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Speech Perception and Subjective Preference with Fine Structure Coding Strategies

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	Interval 1		Interval 2		Interval 3		Interval 4		Interval 5			
ID	FSP	FS4/FS4p	FSP	FS4/FS4p	FSP	FS4/FS4p	FSP	FS4/FS4p	FSP	FS4/FS4p	Mean FSP	Mean FS4/ FS4p
1	65	65	75	82,5	72,5	80	75	90	60	62,5	69,5	76,0
2	75	70	77,5	85					95	90	82,5	81,7
3	67,5	52,5	72,5	72,5			67,5	70			69,2	65,0
4	82,5	80	85	87,5	85	85	82,5	82,5	82,5	85	83,5	84,0
5	45	50	72,5	67,5	62,5	67,5	60	70	60	62,5	60,0	63,5
6	65	70	67,5	67,5	72,5	60	72,5	80	75	80	70,5	71,5
7	50	50	52,5	62,5	57,5	57,5	22,5	40	55	47,5	47,5	51,5
8	40	52,5	57,5	62,5	47,5	62,5	42,5	55	47,5	65	47,0	59,5
9	85	87,5	85	90	75	70	75	82,5	82,5	80	80,5	82,0
10	67,5	62,5	67,5	70	70	70					68,3	67,5

Bold font shows better value

Table 2A: Individual results on Freiburger Monosyllables in Quiet plus mean over all test intervals.

time (Interval 1-5) there were no signi cant di erences in the mean percentage on the HSM in noise with the FSP coding strategy (F(4; 24)=0.234; p=0.917) or with the FS4/FS4p coding strategy F(4; 24)=0.660; p=0.626) (Figure 3 and Table 4a).

Overall (across all tested intervals) subjects there were no signi cant di erences between the mean percentage with the FS4/FS4p coding strategy and the mean percentage with FSP coding strategy on the HSM in noise (Table 4b).

Subjective assessment

Hearing implant sound quality index (HISQUI$_{19}$): e mean average score on the HISQUI$_{19}$ was 78.5 (± SD=21.9) at Interval 1, 41.7 (± SD=24.4) at Interval 2, 47.7 (± SD=30.3) at Interval 3 and 77.9 (± SD=20.2) at Interval 5. Subjects reported ´moderate` self-perceived sound quality at Interval 1 and 5 and 'poor' self-perceived sound quality at Interval 2 and at Interval 3. e results show a signi cant deterioration at Interval 2 and 3 compared to Interval 1 (p=0.005 and

	Interval 1		Interval 2		Interval 3		Interval 4		Interval 5			
ID	FSP	FS4/FS4p	FSP	FS4/FS4p	FSP	FS4/FS4p	FSP	FS4/FS4p	FSP	FS4/FS4p	Mean FSP	Mean FS4/FS4p
1	1,745	0,6	0,365	-0,05	-0,135	-0,23	-1,725	-0,785	3,045	1,515	0,659	0,21
2	-0,215	0,425	-1,91	-0,33					-1,765	-1,865	-1,297	-0,59
3	1,155	6,8	-0,86	3,29			-0,33	4,52			-0,012	4,87
4	-0,235	-0,445	-1,285	0,405	-0,95	-0,33	-1,25	-0,92	-1,35	-0,375	-1,014	-0,333
5	0,995	2,395	0,49	1,8	-0,105	1,745	0,5	0,19	1,385	1,085	0,653	1,443
6	5,8	3,7	4,7	5,2	3,2	2,5	1,3	3,4	2,2	1,5	3,44	3,26
7	3,9	7,3	3,8	5,95	4,6	2,55	3	3,5	3,05	2,65	3,67	4,39
8	-0,55	-1,3	-1,05	-1,45	-1,05	-2,45	1	-1,4	-0,85	-1,65	-0,5	-1,65
9	2,21	0,395	0,75	0,925	0,32	-0,075	1,345	1,525	1	0,8	1,125	0,714
10	-3,14	-4,21	0,05	-0,45	0,475	-0,975					-0,872	-1,878

Bold font shows better value

Table 3A: Individual results on OLSA in noise plus mean over all test intervals.

	FSP	FS4/FS4p	p-value*
Interval 1	1.17 ± 2.49		

p=0.012), but in turn a signi cant improvement from Interval 2 and 3 to Interval 5 (p=0.018 and p=0.028).

Discussion

is study compared subjects with the FSP coding strategy a er upgrade to the FS4 and the FS4p (FS4/FS4p) coding strategies, over 12 months. Subjects with the FS4/FS4p strategy performed as well as subjects with the FSP coding strategy. e primary outcomes measures: the Freiburg monosyllables in quiet, OLSA and HSM test, determined that the performance with both coding strategies were similar. e subjective assessment of subjects showed that half of the time they perceived a moderate improvement in auditory bene t or a poorer sound quality with the FS4/FS4p than with the FSP coding strategy.

e subjects tested herein did not perform signi cantly di erently on the Freiburg monosyllables in quiet test with the FS4/FS4p coding strategy than with the FSP coding strategy. In contrast, Riss et al. [11] had shown that subjects tested on the Freiburg monosyllables in quiet with FS4 had a small, but signi cant di erence in favour of the FSP strategy. A possible explanation for the di erence between the Riss et

al. study and the present data may be the di erence in follow-up period

Conclusion

e FS4/FS4p coding strategy works well in experienced CI recipients and represents a further tool to individualize the tting of audio processors. is grants access to more satisfying sound quality and speech perception. e subjective perception of individual's experiences indicates that in a real life situation many subjects bene t from the use of the FS4/FS4p coding strategy.

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