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LETTER TO THE EDITOR

Declining hearing and the overlooked importance of background sounds

Decline in hearing disrupts family communication (Vas, Akeroyd, and Hall 2017) and noise in the background makes that worse. Background sounds of any kind nonetheless are part of everyday life. The question of this letter is: Do these background sounds have any value?

Sounds can be classified into background or foreground based on what the listener pays attention to. Hearing loss affects not only one's ability to notice sounds – whether they are "foreground" or "background" sounds, but also the ability to select which sounds to pay attention to. Three different settings can be used to illustrate how background sounds can play an important role in daily life: "*at home*"; "*at work*" and "*out and about*".

At home, conversations are usually impromptu; they involve two or more people in the same room, or some from across another part of the house. You might converse while walking past or behind the other person, and each is doing something else, the TV or radio could be on, a jug boils, so you lift your voice. If the phone rings that might require others to be quieter for the moment. When you hear another conversation going on, you can determine its relevance and join in or close a door to reduce the distraction. This shows the dynamics of domestic auditory life, which allows immediate change in background sound level, to cater for these ad hoc needs.

Sounds we hear and make in the house have familiar features, which means we have a sense of what each person is doing and are "in the background". Thus, unexpected sounds get noticed and you inquire or check what has happened; sounds outside are also likely to be noticed if they need attention, like a latch left open, or a knock at the door. Awareness of background sounds in the house plays a role in maintaining the safety and wellbeing of its occupants. Just as an inability to hear what a family member says can generate family concern because the behaviour becomes attributed to reduced care for the other person (Anderson and Noble 2005), the inability to perceive certain environmental sounds in the home can also raise concern and involve risk.

A similar problem could arise in certain occupations. In the workplace, one might be expected to engage with a wide range of people in a group. This entails listening to speech signals that produce rapid changes among speakers; separating these signals is particularly difficult if a person's hearing is declining (Shinn-Cunningham and Best 2008). Disparate sounds in the background makes things even harder. Faulty attribution could arise in such contexts if declining hearing is not recognised as a possible factor.

A relevant matter here: the author suffered a stroke some years ago, resulting in partial blindness (homonymous hemianopia), causing loss of immediate visual awareness of the "next speaker's utterance" off to one side in a group. I have learned how to minimise the disruption of such exchanges, but this experience has also primed me to recognise signs of decline in hearing in a person not hearing a speaker when they are off to one side.

Many places of work involve a combination of noisy machinery and human speech. This creates a conundrum in terms of balancing the need to protect one's hearing while still being able to access important messages conveyed through speech. How to manage these incompatible conditions will have to be correctly resolved (see Laird et al. 2011).

When you are out and about you may hear a voice you recognise, and you turn around to say hello – an ability that is adversely affected by hearing loss. Being able to hear means continually learning what's going on by the sounds you hear, nearby and further away, the spatial auditory world (Blauert 1997). Turning the head is a reflex due to unrecognised sounds you cannot immediately see (Hayato, Masayuki, and Hiroshi 2016). Reduced hearing affects one's awareness of such background sounds and causes anxiety and stress due to not knowing which direction an object is moving (Gatehouse and Noble 2004). This is a "real-time" problem because it is a source of danger in many settings (Cheng et al. 2022). The inability to localise surrounding sounds causes further risk when visibility is reduced (e.g. at night).

While the primary focus in audiological rehabilitation is often to restore the ability to perceive speech communication clearly, and often to eliminate unwanted sounds in the background, the argument presented here is that background sounds are integral to how we function in undertaking everyday activities. The awareness of sounds in the background, whether they are conversational, natural, or mechanical, has an important monitoring and protective purpose. This ability is negatively affected by hearing loss.

Current technology provides benefit for many people who experience declining hearing, and there is a wide spectrum of hearing abilities/disabilities presented in clinics. There is evidence that help is sought by people with "subclinical" hearing loss, but robust data about this are sparse (Frisby et al. 2024). Research of value here would be the design of hearing devices that allow all-around appreciation of the acoustic environment. A condition equivalent to that could include testing a

range of hearing abilities with and without the aid of current electronic technologies to discover the ability to distinguish signals in various spatial settings. That could indicate the value of developing electronic devices that are more representative of real-world conditions.

In conclusion, background sounds provide important information necessary for effective functioning in daily life. This letter aims to serve as an encouragement for a renewed consideration of the importance of background sounds, and how the awareness of these sounds can be restored to individuals with hearing loss.

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Author contributions

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