



Supporting scientists who are deaf or hard of hearing

Increasing awareness and better technology bodes for a more positive future for scientists who are deaf or hard of hearing, explains John Dennehy.

I am a microbiologist and professor at Queens College of the City University of New York, who happens to be deaf, and the path to my present position was rife with challenges. I am sharing my experiences with the scientific community in the hope that science can be made more accessible to individuals who are deaf or hard of hearing. Although I was born with profound bilateral hearing loss, I was fitted with hearing aids at the age of three and I now have a cochlear implant, thus I can participate in the 'oral world' without the use of sign language. Nevertheless, communicating with peers, students and colleagues has always been a challenge. In hearing exams under ideal conditions, my word recognition score is approximately 60%, but this falls to zero in noisy situations. 'Hearing' for me consists of guessing the missing words in other's speech. Because I depend on lip reading, following group conversations is difficult.

During the COVID-19 pandemic, several restrictions and changes exacerbated these challenges. Given the imposed mask mandates, I bought clear masks for my lab, but they are not as effective as N95 masks, so I was reluctant to ask my lab members to wear them. Masks remain a significant challenge. A second major challenge was the transition from in-person to remote meetings and classes. Fortunately, I was able to conduct my lectures using software that offers live captioning. While this software struggled with scientific terms such as *Pseudomonas* or β -galactosidase, it was able to capture the substance of my students' questions and comments, and any uncertainties could be resolved with the chat function. Deaf people are generally quite adept at filling in missing information in oral communications.

More problematic were meetings with colleagues, conferences and colloquia, which were held on platforms that did not offer live captioning. I struggled to follow rapid conversations from disembodied, often

masked, heads, or worse, blank screens. In a virtual meeting with a diversity, equity and inclusion group on campus, I sat flustered and embarrassed for 20 minutes while there was a struggle to figure out how to turn on live captioning. The purpose of the meeting was to communicate the challenges that deaf people face in the changing campus environment, so, in this respect, the meeting was successful. Most platforms have made captioning available, so virtual meetings are now easier to follow than in-person meetings.

Despite this progress, there is still much more that can be done. It is important to recognize that researchers who are deaf or hard of hearing have differing abilities to advocate for themselves. For most of my life, I was reluctant to ask for accommodations, for fear of being a nuisance or to imply that I was incapable. I feared that admitting a handicap would make me less competitive for jobs or funding. Additionally, many people, especially those that suffer hearing loss as they age, will deny they have a hearing loss, even if they can benefit from accommodations. It is helpful to offer accommodations proactively, assuming that those who need it may not be willing, or able, to request it. One of the video platforms has a useful feature that allows one to request live transcription anonymously, however, the host must be using the most up-to-date version of the software.

There are several strategies that non-deaf people can use to facilitate communications with researchers who are deaf or hard of hearing. Obviously, mask mandates must be followed, but where possible, it is helpful to maintain eye contact to ensure that your face and lips can be seen when communicating. When speaking to an audience in person, be sure to face the audience and not the screen. Conference organizers could reserve space at the front, so that researchers who are deaf or hard of hearing can sit close to the speakers without having to request specific seats.

When using remote meeting platforms, turn on your camera, so that attendees who are deaf or hard of hearing can read your lips and see facial cues that are useful in interpreting speech.

Often, understanding a conversation may hinge on just a few missed words. If you are having difficulty communicating, try rephrasing your communication instead of repeating the misunderstood phrase more loudly. Rephrasing may offer more cues for interpreting what is being said. In my experience, the volume of the communication is often not the issue. Instead, the clarity and the ability to discriminate from background noise can be the main roadblocks to understanding. The latter is particularly problematic at social events, such as poster sessions, or informal gatherings at the local pub or restaurant. Consider scheduling these events in quieter spaces to be more inclusive of those who are deaf or hard of hearing.

Researchers who are deaf or hard of hearing have much talent and knowledge to offer to the scientific community, but oral communication will be a challenge to their full inclusion. With greater awareness of these issues, the scientific community can help facilitate better communication with researchers who are deaf or hard of hearing. Assistance must be mindfully and proactively provided to scientists with disabilities in different academic contexts to ensure full inclusion, as some may be reluctant to request it. □

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