Face Naming in Dementia: 
A Reply to Hodges and Greene (1998)

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A case study by Brennen, David, Fluchaire, and Pellat (1996) reported the case of a patient who could occasionally name celebrities with very low concurrent levels of semantic access, which is difficult to reconcile with current models of face identification. Hodges and Greene (1998) attribute Brennen et al.’s case study to artifactual explanations and provide new data, which, they claim, is evidence against the “theory of naming without semantics”. This reply demonstrates that Hodges and Greene’s arguments are unconvincing and that aspects of Hodges and Greene’s data in fact provide support for Brennen et al.’s conclusions. It is also argued that in cases of dementia direct naming has been reported for other stimuli domains as well.

According to current cognitive models of face and object identification, access to a name is dependent on immediately prior access to semantic information. Although the bulk of available evidence is consistent with this idea, a paper by Brennen, David, Fluchaire, and Pellat (1996) reported the case of a 74-year-old patient with suspected Alzheimer’s disease who over several test sessions named the faces of two celebrities while at the same time being unable to give identity-specifying information about who they were. Brennen et al. (1996) concluded that the degree of semantic access required in order to name a face was lower than previously thought.

In this paper the implications of Brennen et al.’s study are discussed, particularly in the light of the commentary and data recently provided by Hodges and Greene (1998).

BRENNEN, DAVID, FLUCHAIRE, AND PELLAT (1996)

Case Study

To begin with a recap of the relevant points in Brennen et al.’s case study: Over several sessions, the patient, Mme DT, was presented with a series of photographs of 20 very famous French celebrities. On nine occasions she named a person and was unable to give

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correct category information about the person. This phenomenon was observed four times for Serge Gainsbourg's face, four times for Catherine Deneuve's, and once for that of Christine Ockrent, a newsreader. Typically on these occasions she would name the face immediately and then, despite the verbal probes of a language therapist and neuropsychologist, be unable to specify the person's semantic category (for a transcript see Brennen et al., 1996, pp. 101-102). Mme DT did, however, appear to know that she was not acquainted with these people personally and therefore that they were celebrities. When given a multiple choice task with a list of five professions, this did not help her retrieve category information, and in some cases she chose what were, strictly speaking, wrong answers—for example, Catherine Deneuve = singer. Only in terms of very loose criteria would that choice be correct.

Importantly, Mme DT's performance on the other faces shown to her was more varied: she showed a whole range of errors (including failure to recognize and retrieve information but not the name), as well as correct naming in the presence of correct semantic information.

Interpretations of Brennen et al.'s data

The fact that "naming without semantics" occurred mainly for two faces rules out some artifactual interpretations. For example, if a patient had attentional problems that made it difficult for her to concentrate for long periods (as was the case for Mme DT), then conceivably these could cause a patient to name a face and then to forget what the task was and to be unable to retrieve appropriate semantic information. However, as Brennen et al. pointed out, if attentional shifts were to blame for the naming without semantics, one would not expect to observe the phenomenon only for some faces. As a guideline, the probability of randomly selecting the same two faces from a set of 20 four times in a row is vanishingly small: 1.5 × 10⁻⁷.

Similarly, an argument based on the assumption that Mme DT did not understand the instructions is untenable because she did name and give category information on trials with other faces.

Brennen et al. claimed that their data were difficult to account for in terms of current cognitive models. They did not, however, claim that this was evidence for a direct non-semantic route in face naming. They pointed out that the problem for any account of naming without semantics is to explain why the phenomenon is never observed in normals: postulating a direct route would be problematical for that reason. Furthermore, in Brennen, Baguley, Bright, and Bruce's (1990) experiments, the use of a non-semantic direct route would have allowed a famous person's face to be a good cue for resolving verbally induced tip-of-the-tongue states. However, although hearing a celebrity's initials proved to be a good cue for resolving tip-of-the-tongue states, seeing their face did not.

Brennen et al.'s (1996) main conclusion was that "Mme DT's performance represents the lowest degree of explicit semantic access that has been shown in conjunction with successful naming" (p. 108).

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¹ Brennen et al. (1996) did not in fact use the term "naming without semantics". Valentine, Brennen, and Brédart (1996) did, all the while making it clear that rudimentary semantic access was achieved. See the Discussion for more on this point and the introduction of a more accurate term.
Hodges and Greene (1998) studied the face identification skills of 24 dementia patients in order to investigate the question of non-semantic naming. Their commentary and their data are here dealt with separately.

Commentary

In outlining the motivation for their study, Hodges and Greene (1998) cite two potential artifactual explanations of Mme DT’s performance. First, they claim that fluctuations in attention may explain her performance. However, as Brennen et al. (1996) point out, this does not account for why naming without semantics should occur for some faces more than others. On the other hand, if attentional problems do account for the performance, then it is a celebrity-specific non-nominal attentional deficit—a disorder that would be even more remarkable than “naming without semantics”.

Secondly, Hodges and Greene (1998) suggest that naming is inherently less demanding of executive resources than is retrieving category information, which would lead to apparent naming without semantics in patients with executive problems. Again, however, the question remains that if this is the reason for “naming without semantics” to be observed, why would it be the same faces that are named without semantics? And why would other faces be named and identified successfully? Thus neither of Hodges and Greene’s artifactual accounts of Mme DT’s performance is adequate.

In addition to putting forward these artifactual explanations, Hodges and Greene (p. 130) also state that single case studies should be used only as hypothesis generators and not as sources of irrefutable evidence, thereby tacitly accepting the need for another non-artifactual account of Brennen et al.’s study. In any case, I cannot concur with this limited role for single case studies: cognitive models make the bold prediction that on every trial where naming occurs adequate semantic access has just been achieved.

Hodges and Greene (p. 130) also claim that Brennen et al. (1996) suggested a direct non-semantic route for naming. This is not correct. As pointed out above, we ruled it out as an explanation, not least because if it existed, a direct route would be expected to operate in a paradigm such as Brennen et al.’s (1990) tip-of-the-tongue state study.

Hodges and Greene refer to “the contentious theory of naming without semantics”, and to Brennen et al. as “proponents of naming without semantics”. It is not clear in what sense naming without semantics is a theory. Brennen et al.’s finding that Mme DT could name some faces without apparent comprehension is an intriguing and surprising observation requiring an explanation, rather than something of which one can be a proponent.

Data

Hodges and Greene investigated the identification of 50 famous faces by 24 dementia patients and 30 controls and found that overall the patients had significant impairments of recognition, and at the semantic level and for name retrieval. Hodges and Greene were particularly interested to investigate how much semantic information could be provided
in cases where the face was correctly named, in order to see whether naming without semantics would be observed.

In total, the patients correctly named 218 faces. On 200 of these trials correct uniquely specifying biographical information was also produced. On 16 occasions the correct name was accompanied by correct but non-specifying information (e.g. Ronald Reagan = a politician).  

On the two other occasions, a patient correctly named a face having retrieved very limited semantic information of dubious veracity. Once a patient named Diana Dors (a poor man’s Brigitte Bardot, who was a British sex symbol and actress of the 1950s and 1960s), having said that she was a comedian. On another occasion a patient named Louis Mountbatten—a Lord related to the royal family—and said that he sat in the House of Commons, which he did not.

Hodges and Greene have a different account of each of these two cases. They claim that the patient who named Mountbatten may in fact have believed that Louis Mountbatten was a member of the House of Commons, and that for the patient therefore naming followed access to correct semantics. Though this may be the case, my concern with this suggestion is that such post hoc explanations could in fact be speculative letout clauses that make the cognitive models of face naming immune to falsification and therefore worthless. Quite apart from the unsatisfactory nature of such post hoc contortions, the question should be asked as to why responses from control subjects never seem to require elaborate post-hoc justifications in order to “fit in” with the model. The need seems to arise in cases of dementia.

In the case of the patient who named Diana Dors and said that she was a comedian, Hodges and Greene say that this was not, strictly speaking, wrong, because some of Dors’ roles involved comedy. This trial is reminiscent of Mme DT naming Catherine Deneuve and saying that she is a singer. In both cases the semantic information is non-canonical and yet at the same time from a neighbouring semantic field. My reading of this trial is that it is a replication of Brennen et al.’s “naming without semantics”. Brennen et al. observed a very low level of semantic access in the context of correct naming, and Hodges and Greene observed the same phenomenon.

However, Hodges and Greene interpret their results differently. They conclude that “naming was never possible in the absence of some correct knowledge about the target person” (p. 129). To this I have two responses. First, supposing for a moment that we accept Hodges and Greene’s conclusion: Brennen et al. made no claims as to how widespread the phenomenon of naming without semantics would be. The logic behind Hodges and Greene’s conclusions appears to be that in a study where naming without semantics might have been observed, it was not, and therefore naming without semantics does not

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2 Despite these 16 observations, Hodges and Greene state on p. 121 that “. . . naming a famous face was possible only with semantic knowledge sufficient to identify the person”. This is patently untrue, as their examples on p. 129 clearly demonstrate.

3 In one example that Hodges and Greene classify as incomplete identification (p. 129), a patient names Harold Macmillan, having said that he was a Labour Prime Minister five years ago. Macmillan was in fact a Conservative Prime Minister over 30 years ago. This could unproblematically be classified as naming with incorrect semantic information, rather than as naming with incomplete semantic information.
This is logically fallacious, and Brennen et al.’s case study would still require an explanation.

Secondly, there is the problem of how much freedom one allows oneself in interpreting celebrities’ biographies in order to account for the “dubious examples”. If calling Diana Dors a comedian (or Catherine Deneuve a singer) is to be deemed a correct response, then so much latitude has to be permitted that the models’ claim that naming is dependent on semantic access becomes so slippery as to be unfalsifiable.

Another point made by Hodges and Greene in their discussion is that even if “naming without semantics” can occur, it must be a very unusual and infrequent event. Be that as it may, the interesting thing is that it happens at all: The relative frequencies of the phenomena of “semantics without naming” and “naming without semantics” are irrelevant to the question at hand because the models predict that access to semantics without access to the name will be observable, whereas the converse will not. Nobody disputes that the models account for a large database on face naming and person identification. This makes the phenomenon in question all the more intriguing, and research should focus, not on how often it happens, but on why it happens at all and how it develops in the course of the disease—as Hodges and Greene also suggest.

DISCUSSION

Hodges and Greene (1998) put forward artifactual explanations of Mme DT’s performance. In this article I have repeated Brennen et al.’s argument that decisively rules these out—namely the fact that the same faces were named in the apparent absence of semantic information.

In addition to explaining Mme DT’s performance as an artifact, Hodges and Greene claim that the observations need to be replicated in order to be worthy of explanation. Ironically, on the trials they labelled “dubious”, they observed naming with extremely low levels of semantic access, which, I would argue, is exactly the interpretation Brennen et al. gave to Mme DT’s performance. Hodges and Greene’s claim that on those trials the patients did in fact achieve normal access to semantic memory is untenable, and in fact their data include the first independent observation of the same phenomenon as shown in Brennen et al. (1996). In other words, so-called “naming without semantics” is not a trivial artifact of attentional or executive demands. Furthermore, despite their own conclusions, Hodges and Greene’s own data underline the reality of the phenomenon.

The fact that Hodges and Greene’s key observations were so similar to Brennen et al.’s is one reason why the phenomenon demands a non-trivial explanation rather than speculation about the patient’s premorbid semantic knowledge in order to claim that naming in fact occurred with correct semantic access or dismissal as an artifact. A second reason comes from the literature on word and object naming in dementia patients. It is striking that neuropsychological case studies showing direct naming often present cases of progressively neurological illness, and this should perhaps make it a great deal less surprising that demented patients occasionally name faces with very little semantic knowledge.

For instance, Shuren, Geldmacher, and Heilman (1993) report on three patients with Alzheimer’s disease who performed well on tests of object naming and poorly on tests of comprehension. In the study of word reading, Schwartz, Marin, and Saffran (1978)
reported the case of a patient with dementia (WLP) who could read irregular words correctly without being able to classify them semantically—for example, “beige”, “leopard”. This study in fact motivated the introduction of a “direct” route between visual input and phonology in information processing models of reading. Similarly, Sasanuma, Sakuma, and Kitano (1992) report the cases of three patients with dementia who maintained very high levels of kanji reading as their diseases progressed, despite losing the ability to perform semantic match-to-sample tasks on the same items. Kanji characters cannot be phonologically decomposed and so must be read via lexical representations rather than by the use of general-purpose pronunciation rules. In this sense they are thus analogous to irregular words in English.

The tasks of face naming and irregular word naming are similar in an important way. In both, access to the name from the visual stimulus is dependent on access to long-term memory because the relationship between the visual stimulus and its verbal label is arbitrary: just as there is nothing inherent in Jack Nicholson’s face that indicates what his name is, so it would be impossible to determine using grapheme–phoneme conversion rules that the correct pronunciation of “yacht” rhymes with “hot”. As irregular word reading without comprehension is well established in cases of dementia, Brennen et al.’s observations that a patient with dementia could name some faces with very little semantic knowledge should perhaps be rather less surprising.

Instead, a common thread through Brennen et al.’s and Hodges and Greene’s key examples (Deneuve and Dors, respectively) is that when the face was named, the patients’ semantic information was in the neighbourhood of the correct professional category but was not itself correct (Deneuve = “singer”; Dors = “comedian”). The patients in question did not, for example, call Dors and Deneuve politicians or sportswomen; they named other professions from showbusiness. In line with Brennen et al.’s (1996) conclusion, the amount of explicit semantic access is very low. Rather than “naming without semantics”, a more accurate term for the phenomenon may be “quasi-nonsesnomic naming”. In cases of dementia, quasi-nonsesnomic naming has now been observed for objects, irregular words, and faces. This is consistent with Brennen et al.’s (1996) speculation that only in cases of semantic breakdown would one find cases of what I now prefer to call “quasi-nonsesnomic naming”. Why progressive brain illnesses, and not focal brain injuries, should lead to the direct naming phenomena is an important topic for future research. One profitable line of research into this question will be computational modelling of the effects of different types of lesion on the relationship between the semantic system and lexical retrieval.

**REFERENCES**


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