



Journal for Social
Science Archives

Journal for Social Science Archives

Online ISSN: 3006-3310

Print ISSN: 3006-3302

Volume 3, Number 3, 2025, Pages 370 – 384

Journal Home Page

<https://jssarchives.com/index.php/Journal/about>



Amplified Identity: The Influence of Hearing Aids and Cochlear Implants on the Self-Concepts of Students with Hearing Impairment in Public and Private Schools

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ARTICLE INFO

Article History:

Received: June 13, 2025
Revised: July 22, 2025
Accepted: August 07, 2025
Available Online: August 21, 2025

Keywords:

Self-concept, Students with Hearing Impairment, Hearing Aid, Cochlear Implant

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ABSTRACT

The issue of self-concept in students with hearing impairments is a key element in educational research which reports the great impact of hearing loss on communication, social interaction and overall wellbeing. This study looks at the self-concepts of students with hearing impairments that use hearing aids and cochlear implants. We determine what factors influence it and also compare the self-concept between students in public and private educational settings. We used a quantitative research design which included a very precise and expert validated questionnaire which presents results via a 5 point Likert scale. The instrument we used had high reliability with a Cronbach's alpha of 0.997. We collected data by purposive sampling of students aged 11 to 18 with diagnosed hearing loss from schools in Lahore City. We analyzed the data using descriptive and inferential statistics via SPSS which included t-test for comparison. We found out that most respondents reported feeling at ease in social settings while using their hearing devices which they also report to be a factor in the development and maintenance of relationships. We report that use of auditory devices does in fact improve social comfort and relational experience of these students. Based on our results we put forth recommendations to reduce the factors which negatively play into the self-concept of students with hearing impairments.

Introduction

Self-concept is what an individual perception and evaluation about himself which plays out in social, academic, emotional, and physical domains. It is developed through experience and interaction with others and plays a large role in growth and psychological health. In the case of students we see that a positive Self-concept is very much a factor in academic achievement, social engagement, and in general wellbeing (Van der Aaret al., 2022; Douma et al., 2025). That said, in children with hearing impairments we see that which Self-concept is affected. Issues in communication, lack of access to sound info, and social exclusion play a role in lower self-esteem and a reduced sense of accomplishment. But we also see that with the introduction of assistive technology like hearing aids and cochlear implants which has improved auditory input, which in turn has enhanced communication skills and also brought about greater social and academic participation (Miao et al. 2024; Gómez et al. 2025).

Hearing aids which are put to use by people with mild to moderate hearing loss amplify sound to improve hearing. Cochlear implants which are for those with severe to profound hearing loss go around the damaged elements of the inner ear and put out direct stimulation to the auditory nerve. While they aim to close the communication gap both of these technologies' psychosocial impact on users does vary. We see that users of these devices report improved academic performance, self-esteem, and social interaction which although very real for many are also very much based on the individual and the context in which they are used (Sahoo et al., 2022; Millett & Mulla, 2025).

Despite there being great interest in the issue of student mental health which has hearing impairments we are still to see what which Self-concept looks like for users of hearing aids as opposed to those using cochlear implants. This gap in research which we see here presents a need for more focused study which looks at Self-concept in terms of academic, physical, and social domains in this population. Presently we undertake a study which is to fill in this gap in research by looking at the Self-concept of students with hearing impairments which report on the use of hearing aids or cochlear implants (de Jong et al., 2024; Amjad et al., 2024). By looking at their self worth, identity, and social integration we aim to put forth valuable information that will in turn inform the design of more individualized support systems and inclusive practices. Also of import is to determine how these technologies play a role in the development of Self-concept which in turn will do much to promote positive psychological results and also improve the quality of life for students with hearing impairments (Podury et al., 2023; Satıcı et al., 2023; Aftab et al., 2024).

This study reports on a very important issue related to students with hearing impairments which are using hearing aids or are fitted with cochlear implants. We looked at the development of their Self-concept in academic, physical, and social settings which is we do so to put in place more inclusive teaching practices and environment. Also we present results that will help in the design of better classroom practices, communication tools, and support structures which in turn will raise self-esteem and improve academic results for these students. Also this study looks at the Special Education Department in Punjab province through the lens of what the psychosocial issues of students with hearing impairments are which in the end will play a role in the development of better policies and programs.

However we see that this study has issues. It is based only in Lahore city which in turn may see to narrow in scope what we can take the results to. Also in terms of culture and education which may play a large role and also the specific population they looked at in terms of age which ranged from 11 to 18, and which also used assistive devices may not translate to larger groups. Also the study looked at students in the key stage of development which is 11 to 18 but does not include the

experience of very young children or the very old that also have hearing impairments and may have different Self-concepts.

Objectives of the Study

The objectives of this study were to:

1. To explore the self-concepts about academic, social and physical of students with hearing impairment with hearing aids and cochlear implant users.
2. To compare the self-concept of students with hearing impairments with hearing aids and cochlear implant users.
3. To identify the factors those influence the self-concept of hearing aid and cochlear implant users.
4. To compare the self-concept of the students of both groups in public and private sector.

Conceptual Framework

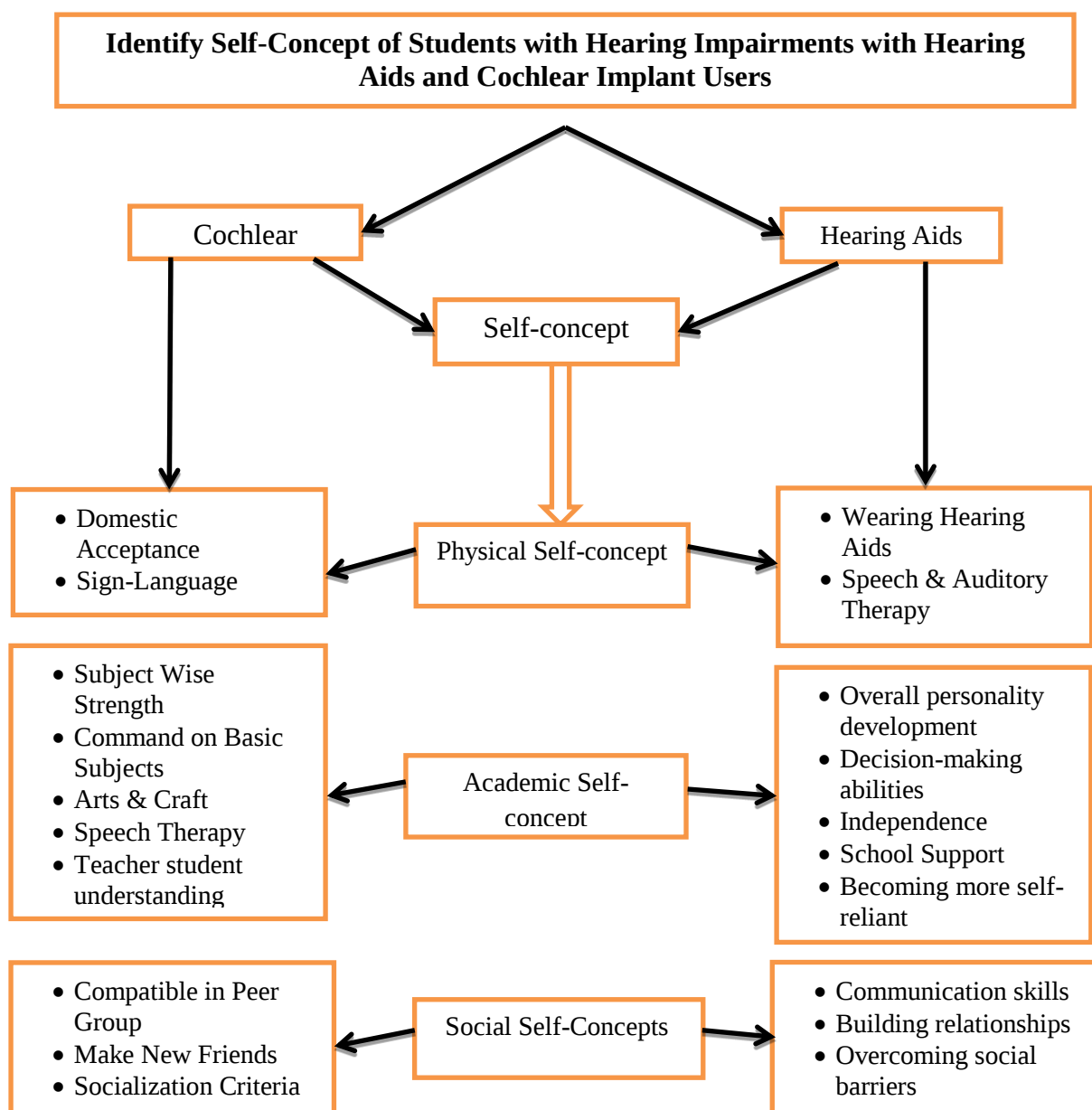


Figure 1.1: Conceptual Framework of the Study

Literature Review

Self-concept as an individual's image of themselves is put together mainly from good relationships and communication which in turn is very much a product of interaction with key people. A child's Self-concept takes shape based on how others respond to them, their own thoughts, and their ideal self. Also it is important to note that children with hearing loss are at risk for low self esteem because they may miss out on subtle social interactions which fall outside their "listening bubble" and also due to the way people in their environment react to them using devices or visual communication methods (Anmyr et al., 2011; Boerrigter et al., 2021). This issue brings to light the unique problems heard impaired individuals face which include their proficiency in communication methods (signed or spoken language) the degree of social support and acceptance they get and the role played by social stigma or discrimination. Positive interactions and inclusive settings are very much so important for a child's sense of belonging and self-worth also we must address negative attitudes for positive identity development (Saeed et al., 2023; Sánchez-Urrea et al., 2024).

The in group's development of Self-concept is also very much a product of what is made available educationally and access to resources which include assistive technologies and support services that in turn foster academic and personal growth. Also it is through the acceptance and celebration of Deaf culture that we see positive Self-concept (Hussain et al., 2023; Kamran & Bano, 2024). We see development of self-advocacy skills and resilience which in turn gives individuals the confidence to put forth their needs and to report through tough times which in turn develops a stronger self-identity. Use of hearing aids is very much a factor in improved Self-concept as they do improve communicative efficiency which in turn improves self-image. By amplifying sound and improving speech clarity hearing aids increase confidence, improve engagement in academic and social settings and promote success which in turn raises self-esteem. Also we see that in the improvement in devices like cochlear implants and bone conduction implants which greatly improve quality of life, communication and integration (Ahmed & Zaman, 2019; Rijke et al., 2022; Vaughan-Johnston et al., 2024).

Self-concept is a key element in academic success and personal growth which hearing impairment may disrupt; also hearing impaired children may present a lower Self-concept as a result of academic issues and social isolation. Although many of these kids do struggle we see that support structures and inclusive practices are very much the solution to these issues. Also the role of Speech and Auditory Therapy is very important for language development we have approaches like Auditory-Verbal Therapy that we use to improve auditory skills for language. Also we note the value of Physical Education in total development, in fitness and self-esteem which also is a great setting in which to learn life skills and develop a positive Self-concept (Afzaal et al., 2023; Afzaal et al., 2024). In the end what we see is that communication skills, support structures, an inclusive environment and the the public thinks of them are very much what shape the Self-concept of the hearing impaired student. Also the issue of independence and self-reliance is very large here with a child's confidence in them and what they are capable of doing forming the base of a positive Self-concept that will see them through the world (Radhakrishnan & Annalakshmi, 2019; Xie & Gan, 2022).

The development of Self-concept in students with hearing impairments is a also a part of their academic and social growth. Hearing impairment puts forth personal, academic and social issues which in turn may interfere with a student's achievement of full potential. It is a common thought that hearing impaired children do so in a lower Self-concept due to tending toward academic

failure, issues in information processing, and a issue of not being included in main stream school (Mekonnen et al., 2016; Bell et al., 2016; Satıcı et al., 2023). For instance in subjects like Math, English and Science we see that some of these students do very well which in turn does great things for their Self-concept. Also a child's total personality development is a result of their relationships with teachers and peers which in turn stresses the importance of a positive inclusive environment in the development of a strong self (Kumari & Bhatt, 2014; Farid et al., 2023).

The elements of Self-concept we develop is in great part a result of the technical and therapeutic interventions we have access to. While hearing aids are very important players in this field other advances like cochlear implants have really made a game change. These devices go around broken elements of the ear to stimulate the auditory nerve and in doing so provide what is perceived as sound. Also we see that beyond hearing aids other innovations such as bone conduction implants and auditory brainstem implants also play a role in improving quality of life for people with different degrees of hearing loss (Bekele et al., 2023; Millett & Mulla, 2025). Also out there beyond the hardware is the field of auditory rehabilitation which works in tandem with these devices. This therapy which is usually run by speech language pathologists is put in place to foster speech and language development. What we also see is that some approaches like Auditory-Verbal Therapy which puts a focus on use of auditory skills to get kids into the community at large and at times will limit visual cues in favor of listening. Also we see that the complex issues of communication are brought to light by the fact that sign language is not a universal language and that at times variation in sign languages may cause miscommunication which in turn high lights the need for very comprehensive support (Rijke et al., 2022; Pryce et al., 2025).

Research Methodology

Research Design

This study used a quantitative research design with a survey approach to explore the self-concepts of students with hearing impairments about the use of hearing aids and cochlear implants. This design was selected for the systematic collection of quantitative data to find patterns and generalize the results.

Population of the Study

The population consisted of students with hearing impairments that use hearing aids and cochlear implants enrolled in public and private schools in Lahore, Pakistan. Lahore was selected due to its integrated services for these students, ensuring a diverse and relevant population for the study.

Sample and Sampling Technique

The sample size was 150 hearing impaired students from public and private schools in Lahore, Pakistan. A purposive sampling technique was used for data collection. The sample included students aged 11 to 18 who were diagnosed with hearing loss, focusing on the critical adolescent stage of self-concept development.

Table 1: Sample Distribution on the Basis of Institutes of Students with Hearing Impairment

Sr. No.	Name of School	Address	Cochlear Implant Users	Hearing Aid Users	Total Number of Respondents
1	Govt. Deaf & Defective Hearing High School for Boys	40-T Gulberg II, Lahore	03	14	17
2	Government Special Education Center, Shalimar Town	982/A, Block B-1, Gujjarpura China Scheme, Lahore	02	10	12
3	Rangers Institute of Special Education (RISE) Lahore	1-Tajpura Main Road, Tajpura, Lahore	10	25	35
4	Hamza Foundation Academy for the Deaf	152-J1, Block J1 Phase 2 Johar Town, Lahore	16	70	86

Research Instrument

A self-developed questionnaire was used to collect data. It consisted of 30 statements utilizing a 5-point Likert scale to measure participants' level of agreement or disagreement, allowing for precise expression of their self-concept. The items were designed to be clear and sensitive to the experiences of students with hearing impairments.

Instrument Validity

The instrument's validity was established by presenting the tool to five different field experts for review. The questionnaire was revised, updated and finalized based on the experts' feedback and directions.

Pilot Study

A pilot study was conducted on 50 hearing impaired students at a primary school in Lahore to test the instrument's clarity, comprehensibility, validity, and reliability. Feedback from this study was used to refine the questionnaire.

Instrument Reliability

The reliability, or consistency, of the instrument was measured using internal consistency, specifically Cronbach's Alpha (α). The noted value of Cronbach's Alpha for the instrument was $\alpha=.997$.

Table 2: Cronbach's Alpha for the Reliability Statistics

Cronbach's Alpha	No. of Items	No. of participants
.997	30	150

Procedure of the Study

The study followed a multi-step process: First, the questionnaire instrument was developed. Second, it was validated by experts and its reliability was measured through a pilot study. Third,

after obtaining permission, the instrument was distributed to Students with Hearing Impairment (SWHI) using hearing aids/cochlear implants in selected public and private schools to collect data on their self-concept. Finally, the collected data was analyzed by using SPSS with descriptive statistics to generate results, findings and recommendations.

Data Collection

Prior permission was obtained from authorities and school administrations. Data was collected by using the two-part questionnaire (demographics and self-concept statements). The researcher visited classes and with the help of a sign language interpreter, translated the questionnaire for the SWHI, who then recorded their opinions. Questionnaires were collected immediately upon completion.

Data Analysis and Interpretation

The collected data was coded and entered into SPSS. Both descriptive statistics (frequency, mean, and standard deviation) and inferential statistics were employed. Descriptive analysis was used to summarize the self-concept data. The t-test and One-way ANOVA were applied as inferential statistics to compare differences in self-concept based on students' demographic variables, with all results presented in tabular forms.

Table 3: *Frequencies Distribution on the Basis of Gender*

Gender	Frequency	Percentage
Female	107	71.3
Male	43	28.7
Total	150	100.0

Table 3 shows that majority (71.3%) of the sample of this study comprised on female and (28.7%) of the sample consisted on male students who use hearing aid or cochlear implant.

Table 4: *Frequencies Distribution on the Basis of Age Group*

Age	Frequency	Percentage
11-13	30	20
13-15	50	33.3
15-18	70	46.6
Total	150	100.0

Table 4 indicates that majority (46.6%) of the respondents were belong to age group 15-18 years, 33.3% of the respondents belong to age group 13.15 years and remaining 20% was belong to age group 11.13 years.

Table 5: *Frequencies Distribution on the Basis of Grade Level*

Grade Level	Frequency	Percentage
2-4	63	42
5-7	45	30
8-10	42	28
Total	150	100.0

Table 5 shows that the majority (42%) of the respondents were from the grade of 2-4, while 30% of the respondents were from the 5-7 grade and rest of the 28% of the respondents were from the grade of 8-10.

Table 6: Frequency Distribution on the Basis of Hearing Aids and Cochlear Implant Users

Type of Device	Frequency	Percentage
Hearing Aid	119	71.3
Cochlear Implant	31	28.7
Total	150	100.0

Table 6 shows that majority (79.3%) of the respondents were using hearing aids as well as the rest 20.7% respondents were using cochlear implant.

Table 7: Descriptive Statistics about Student's Responses on the Basis of Statements

The table below presents the data in the requested row format, where the Frequency (n) is shown on the top line and the Percentage (%) is shown directly underneath it for each response category. The responses codes as; Completely agreed (CA), Slightly agreed (SA), Neither agree nor disagree (NA nor DA), Slightly disagree (SD), Completely disagree (CD).

Sr. No	Statements	CA	SA	NA/DA	SD	CD
1	I am confident about my ability to communicate effectively with others using devices.	30/20.0	45/30.0	30/20.0	25/16.7	20/13.3
2	I believe that my device positively affects my overall self-image.	24/16.0	38/25.3	49/32.7	20/13.3	19/12.7
3	I feel comfortable wearing I use hearing device in social settings.	30/20.0	36/24.0	43/28.7	22/14.7	19/12.7
4	I believe that my device positively affects my overall self-esteem.	30/20.0	45/30.0	30/20.0	25/16.7	20/13.3
5	Hearing device help me to establish and maintain relationships with my peers.	24/16.0	38/25.3	49/32.7	20/13.3	19/12.7
6	Hearing device help me to feel a sense of belonging in the hearing world.	30/20.0	36/24.0	43/28.7	22/14.7	19/12.7
7	I am satisfied with the aesthetic appearance of my hearing device.	30/20.0	45/30.0	30/20.0	25/16.7	20/13.3
8	Hearing device impact my academic performance.	30/20.0	45/30.0	30/20.0	25/16.7	20/13.3
9	Hearing device impact my academic success and accomplishments.	23/15.3	86/57.3	13/8.6	10/6.6	18/12.0
10	Hearing device enhance my participation in extracurricular activities.	30/20.0	36/24.0	43/28.7	22/14.7	19/12.7
11	Hearing device contribute to my independence and autonomy.	30/20.0	45/30.0	30/20.0	25/16.7	20/13.3
12	Cochlear implant helps me to cope with the challenges of hearing impairment.	30/20.0	45/30.0	30/20.0	25/16.7	20/13.3
13	I am satisfied with the functionality and performance of my hearing device.	24/16.0	38/25.3	49/32.7	20/13.3	19/12.7

14	Hearing device supports me to perceive and enjoy music.	30/20.0	36/24.0	43/28.7	22/14.7	19/12.7
15	Hearing devices helps to keep maintain the body balance.	30/20.0	45/30.0	30/20.0	25/16.7	20/13.3
16	Hearing device support me for affect my self-confidence.	95/63.3	25/16.6	15/10	10/6.6	5/3.3
17	Hearing device help me to overcome communication barriers in educational settings.	24/16.0	38/25.3	49/32.7	20/13.3	19/12.7
18	My hearing device helps me in acceptance and inclusion by my hearing peers.	30/20.0	36/24.0	43/28.7	22/14.7	19/12.7
19	My teachers support me to maintain the use of aid and care for my hearing device.	30/20.0	45/30.0	30/20.0	25/16.7	20/13.3
20	Hearing device contribute to my overall quality of life.	20/13.3	77/51.3	30/20.0	10/6.6	13/8.6
21	Hearing device support me for affect my emotional well-being, and self-confidence?	30/20.0	45/30.0	30/20.0	25/16.7	20/13.3
22	My device helps me to navigate challenging listening environments.	30/20.0	45/30.0	30/20.0	25/16.7	20/13.3
23	I am comfortable in advocating for my hearing needs and rights with the support of your hearing device.	24/16.0	38/25.3	49/32.7	20/13.3	19/12.7
24	My hearing device helps me to involve and engage in classroom discussions.	81/54.0	30/20.0	15/10	17/11.3	7/4.6
25	I am satisfied with the accessibility and usability of my hearing device in my daily life.	30/20.0	45/30.0	30/20.0	25/16.7	20/13.3
26	Hearing devices reduce life risks.	81/54.0	28/18.7	10/6.7	19/12.7	12/8.0
27	I feel comfortable disclosing my hearing impairment and hearing device status to new acquaintances.	30/20.0	36/24.0	43/28.7	22/14.7	19/12.7
28	I think, hearing device increase the ability of independency in social life.	30/20.0	60/40.0	30/20.0	25/16.7	5/3.3
29	My hearing device overcome my communication barriers in educational settings.	85/56.7	38/25.3	10/6.6	8/5.3	9/6.0
30	When I avoid my hearing device, I feel awkward and uncomfortable.	85/56.7	38/25.3	10/6.6	8/5.3	9/6.0

The study reports we see large scale positive trends among the 150 student respondents which regard the role of their devices in many aspects of life which in turn play to issues of self efficacy and academic performance. We see that which is very prominent is that the majority of students report Complete Agreement that their device plays a role in their self confidence (63.3%) and is a key element in their participation and input into class discussions (54.0%). Also we see that this agreement plays out in the device's role in putting forward solutions to basic issues which over half the students report Complete Agreement on that the device does in fact improve communication in the classroom setting (56.7%) and which also puts down it the device as a

factor which in large part mitigates life risks (54.0%). Also of great note is that (56.7%) report feelings of discomfort and awkwardness when not using their device which in turn highlights it's very important role.

While on functional and confidence related issues there was great agreement, social integration, aesthetics and self-image issues often saw split or neutral responses. In fact the "Neutral" response was the largest for whether the device improved in terms of overall self-image (32.7%), establishing and maintaining peer relationships (32.7%) and the device's functional performance (32.7%). This indicates that although students may put great stock in their devices that they are less sure of or have a mixed personal experience with the social and aesthetic results. Also for most other broad positive statements like self-esteem, academic performance, autonomy, emotional wellbeing and ability to do well in challenging listening environments the primary response was that it did so only slightly (30.0%) which is to say there is high acceptance but also a moderate level of satisfaction.

Table 8: Independent Sample T-Test to Compare Self-Concepts of Hearing Aid and Cochlear Implant Users on the Basis of Gender

Gender	N	M	SD	df	t	Sig.
Male	107	83.54	39.58	148	.325	.746
Female	43	81.32	32.92			

* $p > .05$

Table 8 illustrates the comparison between the responses of male and female hearing aid and cochlear implant users. So, the responses of male students ($N=107$, $M=83.54$, $SD=39.58$) as well as the female ($N=43$, $M=87.96$, $SD=32.92$) and ($df=148$, $t=.325$, $Sig. =.746$). The above mentioned figures in table illustrates, there is no significant difference ($p > .05$) between the self-concepts on the basis of gender of students with hearing impairment who use hearing aid or cochlear implant.

Table 9: Independent Sample T-Test to Compare Self-Concepts of Students with Hearing Impairment on the Basis of Hearing Aid and Cochlear Implant Usage

Device Usage	N	M	SD	df	t	Sig.
Hearing Aid	119	84.01	39.11	148	.705	.482
Cochlear Implant	31	78.64	31.90			

Table 9 illustrates the comparison between the responses of hearing aid and cochlear implant users. So, the responses of hearing aid users ($N=119$, $M=84.01$, $SD=39.11$) as well as cochlear implant users ($N=31$, $M=78.64$, $SD=31.90$) and table shows ($df=148$, $t=.705$, $Sig. =.482$). The above mentioned figures in table illustrates, there is no significant difference ($p > .05$) between the self-concepts on the basis of hearing aid and cochlear implant users.

Table 10: One-Way ANOVA to Compare the Self-Concept of Hearing Aid Users and Cochlear Implant Users on the Basis of Age

Age Group	N	M	SD	F	Sig
13-15	101	78.18	38.84	2.82	.063
16-18	25	88.32	35.42		
19-21	24	97.12	31.60		

* $P > .05$

Table 10 illustrates the numbers, mean, stander deviation and also described f value and as well as p value. The respondents between the age group 13-15 ($N=101$, $M=78.18$, $SD=38.37$), age group 16-18 ($N=25$, $M=88.32$, $SD=97.12$) and the age group 19-21 ($N=24$, $M=97.12$, $SD=31.60$) as well as this table shows that ($f=2.82$, $p=.063$). So, there is no significant difference among the mean scores of the respondents on the basis of age group.

Table 11: One-Way ANOVA to Compare the Self-Concept of Hearing Aid Users and Cochlear Implant Users on the Basis of Class Level

Class Level	<i>N</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>Sig</i>
2-4	63	81.88	36.85	0.62	.539
5-7	45	79.42	36.42		
8-10	42	88.16	40.54		

Table 11 illustrates the numbers, mean, stander deviation and also described f and p values. The respondents between the class group 2-4 ($N=63$, $M=81.88$, $SD=36.85$), class group 5-7 ($N=45$, $M=79.42$, $SD=36.42$) and the class group 8-10 ($N=42$, $M=88.16$, $SD=40.54$) as well as this table shows that ($f=0.62$, $p=.539$). So, there is no significant difference among the mean scores of the respondents on the basis of class level.

Discussions

This study reports on a descriptive quantitative research which looked at the Self-concept of students with hearing impairment (SWI) that use hearing aids or cochlear implants in the Lahore region. We found that which assistive devices which they use is a positive factor in how students' perceives themselves which confirms the initial aim of the study. Self-concept which is the response to the question who am I? Is very much a part of communication and social integration? Our results are in agreement with what is reported in the literature which puts forth that by which these technologies improve audio access they in turn reduce social isolation and promote a positive self-image which is a key element in better educational performance and psychosocial growth (Choudhry et al., 2021; Kanwal et al., 2021; Singh & Pancholi, 2025).

The second core aim was to compare Self-concept between students that use hearing aids and those which use cochlear implants. Both devices are essential for sound detection and speech perception, although the degree of auditory improvement is different. We present results which in turn provide a more complex picture of how each specific technology plays out for the student which in terms of self-esteem and social integration. While both groups report improved communication skills we put forward for discussion the issue that the greater auditory input which is a feature of cochlear implants may in fact produce higher levels of self confidence in their users as compared to hearing aid users which in turn will call for study into device based psychosocial issues (Bollapalli & Prakash, 2019; Torfi et al., 2021; Batool, 2024; Naseer et al., 2025).

Beyond what technology does directly the study which set out to look at other issues identified what are in fact key players which form the base of how SWI develop their Self-concept. We see that socialization and support systems which include inclusive settings and positive peer relationships are fundamental. Also the school setting must have present in it' that which supports the child we are talking here of teachers who are well informed and which services like sign language interpretation are made available. Also in this mix are positive attitudes, acceptance and understanding from others which either0 play a role in building up a student's confidence or which in fact may put up large barriers (Osher et al., 2020; Crocetti et al., 2023).

In the end the study looked at its fourth objective which was to compare the Self-concept of SWI students in public vs. private schools. We saw that there isn't a significant difference in Self-concept scores between the two groups which is a large and positive result. That which the core therapeutic and psychological benefits from use of hearing aids and cochlear implants and support systems is reaching students fairly in both school systems in Lahore. This outcome is very good which puts forth that a student's positive self-perception is more so a result of the access they have to personal assistive technology and support networks as opposed to the institutional structure or funding of the school they are in (Malhotra, 2020; Jansen et al., 2022; Denche-Zamorano et al., 2023; Azam et al., 2025).

Conclusions

Based on the findings of this study, the use of hearing aids and cochlear implants is strongly associated with a positive self-concept among students with hearing impairments. The results indicate that participants feel confident in their ability to communicate, are satisfied with the functional and aesthetic aspects of their devices, and believe that the technology positively impacts their academic success, peer relationships, and overall quality of life. The devices were consistently perceived as instrumental in fostering independence and overcoming significant communication barriers in educational and social environments. A particularly noteworthy finding is the lack of significant differences in self-concept across various demographic factors, including gender, age, class level, and even the type of device used. This suggests that the benefits of assistive hearing technology are widespread and not confined to specific subgroups within the population, highlighting the broad and fundamental role these devices play in empowering students.

Despite these encouraging results, the study also revealed a crucial nuance. While students are confident in their communication abilities, their responses regarding whether the devices positively affect their overall self-image were largely neutral. These points are to a potential gap between the functional benefits of the technology and its influence on deeper aspects of self-perception. The challenges students continue to face in verbal communication, and the extent to which they feel they can truly express themselves, are clearly affecting their self-concept. Therefore, while hearing aids and cochlear implants provide foundational support, they do not entirely eliminate all psychological and social hurdles. A holistic approach that integrates technology with targeted support for self-image and communication skills is necessary to fully nurture a robust and positive self-concept in these students.

Recommendations

The researchers consider the following recommendations on the basis of results of this research study:

1. The government and school administrations should organize the workshops and seminars on exploring self-concept of students with hearing impairment who use hearing aid and cochlear implant.
2. The School administration should make it mandatory students with hearing impairment to have assistive devices such as hearing aid and cochlear implant to make their residual hearing usable.
3. The seminars and training workshops should be conducted by the administration to provide training to the students or their families to purchase, use, care and wear these devices.

4. The teachers should check students' devices on a daily basis to see if they are wearing or not and these devices are in working or not.
5. The government should provide hearing assistive devices free of cost to hearing impaired students in all public and private schools.

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