

International Journal of Community Music  
Volume 15 Number 3

© 2022 Intellect Ltd Article. English language. [https://doi.org/10.1386/ijcm\\_00069\\_1](https://doi.org/10.1386/ijcm_00069_1)

Received 25 March 2022; Accepted 16 September 2022

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# The CI Music Hour: Building community and promoting well-being through music appreciation

## ABSTRACT

*The Cochlear Implant (CI) Music Hour is a weekly music appreciation session hosted by a major university in the United States. Led by researchers in music and audiology, the CI Music Hour combines research and community engagement. This study primarily examined the relationship between involvement in the CI Music Hour, musicianship and general well-being of its participants during its two years of existence. A second aim was to uncover resources, learning environments and relationships that our community members found meaningful in the CI Music Hour. In this mixed methods study, we collected qualitative data from weekly CI Music Hour observations and in-depth interviews,*

## KEYWORDS

community music  
cochlear implant users  
hearing loss  
listening rehabilitation  
audiology  
ear training

*and quantitative data in the form of a self-report on musicianship from sixteen community members. Findings were analysed using Martin Seligman's five categories of well-being, along with an additional category for negative emotions from the PERMA (Positive Emotions, Engagement, Relationships, Meaning, and Accomplishment)-profiler. Our findings suggest that although experiences and levels of musicianship varied, instances of negative emotions were counter-balanced with positive experiences identified in Seligman's well-being theory. Many of these experiences were the direct result of music making within a group setting and building connections with fellow CI users, thus indicating a benefit to participating in the CI Music Hour.*

## INTRODUCTION

Collective music making is at the heart of community music, which presents itself in at least three ways: communal music making, music of a community or an intervention (Bartleet and Higgins 2018). This article reports on a community of music makers called the Cochlear Implant Music Hour (from here on referred to as the CI Music Hour or Music Hour). This group was created through a research lab at a major university to foster music appreciation within a community of cochlear implant (CI) users, with much attention to issues of inclusion, diversity and music making across the lifespan. While the initial meeting occurred in-person before the COVID-19 pandemic, the group quickly adapted to meeting every week over Zoom throughout the pandemic and continues to meet online.

In this article, we focus on the connections between involvement in the CI Music Hour, musicianship and general participant well-being using Martin Seligman's (2011) Flourish theory as our main framework. We also reflect upon resources, learning environments and relationships that our community members found meaningful in the CI Music Hour. We begin with a brief discussion of research on music and well-being, including Seligman's (2011) PERMA (Positive Emotions, Engagement, Relationships, Meaning and Accomplishment) model. We then characterize music making and the hard-of-hearing community, with a special emphasis on CI users and their challenges with music appreciation. Altogether, these offer a backdrop and a motivation for our study.

### **Seligman's PERMA model**

Maslow's (1943) work on hierarchy of human needs paved the way to new developments in psychology including the emergence of positive psychology, a field that focuses on topics such as character strengths, life satisfaction and well-being. Following several years of research, Seligman (2011) proposed five measurable components of well-being known as PERMA: Positive emotion, Engagement, Relationships, Meaning and Accomplishment. Positive emotion, the first element of the model, is known to be central to human flourishing. Engagement is linked to Csikszentmihalyi and Csikszentmihalyi's (1988) idea of flow, when individuals are deeply engaged in a task that has a good balance between skill and challenge, temporarily losing their sense of time and self. Humans are social beings; relationships therefore give meaning to life. Humans are also meaning makers; as Croom contended, 'having meaning or purpose in life has been considered by scholars to constitute an important element of psychological well-being' (2014: 53). Finally, accomplishment

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relates to the achieving life, 'a life dedicated to accomplishment for the sake of accomplishment, in its extended form' (Seligman 2011: 19). Together, these five elements comprise the Flourish theory (Seligman 2011) used to ground our study.

Seligman's PERMA model (2011) has been used in several recent studies on music and well-being. In a meticulous review of literature, Croom (2014) argued that music practice and participation can positively contribute to human flourishing. Ascenso et al. (2018) had classically trained professional musicians complete the PERMA-profiler, a questionnaire focusing on the five components of the PERMA model. Findings suggested that musicians scored relatively high across all five components, with meaning receiving the highest ratings. Faran et al. (2021) found a significant positive relationship among music, emotion regulation and well-being in university students, with emotion regulation playing a mediating role. Findings from these studies suggest a link between music and well-being.

### ***Music and the deaf and hard-of-hearing (DHH) community: CI users***

Many studies have focused on the musical experiences of individuals who are DHH, including those who self-identify as musicians (Churchill 2015; Jones 2016). The approval of the single-electrode CI for adults in 1984 by the FDA, followed by the multiple-electrode CI in 1987 for adults and subsequently for children (in 1990) helped to define a new identity: the CI user (see Churchill 2015). Several studies on musical responses, engagement and enjoyment of children and youth with CIs (Gfeller and Lansing 1991; Schraer-Joiner and Chen-Hafteck 2009) offer clues into musical appreciation for CI users.

Music appreciation is particularly important for CI users (Looi et al. 2012). CIs are neuroprosthetic devices that essentially restore hearing to the deaf through electrical stimulation of the auditory nerve (National Institute on Deafness and Other Communication Disorders 2021). While these devices succeed at processing speech into meaningful sound, they are not built to process a wide range of pitches, timbres and harmonics involved in music (Jiam et al. 2017). As a result, many individuals who are implanted often experience a decrease in music enjoyment post-implantation. While many studies attempt to address this issue through auditory perception analyses in CI users (e.g. Jiam et al. 2017), little research is currently available on more immediate support to improve music making and appreciation among CI users. Research on the types of environments and musical characteristics (e.g. timbre, lyrics and key) that are most beneficial for listening to and enjoying music with a CI (Gfeller et al. 2008), and on the impact of music on the well-being of CI users (Dritsakis et al. 2017) have emerged in the literature. Yet, most of these studies concentrated on rehabilitation, not on actual uses of music in everyday life and its enjoyment through community music programmes. How community music programmes may impact the lives of CI users remains elusive.

### ***The CI Music Hour***

The CI Music Hour was created through the Bionic Ear Lab at the University of Southern California's Keck School of Medicine in December of 2019 to better understand the challenges of music appreciation among CI users and to foster social and musical engagement among all participants. Since then, we have

held over 70 virtual meetings with an average attendance of 22 participants, including CI users, faculty and students. Most weeks, the Music Hour features a different guest presenter based on CI users' requests, popularity of previous guests and diversity of musical content. A list of the group's favourite and most notable past guests includes Evelyn Glennie (Scottish percussionist and advocate for the deaf), Beegie Adair and Monica Ramey (late American jazz pianist and jazz vocalist, respectively), Richard Reed (American musician and hearing loss advocate), Billy Livsey (American music producer and songwriter), Cynthia Lilley (Dalcroze instructor and member of the Dalcroze Society of America) and Dr Brad Ingrao (audiologist and musician). Once a month, we hold a Music Hour for the group members, with no external guests. These Music Hours involve a variety of activities including presentations of study outcomes from the Bionic Ear Lab, group sing-alongs to CI users' favourite songs, group ear training games and musical performances by CI users.

Each Music Hour follows the same general structure: welcome and weekly check-in (announcements or personal stories from group members may be shared during this time), a brief introduction of the guest or activity of focus that week by one of the Music Hour facilitators and a presentation by the guest interspersed with questions and comments from Music Hour members. The structure of meetings is fairly open as content and activities are variable depending on the visiting guest. While sessions are not recorded for presenters' and participants' privacy, details of each meeting are documented in writing and sent out to the Music Hour group following each session, for future discussion. Summaries are written with the broad musical experiences of the CI user group members in mind. As a result, musical terms are often briefly explained, and any valuable music practice tips and resources are clearly listed.

The format and content of the CI Music Hour is ever changing due to the diversity of guests, members' interests and our growing community. While the Music Hour began with CI user participants based in Los Angeles, California, the group has continued to expand over time to include members from all over the world. Current members were recruited through distribution of CI Music Hour flyers. The Music Hour has also welcomed new members through word of mouth (e.g. current CI user members sharing the group with friends). Anyone with a CI and interest in music is welcome to join the Music Hour on a regular basis by contacting one of the Bionic Ear Lab staff through our website: <https://sites.usc.edu/bionicearlab/contact/>.

### **Study aims**

The primary aim of this study was to understand the relationship between involvement in the CI Music Hour, participant self-reported musicianship and general well-being during its two years of existence. A secondary aim was to uncover resources, learning environments and relationships that our community members found meaningful in the CI Music Hour, to assist with subsequent sessions and events.

## **METHODS**

### **Participants**

While our Music Hour community consists of CI users, students, faculty and researchers, this study focused on the experiences of the CI users. Our study included nine females and seven males (age range = 46–78 years, mean = 64.81), residing domestically in eight different US states and internationally in

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Poland. Participants in the Music Hour represent a wide range of hearing loss characteristics and music experiences. Some participants in the group were born hard-of-hearing, while others lost their hearing later in life due to accident, illness or gradual decline. At the onset of the study, participants used their CI's for anywhere between a few months and over 30 years. Three individuals had a unilateral set-up, meaning they had a CI in one ear and were completely deaf in their other ear. One of them was single-sided deaf, meaning they had a CI in one ear and were normal hearing in their contralateral ear. Eight participants were bilateral, meaning they used a CI in both ears. Five were bimodal; they use a CI in one ear and a hearing aid on the other. Finally, participants varied greatly in their musical backgrounds. Some had little to no musical training and others were professional musicians. All study participants were recruited from our CI Music Hour e-mail list.

### ***Study design, data collection tools and procedures***

Well-being and their links to music appreciation and hearing loss trajectories were common topics in conversations between Music Hour members, leading us to employ an embedded mixed methods design, in which qualitative and quantitative data are collected simultaneously (Creswell and Guetterman 2021). Qualitative data were collected through individual, semi-structured interviews (Seidman 1990) focusing on participants' personal hearing loss journeys, musical background and interests, and quantitative data were collected through self-report instruments concerning participants' musicianship (Müllensiefen et al. 2014). We later combined, contrasted and mixed qualitative and quantitative data to form a better understanding of the experiences of our community members. Data collection spanned from September 2020 to April 2021. All study protocols were approved by the University of Southern California Institutional Review Board.

#### *Qualitative data: Semi-structured interviews*

Prior to scheduling interviews, each participant signed an informed consent form reviewing their participation in the broader Music Appreciation After Cochlear Implantation Research study through the Bionic Ear Lab. Semi-structured interviews were conducted by two CI Music Hour facilitators via Zoom and lasted approximately one hour. Interview questions were designed to better understand participants' hearing and musical backgrounds, and to address themes from the study aims including learning environments, resources and relationships. During each interview, participants were asked the following questions and prompts:

- When did you become hard-of-hearing? Tell us about your hearing story.
- What kind of hearing device(s) do you use and for how long have you used it (them)?
- Do you identify as a musician? Tell us about your musical journey.
- What would you like to see at a CI Music Hour this year?
- Why is the CI Music Hour important to you?
- What types of musical engagement would give you the most benefit? Why?
- Do you have any personal musical goals? Please explain.
- Is there any other relevant information you would like to share?

As is typical of semi-structured interviews (Seidman 1990), other topics and questions emerged, including childhood memories, musical experiences, everyday hobbies and various hearing loss experiences. Following each interview, participants were thanked for their time and compensated \$15.00 for their participation. Interviews were then transcribed through Otter.ai (Otter.ai 2022) and checked by the researchers for consistency.

### *Quantitative data: The Goldsmith Musical Sophistication Index (MSI) Self-Report Inventory*

Musical sophistication and experience were measured through a combination of interview questions and the Goldsmith MSI Self-Report Inventory, a 39-item psychometric instrument used to measure an individual's holistic musical ability, including instances of formal and non-formal music training and engagement (Müllensiefen et al. 2014). This index was used to supplement the musical experiences that participants shared during interviews. The questions on this assessment tool are grouped into five subscales: active engagement, perceptual abilities, musical training, singing abilities and emotion. In this study, we focused on the General Music composite score, which encompassed answers to questions pertaining to each of the five subscales.

### **Data analysis**

As we began to analyse data, our team noticed how interview responses relating to musical identities, meaningful types of music engagement, personal goals and group relationships reflected many themes found in Seligman's (2011) well-being work. Seligman's PERMA model, with its emphasis on five unique components of well-being, closely reflected the nuances of experiences observed within the Music Hour and interviews. It was at this point that we adopted Seligman's PERMA model (2011) as an analytical tool to deductively code the experiences of CI users in relation to their participation and views of the Music Hour and perceived well-being. Secondary aims of the study were also uncovered in this process as discussions of resources, learning environments and relationships are all relevant to the PERMA model and areas of well-being.

Butler and Kern (2016) clarified each letter's description of Seligman's PERMA model in their PERMA-profiler measure and added a sixth domain – negative emotions – to account for negative experiences and challenges (2016). In this augmented evaluative measure, PERMA(N) stands for **P**ositive emotion, **E**ngagement, **R**elationships, **M**eaning, **A**ccomplishment and **N**egative emotion. Butler and Kern's PERMA-profiler is traditionally a 23-item measure, consisting of a total of fifteen PERMA related questions (three per category) (2016). For the purposes of this study, we did not use the actual PERMA survey, but adopted this categorization system as a foundation upon which to code interview data.

Interview data were first analysed independently and categorized in terms of the six abovementioned key PERMA(N) domains by each individual researcher. To establish trustworthiness of data, the researchers met to discuss differences and similarities in coding before reaching a final consensus. For example, if the researchers placed the same comment in two different PERMA categories, the researchers reviewed Seligman's original definitions for the two categories in question, along with practical

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examples of the category (Seligman 2011). Following this review, researchers came to an agreement to place the interviewee comment either within one PERMA category or in two PERMA categories to reflect the duality of the comment.

Next, the research team engaged in data mixing, as is typical of mixed methods research (Creswell 2017). We contrasted interview responses with self-report data and discussed whether scores obtained through the MSI reflected participants' self-identification as musicians. Quantitative data also guided our understanding of how musical sophistication scores related to experiences (i.e. relationships created, music engagement and musical accomplishment) in and outside of the Music Hour. This process further addressed the secondary aims of the study in uncovering types of resources and learning environments that could be helpful to CI users. Finally, we used member checking as a form of data triangulation (Creswell 2017). Following the completion of analysis and the write-up of all research findings, a draft of the article was shared with study participants and their feedback was incorporated.

## FINDINGS

### *Interview data analysed through a PERMA lens*

In our study, the PERMA category with the largest number of occurrences was negative emotion, followed by accomplishment, engagement, relationships, positive emotion and meaning. Figure 1 offers a representation indicating participants' responses per PERMA category.

#### *Negative emotions*

The largest category, *negative emotion*, included 52 examples of difficulty with music perception, feelings of social isolation and being let down from high expectations. Fifteen out of sixteen participants shared at least one instance of negative emotion, as seen in the words of two participants:

I have a supportive family, but they don't always know ways to help me... the once-a-year audiology appointment is not enough so this [CI Music Hour] is filling in the gaps.  
(Participant 7, female, bilateral user, self-identified musician)

I've kind of resigned myself that I'm not gonna enjoy listening to music.  
(Participant 13, female, bimodal user, self-identified non-musician)

Participant 8, a male, bilateral user who self-identifies as a musician shared how listening to music never became fully satisfying after receiving both of his CIs, despite him having a deep desire to enjoy music again. Each of these examples represents instances of negative emotion due to participants' experience of isolation, disappointment or frustration. Instances of negative emotion surrounding music perception after implantation were consistent with observations and comments made by non-study CI Music Hour participants during CI Music Hour sessions.

#### *Accomplishment*

The second largest category, *accomplishment*, centred on the expression of musical goals, accomplishments in hearing outside of the CI Music Hour and

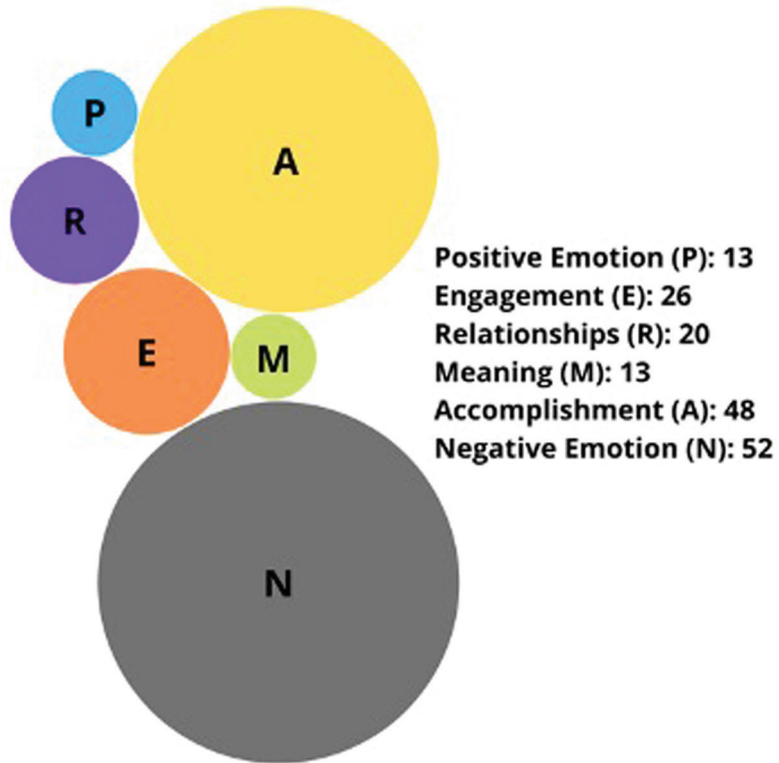


Figure 1: Frequency count of PERMA(N) categories. Data represent findings from all sixteen participants. Numbers after each domain name indicate the number of occurrences of each category for the participants as a group.

musical progress made during the CI Music Hour. A total of 48 examples of accomplishment emerged in the interviews.

I mean, it was pretty [much] a milestone for me to be actually playing something, even if it's banging a drum. So that was a stretch, yeah...so I guess it's all fun.

(Participant 13, female, bimodal user, self-identified non-musician)

I'm not sitting dormant, hoping things will get better. I'm really trying to do things that I maybe have never done before like playing scales so my fingers can really feel the right places.

(Participant 6, female, bimodal user, self-identified musician)

According to Butler and Kern, accomplishment involves working hard to achieve goals and mastery (2016). It is apparent in these two quotes that access to learning environments in which participants could engage in new forms of music engagement was helpful in guiding them towards their goals. All but one participant shared at least one instance of accomplishment that involved strong motivation to work towards musical and hearing development and feelings of pride when achieving these goals.



### *Engagement*

The next most prominent category was *engagement*, which emerged 26 times during the interviews, and was mentioned by fifteen participants. Music engagement typically involves a state of intense concentration, absorption and focus (Butler and Kern 2016; Seligman 2011). According to Small (1998), music engagement may involve performing, listening, rehearsing, practising, composing, dancing or being involved in a music production. Instances of engagement from participants embodied both definitions at various levels.

I liked hearing the musicians that played different scales and different intervals, even though that was not part of my original training. I found myself pulling the hearing aid out, just listening with the cochlear implant, pulling that out and putting both in just to see how I could better understand those different intervals.

(Participant 6, female, bimodal user, self-identified musician)

In her interview, Participant 6 also shared ways she practised listening with her CI outside of the CI Music Hour.

So after getting kicked out [of school orchestra rehearsals due to hearing loss], I was so crushed that the violin got thrown into the bottom of the closet... the last 20 years or so I stopped playing the fiddle.... Now with the combination of the cochlear implant and the hearing aid together, I started playing the fiddle again. But now at first, it's like a little embarrassing to put the stickers on my own [fiddle]. But I'm finding that it is helping me to get my fingers down in the right place.

(Participant 6, female, bimodal user, self-identified musician)

Participant 5, a male, bimodal who self-identifies as a non-musician, shared how six months following his implant surgery he began to listen to music for one hour every day. This participant believed that listening to music that he knew from before his surgery helped to 're-train' his brain in hearing music again.

The examples above reveal not only instances of engagement but also several resources that can aid CI users in music perception: listening to scales and intervals, using visual cues (i.e. stickers on the fiddle) and listening to familiar music. While study participants mostly shared personal music engagement experiences, individuals also shared that by speaking with CI Music Hour group members and facilitators, they benefited from a cross-exchange of strategies to practise pitch perception and active music listening.

### *Relationships*

*Relationships* emerged twenty times in the interviews and were mentioned by twelve participants. Relationships were more commonly associated with family and friends outside of the Music Hour, although some related with the Music Hour community. The quotes below are from participants' responses to the following question: why is the CI Music Hour important to you?

Partly, because it is a community of similarly afflicted people with similar interest in music. Partly, because I'm learning a lot about instruments and music that I would enjoy even if my hearing was perfect.

(Participant 8, male, bilateral user, self-identified musician)

This is my connection to others who struggle with music.  
(Participant 11, female, bimodal user, self-identified musician)

These examples together demonstrate a specific type of relationship that is most impactful to many CI users: connection with others in similar positions. Although the group varies in their hearing loss backgrounds and levels of musical experience, they all have hearing loss and appreciation for music in common. These connections are important in building a strong and safe community for music appreciation.

### *Meaning and positive emotion*

*Meaning and positive emotion* were mentioned the least in the semi-structured interviews. Twelve participants shared at least one instance of meaning and eleven shared at least one instance of positive emotion. Meaning relates to instances where individuals feel a strong connection to something larger than themselves or feel a sense of purpose and direction in their lives (Butler and Kern 2016). Participants' experiences of meaning often involved feeling close connections to a particular piece of music, a career (i.e. in hearing loss advocacy) or a specific musical memory. For example, Participant 4, a male, unilateral user, who self-identified as a musician, shared how he found value in exploring music appreciation with the CI because of its overlap with his career in physics. He enjoyed tracking all his musical progress with his CI, in the same ways as he would in a lab setting.

Positive emotion is often characterized by feelings of gratitude and joy, as well as the cultivation of hope and optimism (Seligman 2011; Butler and Kern 2016). These experiences for CI users often involved feeling a sense of excitement and hope when they were able to hear music through their CI. Other examples were associated with the recollection of a joyful musical memory.

I love to hear it every day. I don't go a day without any kind of music.  
(Participant 14, female, unilateral user, self-identified musician)

### ***Intersections between PERMA domains***

Although our data were categorized in relationship to individual PERMA domains (Butler and Kern 2016), there were many convergences and overlaps between them. Figure 2 depicts overlapping themes between PERMA categories.

The relationships category revealed examples of positive emotions, such as joy and gratitude. A participant describes how during her time volunteering as a research participant for the Bionic Ear Lab she enjoyed not only building relationships with people but also improving upon her listening abilities.

So yeah, I tested with them for years. And I always felt I was happy to do it because I was so grateful that Cochlear [device company] helped me. I don't know what I would do without a cochlear implant. I would not have been a happy person at all.  
(Participant 15, female, bilateral user, self-identified musician)

Similarly, reports of meaning were often linked to participants' engagement in musical activities. The following is a quote from another participant who has

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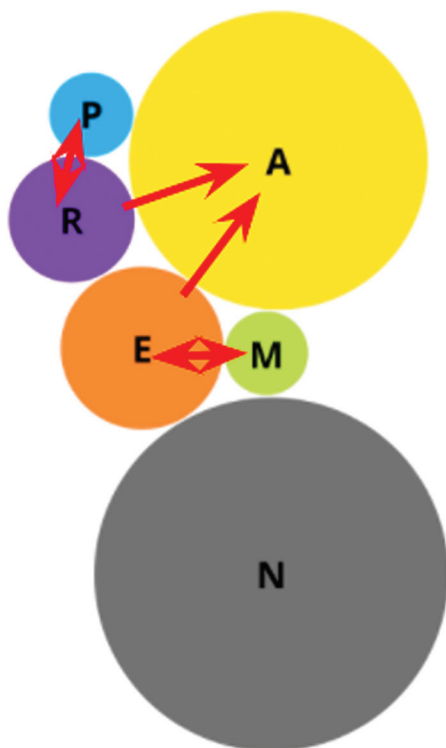


Figure 2: Most common relationships between PERMA categories. Data represent findings from all sixteen participants. The two-sided arrows in the figure represent connections between positive emotions and relationships, and engagement and meaning. The single-sided arrows represent connections from relationships and engagement to accomplishment.

used his CI for over 30 years. Here he shares his recent experience of playing music for his children.

It's pretty recent. Like I've done it before. So, I kind of played around on the guitar for a while. But then, I hadn't been playing for a while. And then I just made the effort to get nylon strings and I put them on. And since then, that was a couple months ago, and I've been playing at their bedtime for about the past month or six weeks or so. And it's really, it's really enjoyable.

(Participant 1, male, unilateral, self-identified musician)

Finally, we found relationships and engagement to support instances of musical accomplishment. For example, Participant 8 shared his experience participating in an instrument identification game during the CI Music Hour. During this session, he was able to correctly identify all the instruments played after listening to brief excerpts. Additionally, the quote from Participant 1 above provides an example of how active engagement with loved ones can lead to a feeling of enjoyment and fulfilment which are both commonly associated with accomplishment. These examples of overlapping themes further reveal the

importance of motivating music learning environments in promoting music engagement among CI users and the importance of a supportive community within those settings.

**MSI scores**

During the interviews, participants shared whether they personally identified as a musician. Eight participants self-identified as musicians. MSI scores are based on a scale from 1 to 7, with higher scores indicating more active musical engagement and higher levels of music training. MSI composite scores ranged between 1.78 and 5.83, with participants who self-identified as musicians scoring at the higher end of the scale (Figure 3).

**DISCUSSION**

The primary goal of this mixed methods study was to investigate the relationship between participation in the CI Music Hour, perceived musician-ship and general well-being among CI users. This work also aimed to uncover meaningful resources and learning tools for our CI Music Hour community. In mixed methods design, quantitative and qualitative data must be mixed. Therefore, we begin our discussion by addressing the juxtaposition of MSI data (Müllensiefen et al. 2014) with PERMA-informed interview findings. Next, we discuss how our findings support and offer additional insights into the CI user community and their participation in the CI Music Hour, drawing implications for community music.

**Musicianship and music appreciation**

Interviews with participants confirmed the diversity of musical experiences among the CI Music Hour participants. Eight participants identified themselves as musicians or as having significant prior musical experiences. Upon

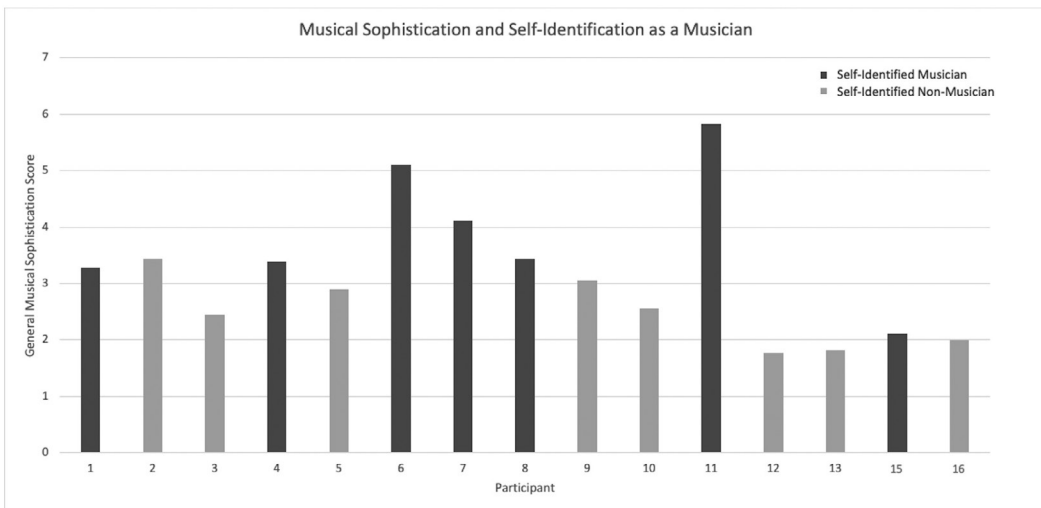


Figure 3: Musical sophistication vs. self-identification as a musician. Participant 14 did not complete the MSI and therefore was excluded from the figure.

revisiting Figure 3, we see that these individuals also tended to have higher MSI scores. However, qualitative findings revealed that even those who did not identify as musicians were still able to engage musically and benefit from this engagement during the Music Hour and other daily life experiences. This was articulated in Participant 13's description of musical accomplishment when playing the drums during the music hour, and Participant 5's report of musical engagement while listening to music in daily life.

These responses suggest that regardless of musicianship level, participants still benefited from and enjoyed musical interactions in and outside of the music hour. These types of music engagement play a critical role in the promotion of well-being (Croom 2014) and point towards the importance of music making in promoting a sense of togetherness within the CI user community. They also reveal the importance of creating safe learning environments where individuals are pushed outside of their comfort zones. While Participant 13 had never played a drum before, she was able to enjoy experimenting with the instrument when surrounded by a supportive community.

Although those who self-identified as a musician shared several positive music experiences in and outside of the music hour, these individuals did not necessarily report more benefits from participating in the Music Hour or enhanced music engagement post-implantation. Additionally, many individuals with high MSI scores shared a common frustration: not being able to hear or enjoy music at the level they were once able to. While frustration and negative emotions associated with music listening in CI users were reported earlier (e.g. Dritsakis et al. 2017), our finding also hints at the intricate link between musical sophistication, implantation and identity an area that requires further research.

Our data further suggest that community music programmes aimed at CI users may potentially curb frustrations with music listening, helping individuals persist in their musical goals. As an example, Participant 8 expressed how negative emotions affected his current motivation to engage with music in everyday life. Still, he continued to participate in the CI Music Hour regularly. This points to another important purpose of the Music Hour: to provide individuals with regular musical engagement within a safe environment, which may eventually promote engagement outside of the hour.

### ***Counterbalancing negative emotions through community building***

Despite the negative challenges shared by our participants, they were nevertheless able to positively engage with music through the CI Music Hour and other instances in their life with the right amount of support and perseverance. Interviews revealed instances of accomplishment (excluding negative emotions), as well as relationships and engagement. It is possible that we saw fewer instances of positive emotion and meaning because these take time to develop, especially in the face of hardships such as those experienced by the CI user community. Butler and Kern (2016) found upon creating the PERMA-profiler that instances of positive emotion were strongly and inversely correlated with negative emotion. Perhaps because of the larger number of challenges reported, participants shared fewer positive emotions during interviews. However, our data suggest that these challenges are counterbalanced by more frequent occurrences of accomplishment, engagement

and relationships. The domain of relationships in particular is a strong inverse correlate of loneliness (Butler and Kern 2016). The CI Music Hour is a place where CI users can counter feelings of isolation and frustration by coming together with other individuals who share similar experiences. Participant 11 stated this beautifully in her quote shared again below:

This is my connection to others who struggle with music.  
(Participant 11, female, bimodal user, self-identified musician)

Interview data along with our own observations during the CI Music Hour suggest that participants were on the path towards rediscovering their appreciation for music. Many CI users expressed that they looked forward to the weekly CI Music Hour because it provided them with opportunities for social engagement with similarly hearing individuals. Consistent with earlier studies (Mäki-Torkko et al. 2015), our participants also expressed experiences of social isolation as hard-of-hearing individuals and the resulting importance of a supportive community like the CI Music Hour. In one meeting, a CI user expressed how he felt he had missed the entire US social revolution of the 1960s because he could not hear any of the music. This began as a group conversation about how music can influence thoughts, opinions and emotions. Another CI user wondered if she would have been active in anti-Vietnam War protests had she been able to hear the songs of the time better. These types of conversations among individuals who share similar experiences are important in the development of a sense of belonging and resilience, and in building community (Cross 2001). They also align with the social functions of music: contact, social cognition, co-pathy, communication, coordination, cooperation and social cohesion (Koelsch 2013).

### **Music appreciation resources**

Study participants shared that one of their main goals was to enjoy listening to music again due to the CI's poor pitch resolution. Interviews revealed that by speaking with CI Music Hour group members and facilitators, participants benefited by exchanging rehabilitation practices that helped them outside of the Music Hour and felt this dialogue could help others outside of the group. This demonstrates a community-centred effort to promote music appreciation and a broader motivation to help others in similar positions outside of the CI Music Hour community. Rehabilitation practices shared by members included listening to short examples of solo instruments playing simple melodies, using lyric sheets to follow along with favourite pre-hearing loss songs and utilizing visual cues to follow melodic contour. A favourite tool for listening to instruments are *Meet the Instruments* videos available on the Dallas Symphony Orchestra website under their *Community and Education* content. Lyric sheets and other visual cues, such as a cursor, make listening a multi-sensory experience and help codify comprehension and pitch perception. As group members made suggestions, we collected all links and created an online resource page for easy access. This resource page also houses YouTube playlists with members' favourite songs and all past CI Music Hour recaps.

### **Limitations**

Our study had some limitations. We recognize that our sample was rather small. We also understand the limitations of using a preset of categories like the PERMA model to interpret qualitative data. Additionally, we placed some

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individual's quotes into two categories to consider how one person's experience may encompass multiple domains of well-being. For this reason, the numbers are not to be interpreted in absolute terms but should be used as a point of departure when developing music programmes for the deaf and hard-of-hearing community.

Most importantly, while we worked to represent participants' words and experiences as accurately as possible, it is important to keep in mind the perspective from which this study is written. As a mixed team of normal-hearing individuals and CI users, some of us have never experienced what those with hearing loss experience daily. While we view this work as a hopeful foundation for promoting CI user well-being through community music engagement, we recognize the limitations of our perspectives.

## CONCLUSION

In her seminal book *Music in Everyday Life*, British sociologist Tia DeNora describes music as a technology of the self (DeNora 2000). For DeNora, music is an ingredient of self-care, or 'a resource to which people turn in order to regulate themselves as aesthetic agents, as feeling, thinking and acting beings in their day-to-day lives' (2000: 62). Self-regulation, in turn, demands awareness of a need for regulation as people go about their daily lives and reflexivity. It is also profoundly linked to self-identity. DeNora further describes music as a 'container for feeling' (2000: 74) that connects and renders events meaningful over time. This is partly due to music's unique capacity for emotional induction and expression (Juslin 2016). We believe the reason why our CI users continue to participate in the Music Hour is linked to this idea of music as a source of self-care through reflexivity, and as a form of self-identity. Through music appreciation activities and dialog with peers, members of our community have opportunities to connect (and, in some cases, reconnect) to their aesthetic and musical selves in a shared, safe space. But music does not only operate at individual levels. Through their engagement in collective listening experiences, individuals are afforded with opportunities to immerse themselves in the music and re-examine their own musical selves, in relationship to their own experiences and in relationship to those of the other members. Thus, the Music Hour is a collective space where CI users can engage in identity work and build community, while working on their own music listening skills.

Although the CI Music Hour was conceptualized and started before March 2020, it gained momentum during the pandemic. As one of our participants stated when offering feedback about this manuscript:

I believe the need for something like the Music Hour existed long before COVID. COVID may have prompted greater use of tools such as Zoom, allowing us to 'meet' without breathing each other's air, but for me at least the presence of COVID was at most a tertiary influence on my loss of enjoyment and community due to my adult-onset deafness and subsequent CI implantation. My experience of social isolation and other negative emotions far predated the onset of COVID, and mostly was precipitated by the inability to hear music satisfactorily and (probably more importantly) to participate alone and with others in making music. Deafness and the use of CIs makes nearly all social interaction more difficult (than for normal-hearing people) because it interferes with the ability to carry on conversations well, especially in challenging

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environments. However, for me at least, the loss of music was more devastating. If I were more extroverted and more conversational prior to my hearing loss, maybe I would have missed the conversational aspect more, but as it was, the loss I felt most acutely was the loss of music. The CI Music Hour more than anything else has brought me back to enjoying music again, even though that enjoyment is not 'perfect'. And yes, I still have a ways to go: I still need to more actively engage with music in order to improve my enjoyment of it and of life in general. Long ago, I distanced myself from music, and was plenty busy with work and family; in effect I told myself it was a luxury no longer available to me. I need to work more to overcome that habit of 'distancing'.

(Participant 8, male, bilateral user, self-identified musician)

To conclude, with this study we explored the experiences of our participants in this community music initiative through the lens of well-being. Our findings reinforced the role of community support in promoting well-being through music appreciation and engagement among CI users, irrespective of their levels of musicianship or previous musical background. While self-identification as a musician and perceived levels of musicianship obviously impact the musical experiences of CI users, our findings suggest that musical appreciation workshops such as the ones carried out in the CI Music Hour can provide meaningful opportunities for learning and reflection for all. Community musicians are likely to encounter varied levels of musical experience and hearing when working with CI users. Therefore, it seems reasonable to design workshops and activities that include a wide range of listening, performance and movement to engage participants.

Findings from our study also provided a platform upon which we can build upon for the CI Music Hour moving forward. While there were several reports of positive music engagement within the Music Hour (e.g. learning about new instruments, discussions of music perception with fellow CI users and engaging in multi-sensory musical activities), we would like to continue exploring ways to support CI users in feeling more confident in their musical identities outside of the Music Hour. As we continue on our journey with the CI Music Hour, we also continue to hold inclusion, diversity, community responsibility, creative opportunities, excellence and lifelong music making (Bartleet and Higgins 2018), as critical goals for our work.

## ACKNOWLEDGEMENTS

We would like to thank all CI Music Hour participants for their time and willingness to share their stories with us. We would also like to thank the audiologists in the USC Keck School of Medicine for helping with participant recruitment.

## FUNDING

National Institute of Health NIDCD 1 R01 DC018701 Music Appreciation after Cochlear Implantation.

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## SUGGESTED CITATION

Kovach, Chrysa, Papadopoulos, Julianne, Ilari, Beatriz and Goldsworthy, Ray (2022), 'The CI Music Hour: Building community and promoting well-being through music appreciation', *International Journal of Community Music*, 15:3, pp. 365–83, [https://doi.org/10.1386/ijcm\\_00069\\_1](https://doi.org/10.1386/ijcm_00069_1)

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