



HAL
open science

Phonological processing in post-lingual deafness and cochlear implant outcome.

Diane S. Lazard, H. J. Lee, Michael Gaebler, Christian A. Kell, Eric Truy,
Anne-Lise Giraud

► **To cite this version:**

Diane S. Lazard, H. J. Lee, Michael Gaebler, Christian A. Kell, Eric Truy, et al.. Phonological processing in post-lingual deafness and cochlear implant outcome.: Predictors of cochlear implant outcome. *NeuroImage*, 2010, 49 (4), pp.3443-51. 10.1016/j.neuroimage.2009.11.013 . inserm-00675311

HAL Id: inserm-00675311

<https://inserm.hal.science/inserm-00675311>

Submitted on 29 Feb 2012

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Table 1: Clinical data of the 8 profound deaf candidates for cochlear implantation

Patient no.	Sex	Age at experiment (year)	Bilateral HL duration (year)	Deafness duration (month)	WRS pre-CI* (% , 60 dB)	WRS post-CI (% , 60 dB)
1	F	67.7	46	36	0	48
2	M	45	26	4	0	41
3	F	32	10	12	0	69
4	F	56.2	23	36	0	24
5	F	56	22	48	0	48
6	F	73	16	8	0	86
7	M	31.7	18	216	36	X
8	F	54.7	30	360	50	28

HL = hearing loss. WRS = word recognition scores

There was no statistical correlation between age and deafness duration.

Patient 7 was not implanted for personal reasons.

* With optimally fitted hearing aids, Lafon test

Table 2: Whole brain correlation with post-CI word recognition

Correlation	L/R	Region	BA	MNI coordinates	Cluster size	Z score
Positive	L	Premotor cortex	6	-48 8 34	12	2.79
	L	Premotor cortex	6	-28 -8 60	12	4.00
	L	Superior parietal lobule	7	-10 -72 62	51	3.12
	L	Middle occipital gyrus	18	-10 -104 18	109	12.98
	R	Middle occipital gyrus	18	30 -84 4	35	3.71
	L	Middle temporal gyrus	37	-54 -54 0	20	2.91
Negative	L	Temporal pole	22	-54 4 0	76	17.49
	L	Temporal pole	22	-46 8 -16	108	6.33
	L	Inferior frontal gyrus	47	-36 28 -20	30	3.18
	R	Inferior frontal gyrus	47	36 24 -20	186	3.49
	R	Inferior frontal gyrus	47	44 36 -10	73	3.40
	L	Middle temporal gyrus	21	-48 -36 -6	77	3.35
	L	Middle occipital gyrus	19	-46 -74 6	35	3.70
	R	Supramarginal gyrus	40	56 -34 26	11	3.51

Table 3: Whole brain correlation with hearing loss duration and direct group comparison

Patients > Controls

Correlation	L/R	Region	BA	MNI coordinates	Cluster size	Z score
Negative with HL	L	Inferior frontal gyrus	44	-52 10 26	41	4.30
	L	Middle occipital gyrus	18	-26 -94 0	34	3.62
Positive with HL	L	Inferior frontal gyrus	47	-44 28 -8	67	4.02
Patients > Controls	R	Surpamarginal gyrus	40	60 -34 22	73	4.43
Controls > Patients	-	-		-	-	-

HL = hearing loss duration

- = no significant result.