two are Scottish, two English and two German. This is a very salient dimension for this group of participants, and often discussed in the workplace.

Three different images of each person were used, one for each block. Stimuli were full frontal greyscale photographs, cropped to exclude background information. A set of word stimuli was also created, containing the first names and nationalities of each of the people who formed the stimulus set. Stimuli were presented on a computer monitor, against a plain black background, at a viewing distance of 60 cm. The face stimuli were approximately 9 cm in height, and the word stimuli were point size 32.

Design and Procedure

A 2 X 3 within subjects design was used: 2(*Condition: naming person vs naming nationality) X* 3 (*Experimental Block*). The critical stimuli were presented in three blocks with a short filler task between each block. Within each block, decision type was also blocked, such that six name decisions were followed by six nationality decisions (or vice versa), with the order of decision type counterbalanced across subjects.

Prior to presentation of the critical stimuli, participants were asked to speak aloud names and nationalities belonging to the people in question. This was done to ensure that there was no difference in voice onset latencies between speaking names and speaking nationalities. Each name (6 in total) and nationality (3 in total) was presented ten times. Trials began with a fixation cross for 1000ms, followed by a word stimulus (a name or nationality), which remained on screen until the participant responded. Participants were instructed to speak these names or nationalities as quickly and as accurately as possible into a voice key.

This pre-test phase was followed, after a short break, by the set of trials containing the critical stimuli. Trials began with a fixation cross for 1000ms, followed by the face, which remained on screen until response. Dependent on block, participants were instructed to speak the first name or nationality of the person in question as quickly and as accurately as possible into a voice key. The inter-trial interval was 2 seconds.

Results

The pre-test showed no difference in voice onset latencies between speaking names (mean 616, SD 78) and speaking nationalities (Mean 602, SD 70), $t(14) = 1.03$, $p > 0.05$.

Median RTs for correct responses were calculated for each subject, and means of these by condition are shown in Table 2. Exclusions due to error or failure of the voice key were very small overall (2.2%) and these were not analysed further. RT data were analysed using a

2(*Condition) X* 3(*Experimental Block*) ANOVA, which revealed main effects of condition, $F(1,14) = 41.73$, $p < 0.05$, and test block, $F(2,28) = 23.63$, $p < 0.05$, but no significant interaction, $F<1$. Tukey HSD test ($p < 0.05$) revealed differences between Block 1 and the other two blocks, only.

Discussion

The data from Experiment 2 replicate Experiment 1 extremely well. Given the many differences in detail, the data are remarkably similar. Subjects are reliably faster to name a face than to make a semantic judgement. Furthermore, this is not due to the relative articulation times. Reading times for the names and nationalities were almost identical. Note also that nationality is a salient characteristic in this group, and it seems unlikely that this result arises because the nationality decision is difficult. Nationality has been used as a semantic decision in several previous studies in which it has been shown (using celebrity faces) to be faster than a corresponding name decision (e.g. Johnston & Bruce, 1990; Schweinberger et al, 2001).

General Discussion

We have now presented two independent experiments in which access to names, as measured by articulation onset, is reliably faster than access to descriptive information about people. A difference between this and previous studies (with the exception of Sergent, 1986) is that here target faces were very familiar personal acquaintances, and not those of celebrities. Familiar people selected as stimuli were co-workers with whom the participants had regular interactions and generally knew very well.

We suggest that the key difference between these personally-familiar stimuli and celebrities lies not in familiarity *per se*, but in the frequency of exposure to their names.

Whether it is frequency of recall of names or frequency of passive exposure to the auditory stimulus remains an open question, though it is interesting to note that both Burke et al.'s (1991) model and Valentine, Brennen and Brédart's (1996) model predict that both forms of exposure would strengthen links to the phonological form of the name, and that this aspect of the model has received some support (Valentine, Hollis, & Moore, 1998; Hollis & Valentine, 2001).

The present data clearly support parallel over serial models of retrieval. We have demonstrated that name retrieval can precede retrieval of other information, and this is difficult for serial models to accommodate. However, we should note that there remains open debate about what form of account will accommodate all the data on this issue. The vast majority of data from psychological investigations of face naming show that it is difficult, by comparison to other classification tasks. We have examined a special circumstance in which this general finding can be reversed. However, the basic finding, that names are *generally* harder to retrieve than other semantic information, still requires explanation. Our results appear to rule out a strictly sequential model, but do not resolve the whole issue of how names are stored.

In sum, this paper reports a response time advantage for naming over semantic access for highly familiar faces whose names one is used to retrieving. The results suggest that frequency of name use, a variable that IAC models have not emphasized, could be an important determinant of data patterns in face naming (Burke et al., 1991; 2004).

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	Blocks		
	1	2	3
Condition			
Name	859 (184)	830 (162)	808 (142)
Status	1059 (192)	1045 (191)	995 (247)

Table 1. RTs in Experiment 1, as a function of the condition (naming a person vs naming the person's educational level), and the experimental block (with SDs).

	Blocks		
	1	2	3
Condition			
Name	943 (192)	835 (133)	838 (124)
Status	1076 (158)	1010 (136)	952 (198)

Table 2. RTs in Experiment 2, as a function of the condition (naming a person vs naming the person's educational level), and the experimental block (with SDs).