

Jürg Schwyter used to speak five languages. But after a brain stroke in February 2009 he lost this ability abruptly. Here he discusses why this happened and the efforts he has made to recover his language abilities.

# Losing language: multilingualism and aphasia





Jürg Schwyter

“In 2009 I suffered a stroke and a massive brain haemorrhage, initially losing all of my language faculties. Even today I continue to suffer from aphasia, a (partial) language deficit caused by a lesion in the brain.”

I used to speak and understand five modern languages. I acquired Swiss German from birth, and learnt Standard German at school starting from when I was 7. Later I also studied French, English, and Italian – in that order – at school. I then attended university in the USA and Britain before returning to Switzerland. In 2009 I suffered a stroke and a massive brain haemorrhage, initially losing all of my language faculties. Even today I continue to suffer from aphasia, a (partial) language deficit caused by a lesion in the brain.

I have now recovered two of my languages – Swiss German and English. I am still undergoing speech therapy for my French. But, so far, there has been very little or no recovery of my active command of Standard German, though I can read it and understand what’s happening on TV. The same is true for my Italian. This has been an enormously distressing experience for me personally. As I am a Professor of English Linguistics at the University of Lausanne, this situation has raised some very interesting

questions for me, intellectually and professionally.

Multilingualism is not easy to define, of course, and a variety of statements about the exact meaning of the term can be found in the scientific literature. Broadly speaking, a multilingual person is somebody who can communicate in more than two languages. Since the 1950s, there has been an explosion in studies of bi- and multilingual patients who have experienced brain damage or strokes, and the recovery of their language abilities. These have focused on the place of lesion, age of acquisition, language proficiencies at the time of stroke, emotional involvement with languages and, finally, relative distance between the languages for a multilingual person.

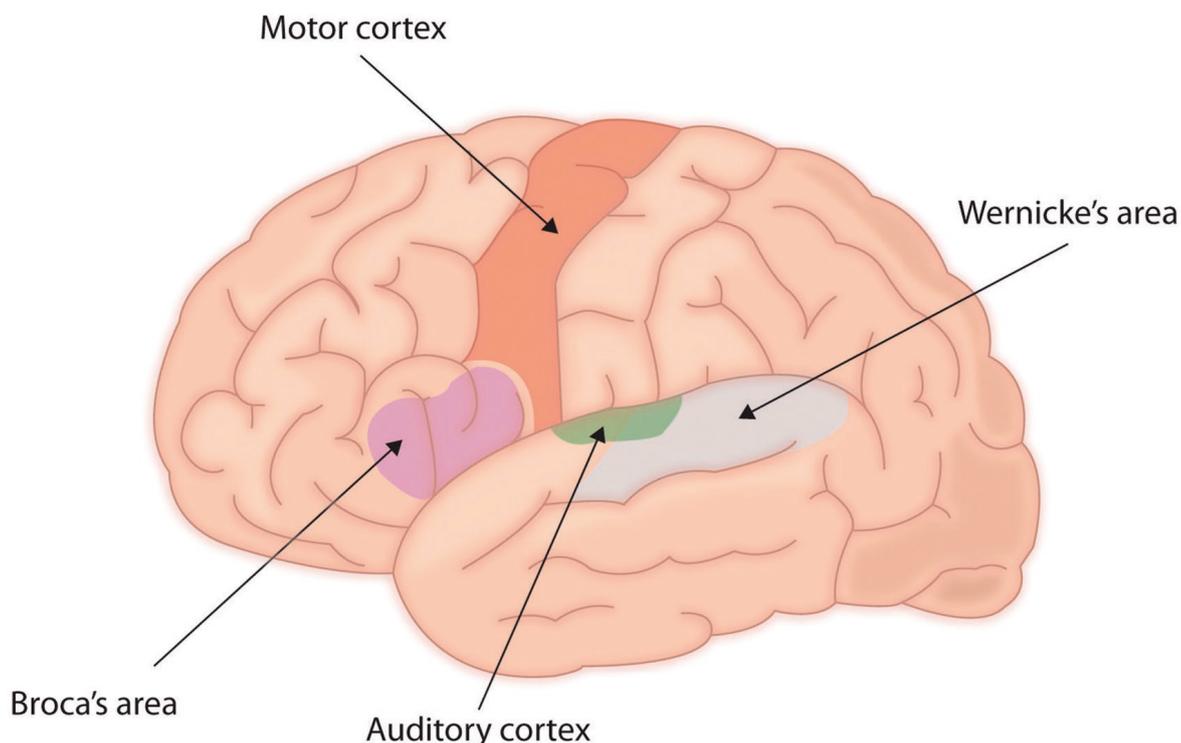
For example, research has shown that 45% of bilingual people experience parallel recovery of both languages to the same level at the same rate. However, 25% and 20% respectively have a better command of either their first language or their second language, and the remainder switch languages within a

sentence or alternate languages between sentences.

The scenario may be much more complex for multilingual patients.

#### Place of lesion

The place of lesion in a stroke patient can be determined by a brain scan (e.g. magnetic resonance imaging, MRI). Language tends to be affected if the lesion is in the left cerebral hemisphere, specifically at the front (Broca’s area) or in the back (Wernicke’s area). Lesions in Wernicke’s area often result in fluent but nonsensical speech. Such patients are generally unaware of their deficit. Their spoken language sounds very good; there are no long pauses, sentence intonation is normal, function words are used appropriately, and word order is syntactically correct. Their written language is formally very good, but it also makes little sense. Broca’s area is one of the principal speech motor areas. Injuries in this region will affect speech output greatly, causing, for example, severe phoneme confusion (from an English perspective,  $\theta$  versus  $t$ ,  $j$  versus  $s$ ,  $r$  versus  $l$ , etc.), faulty sentence structure and a telegraphic style



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(e.g. no function words, no ‘is’, ‘it’, or ‘have’), and a total lack of prosodic features such as stress, rhythm and intonation (e.g. no stress in three and four syllable words such as ‘aca’demic’ and ‘post’graduate’).

I had a Broca’s area stroke. I was initially totally mute (together with having comprehension difficulties – this is referred to as global aphasia). I experienced typical Broca’s aphasia difficulties with speech articulation, but thanks to intensive speech therapy in the weeks following my stroke, I soon recovered my mother tongue, Swiss German.

With intensive speech therapy conducted by a German-English bilingual therapist, I have also recovered my English. Standard German, however, is extremely difficult for me: I speak it more slowly and with a very strong Swiss German accent (which I didn’t before), and I also make the odd mistake (for example, Swiss German does not

have a genitive and expresses those relationships with the dative, something I now tend to do in Standard German as well).

**Age of acquisition**

The critical period for language acquisition is said to be somewhere in late childhood or early puberty. Afterwards, learning languages may become more difficult as connections between brain cells (brain plasticity) are lost to a considerable extent. However, this is not categorical, as brain cells continue to make connections with each other, albeit at a somewhat slower speed; the ability to learn new things, including languages, is by no means lost.

For people who speak more than one language or dialect, recovery processes after a stroke are complex. Some multilinguals recover all their languages or dialects, some just a few, and some struggle even with their mother tongue.

Early neurologists postulated that there are a number of 'language centres' in the brain, and that for each language the comprehension centre (Wernicke's area) and production centre (Broca's area) is different. For a trilingual person, then, this would give six different cerebral centres. In the early 20th century, Mieczyslaw Minkowski, a Swiss neurologist, questioned the notion of language centres and proposed that there is a common language area. Languages learned later are superimposed on those learned first, and thus stroke damage and aphasia results in greater impairment of later-learned languages. The age of language acquisition, therefore, would need to be taken into account.

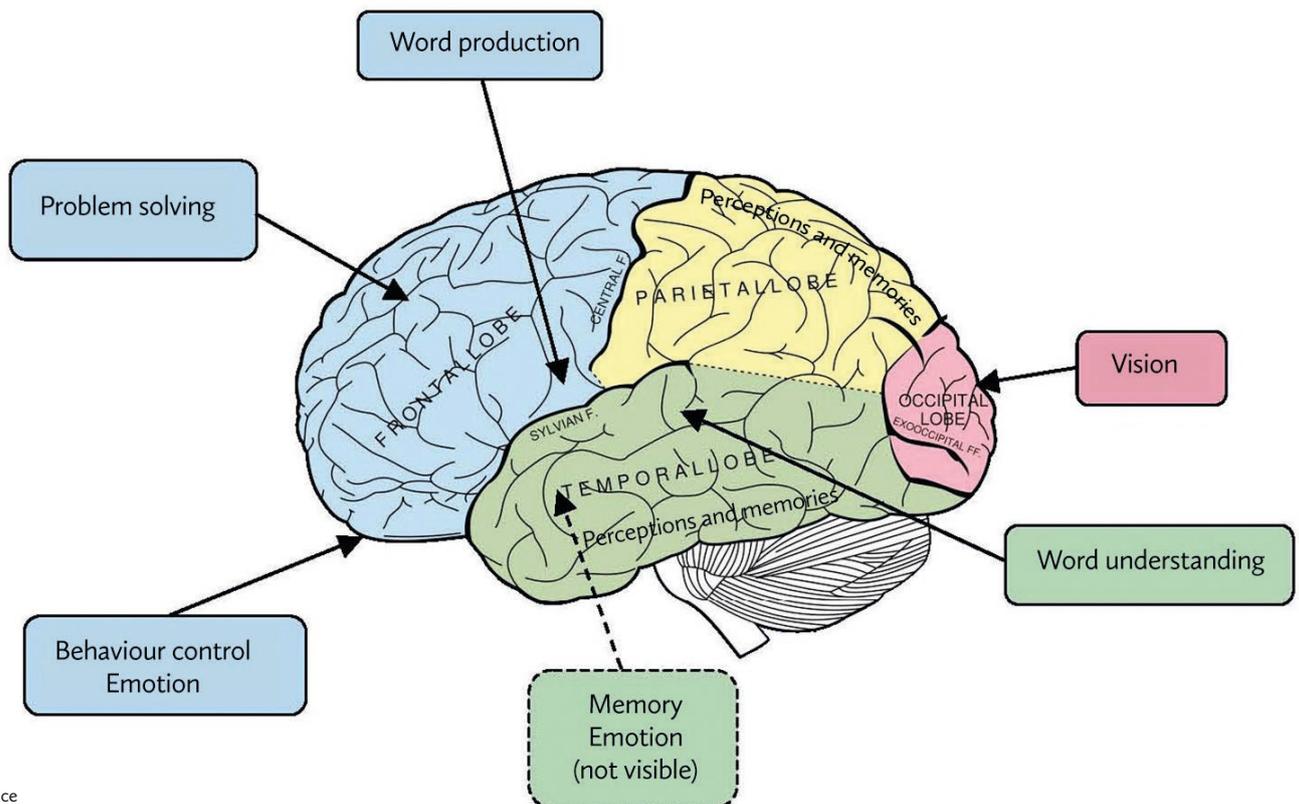
In the multilingual Switzerland of the 1970s, my school languages started with Standard German in elementary school at the age of 7, followed

by French, English and Italian in high school between the ages of 13 and 17. Consistent with a recovery pattern based on age of acquisition, I have recovered my mother tongue, Swiss German, almost perfectly, but can no longer speak Italian, which I studied for two years starting at 17. It seems totally inconsistent, however, that I have been unable to regain my pre-stroke perfect command of Standard German. And, while my English is almost back to my pre-stroke high proficiency level, my failure to recover French is also puzzling.

As recent research has shown, language recovery after a stroke does not follow the pattern of the age of acquisition. I am a case in point. Language recovery in fact is strongly influenced by a combination of the patient's pre-stroke proficiency and level of use at the time of the stroke.

### Language proficiency at the time of the stroke and response to post-stroke training

One factor, as just noted, is the proficiency and frequency of use of each language before the stroke. The question also remains of whether, during rehabilitation, there is transfer from the language in which the patient undergoes speech therapy to the language(s) not involved in speech therapy. A clinical study of a German-French bilingual stroke patient with severe Broca's aphasia, who used both languages on a daily basis pre-stroke, highlights the role of the language used in speech therapy. His speech and language therapy was conducted only in German. He performed better in German than in French throughout. The patient's relatives and friends also only spoke German with him, on the advice of the therapist. His



Brain Language, voice and behavior map

French remained “dormant” and unchanged, showing no transfer effect. In short, this German-French bilingual patient is a striking example of the effects of language use together with therapy-related language recovery.

Before my stroke, I was Professor of English Linguistics at the University of Lausanne, Switzerland. I had studied at the University of Pennsylvania, where I received my BA, and at Cambridge University, where I obtained a PhD. Thereafter, I was a junior research fellow in Britain. It is easy to see that English was by far the *strongest* non-native language I had command of before the stroke. I wrote, read, conversed and joked in English about 75%-80% of the time. The remaining 20%-25% of my language use was equally distributed between Swiss German (telephone calls with my family), French (in the streets of Lausanne and, above all, for administrative matters in the university) and Standard German (with my partner, who is German); Italian was more or less absent from my life, except for reading the odd scientific article.

It is easy to understand my varied recovery levels of Swiss German, English and French in the light of my language proficiencies before the stroke and speech training exercises. However, the almost complete lack of recovery of Standard German, which I had spoken perfectly since age 7, is still not very well explained. Why is it that this language just ‘isn’t in my head’ any more? Why is it that my active use of this language has basically vanished? Is it linked to my emotional involvement with these languages?

### Emotional involvement with languages

We do not yet know how to capture and precisely quantify emotional involvement with languages. But broadly speaking, one can distinguish between instrumental and integrative motivation; instrumental meaning the *need* to learn a language to get ahead in life; integrative signalling a desire to assimilate. In the short term, one can learn a language very well through instrumental motivation, particularly if one is highly incentivised. In the long term, however, integrative motivation carries one further, if this stays very high. Unfortunately, this approach is too imprecise for neurological investigations, which aim to be ‘precise’ and ‘quantifiable’. Sociological and linguistic studies, by contrast, are able to incorporate options of a more-or-less scalar type, possibility/variability, and hence achieve a more balanced interpretation.

My emotional involvement is highest for Swiss German, my mother tongue (it is the language of my childhood, dreams, etc.), followed closely by English (the language of my profession and passions, and thus entailing very strong integrative motivation). My infatuation with English certainly helped me recover this language with relative ease and to a high level of proficiency after my stroke.

In contrast, my other languages – Standard German, French and Italian – were learnt at school purely instrumentally. I hardly used Italian, except for reading the odd article; I had to brush up on French before my stroke (but only then) to deal with the university administration, which does not reflect an altogether positive emotional involvement. Standard

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German is interesting because, although it was the first language I learnt at school starting at a very early age, it was never more than a means to an end; there was no emotional involvement whatsoever (or even a negative one, because Standard German is perceived as a ‘foreign’ or even ‘alien’ language in Switzerland). What is even more surprising is my lack of progress despite the relative closeness of Swiss German and Standard German.

### Relative distance between languages

Neurolinguists and clinicians claim that proximity between languages aids the recovery of languages *not* directly targeted in speech therapies through therapeutic transfer. Simply put, English and German are members of the Germanic sub-family of languages, and Italian and French are members of the Romance sub-family. Subtleties aside, one would expect that it is easier to learn languages that belong to the same or closely related (sub-)family.

Relative distance between languages can help explain why I, as a Swiss German native speaker, am experiencing a poor recovery of French and total failure to regain Italian.

But it cannot account for my difficulties with the closely related language, Standard German, which I seem to be unable to switch into an active mode.

Linguistic distance cannot be quantified decisively enough so as to allow us to draw solid conclusions. The same is true for the effects on multilingual stroke victims with aphasia: there can be no watertight claim that languages from a distant genetic (sub-)family will have a worse recovery level than those with a proximal genetic relationship, even if (say) grammatical or phonological similarities have a marginal influence on the recovery rate.

The place of lesion, age of acquisition, language proficiency at the time of stroke, emotional involvement with a language, and relative distance between languages play different roles in multilingual language recovery in stroke patients. Studies of highly measurable and quantifiable parameters, such as the place of lesion and the age of acquisition, have produced more results than comparatively imprecise ones on emotional involvement and language proficiency/competence at the time of a stroke. But it is exactly the latter parameters that most progress can and should be made on in the future in order to understand and treat aphasia.

I used to be a highly multilingual professional linguist at the time of my stroke, speaking and understanding five different modern languages. It is not easy to determine what has been going on in my 'black box' of languages, but I tend to see my language proficiency at the time of my stroke and my emotional involvement with the various languages as having the greatest cumulative effects on

my recovery rates, with age of acquisition and relative distance between languages having fewer effects.

Most importantly, we can account for my manifest recovery of Swiss German by appealing to my emotional involvement with the language, and for my marked recovery of English as being due to both my proficiency and frequency of use at the time of the stroke and my emotional involvement with the language.

My poor recovery of French and total absence of Italian can be explained by my marginal involvement with them at the time of the stroke, and possibly by the relative linguistic distance of these languages from my mother tongue. My inability to reactivate my once-perfect Standard German is best accounted for by lack of emotional involvement with the language – I learnt it purely for instrumental reasons and not for integrative ones.

With further therapy – although this becomes increasingly difficult and cumbersome as time goes by and progress slows – and practice, I hope to be able to achieve something close to my multilingual proficiency before the stroke so that I can once again speak and understand all the languages I so cherished. ¶

**“My poor recovery of French and total absence of Italian can be explained by my marginal involvement with them at the time of the stroke, and possibly by the relative linguistic distance of these languages from my mother tongue.”**

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**Jürg Schwyter** used to be Professor of English Linguistics and Head of the English Department in the University of Lausanne before he suffered a severe brain stroke in February 2009. After four years, he gained the ability to walk again and to speak English and Swiss German (though not the many other languages he used to speak), but his right arm is still partially paralysed. He writes with the Dragon Dictate speech recognition programme and works part-time at the University.

#### **Acknowledgements**

Due to partial paralysis of my right arm, this text was dictated using a speech recognition program, Dragon Dictate for Mac OS X, and was then automatically typed into the file. I would like to thank Jean Hannah, Peter Trudgill and my partner Gunter Siddiqi for their generous help and support in writing, correcting and publishing this paper.

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### Find out more

#### **Articles**

Schwyster, J. (2011) “Me talk funny”: a stroke patient’s personal account’, *English Today* 27(4): 49-52.

#### **Books**

*The Handbook of Bilingualism* edited by Tej K. Bahttia and William C. Ritchie (Blackwell, 2004).

*Aspects of Multilingual Aphasia* by Martin R. Gitterman, Mira Goral and Loraine K. Obler (Multilingual Matters, 2012).

*Language and the Brain* by Loraine K. Obler and Kris Gjerlow (Cambridge University Press, 1999).