

Musical perception and appreciation in cochlear implant users

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INTRODUCTION

Cochlear implant has been designed primarily to enhance speech communication. However music perception and music appreciation can be challenging for many users with a cochlear implant. Adult cochlear implant users are significantly poorer than normally hearing listeners at music tests. These tests are rhythm identification, pitch perception, instrument identification and melody recognition. Accurate music perception for cochlear implant users involves a number of factors including the number and condition of surviving auditory neurons, the processing capabilities of the implant and sound processor, the insertion of the electrode array and psychosocial factors such as whether the recipient has any auditory memory and/or experience with music and the type of music being listened to.

AIM:

The aim of the our study is to evaluate musical perception and appreciation of adults with cochlear implant.

METHOD:

34 cochlear implanted adults (20 years old and above) who have postlingual hearing loss and no additional problems were included our study. CI (cochlear implant) users were divided into groups according to chronological age, implantation age and duration of cochlear implant use. We used Personal Information Form and Cochlear Implant Music Performance Profile for Adults as data collection tools. Personal Information Form consist of questions about demographic characteristics of the participants. Cochlear Implant Music Performance Profile for Adults was translated to Turkish and adapted from 'Music Training and Background Questionnaire' and 'Listening To Music With A Cochlear Implant Questionnaire' were developed by V.Looi. It consists of questions related to information about cochlear implants, history of listening to music, music styles, instruments, music recognition, factors of affecting to musical perception and music education programs. Our study approved by the ethics committee of Hacettepe University and Informed Consent Form was used for all the participants. At the end of the application, scores of groups according to their responses were compared statistically.

RESULTS :

When the results were examined, the mean scores of cochlear implant users in perception of percussion instruments such as drum/snare observed to be higher than other instruments. Also, users were more successful in perception of male singer voice than female singer.

Table 1	> 40 years (CI)			< 40 years (CI)			p
	N	Mean	SD	N	Mean	SD	
Piano Naturalness	21	6,53	2,741	13	4,35	3,220	0,045
Violin Naturalness	21	6,65	3,220	13	4,41	3,447	0,034

Table 2	Duration of CI < 5 years			Duration of CI > 5 years			p
	N	Mean	SD	N	Mean	SD	
Piano Sound Quality	19	3,79	3,066	15	6,73	2,086	0,007
Flute/Clarinet Naturalness	19	3,53	3,221	15	6,40	26,40	0,021
Drum/Trumpet Sound Quality	19	5,11	2,726	15	7,33	3,109	0,040
Drum/Trumpet Naturalness	19	5,21	2,594	15	7,80	2,859	0,012
Guitar Naturalness	19	4,53	3,657	15	7,07	2,576	0,040

However, users who have duration of cochlear implant use more than 5 years perceived voice female singer more better quality and natural. Piano and violin perceptions of 17 cochlear implanted adults who were applied cochlear implant under 40 years old was found statistically significant (p<0.05) regarding sound naturalness than others.

Table 3	Female			Male			p
	N	Mean	SD	N	Mean	SD	
Male Singer Sound Quality	21	5,10	2,606	13	7,54	2,106	0,008
Male Singer Naturalness	21	5,52	2,713	13	7,62	28,44	0,039

Table 4	Duration of CI < 5 years			Duration of CI > 5 years			p
	N	Mean	SD	N	Mean	SD	
Female Singer Sound Quality	19	5,47	2,653	15	7,40	1,957	0,033
Female Singer Naturalness	19	5,26	2,423	15	7,40	2,354	0,014

In addition to these data, there was found statistically significant difference between adults who have duration of cochlear implant use more than 5 years and less regarding recognition of orchestral/ choir music and pursue the melody (p <0.05)

CONCLUSIONS:

Musical perception and appreciation varies depending on many factors among cochlear implant users. Age of cochlear implantation, duration of cochlear implant use, music style and sound featuresof instruments are very important factors for musical perception and appreciation of users.

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