

A close-up photograph of a person's hand touching a small, square, white device attached to a blue wristband. The device has a circular indentation on its top surface. The background is a blurred green, suggesting an outdoor setting.

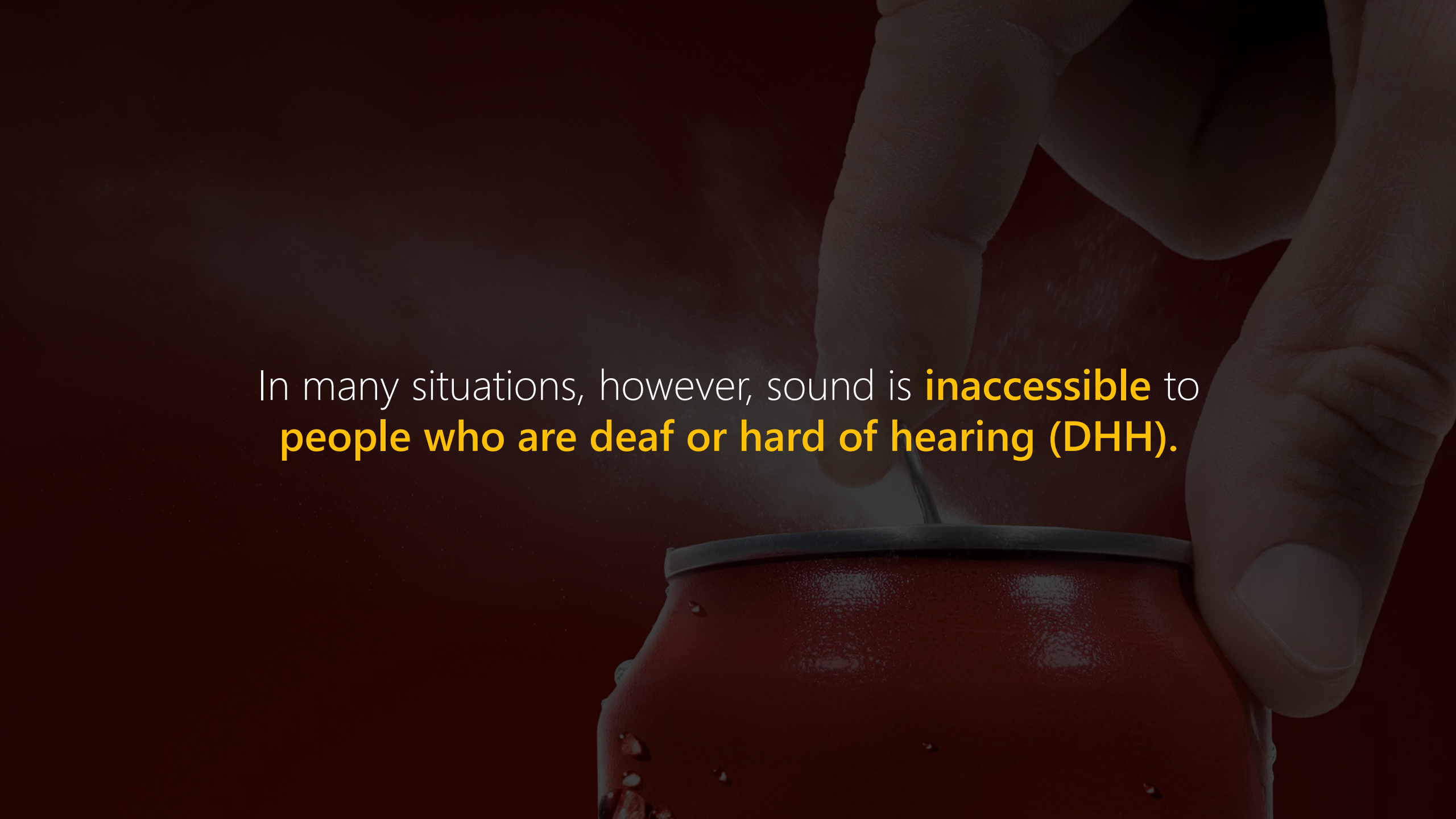
Field Study of a Tactile Sound Awareness Device for Deaf and Hard of Hearing Users

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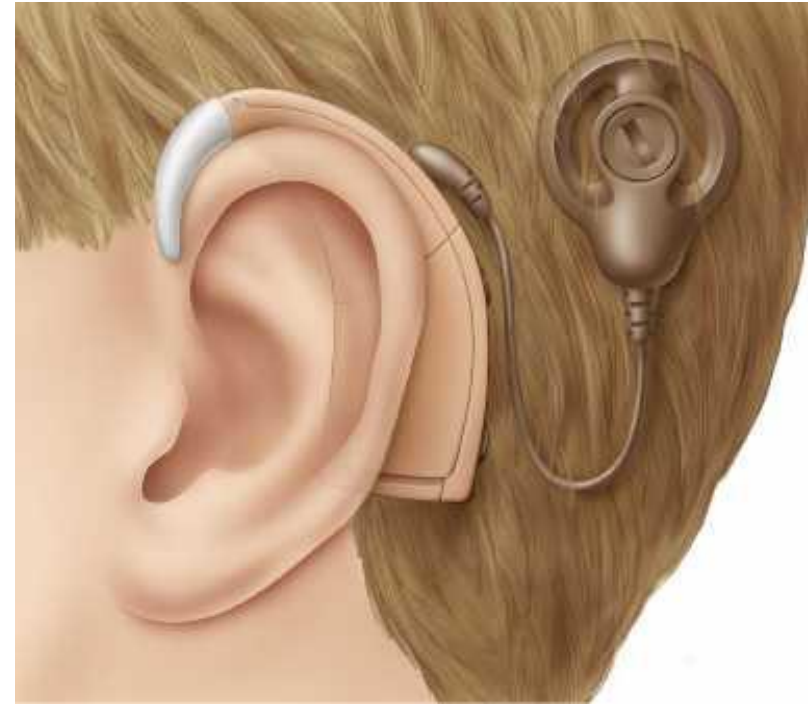
Please turn on subtitles if you haven't :)

The world is filled with a
rich diversity of sounds



A close-up photograph of a hand holding a red cup with a straw. The hand is positioned on the right side of the frame, with fingers gripping the cup. The cup is red and has a black straw inserted into it. The background is dark and out of focus. The text is overlaid on the left side of the image.

In many situations, however, sound is **inaccessible** to **people who are deaf or hard of hearing (DHH)**.



Hearing Aid and Cochlear Implant
are not suitable for all hearing ranges...

We explored a complementary approach:
tactile-based sound awareness

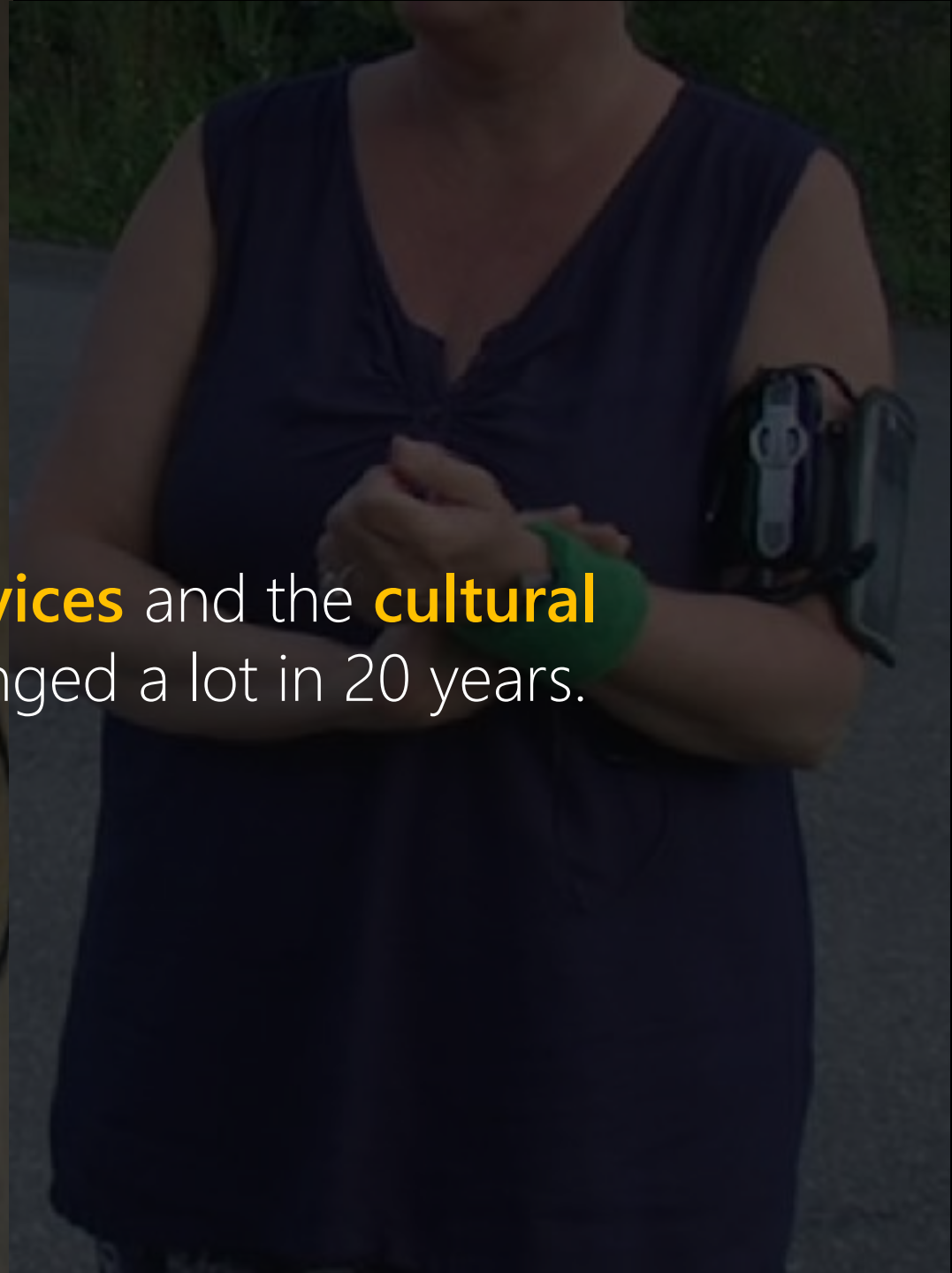


Most prior studies on tactile feedback with DHH users was **conducted over 20 years ago...**

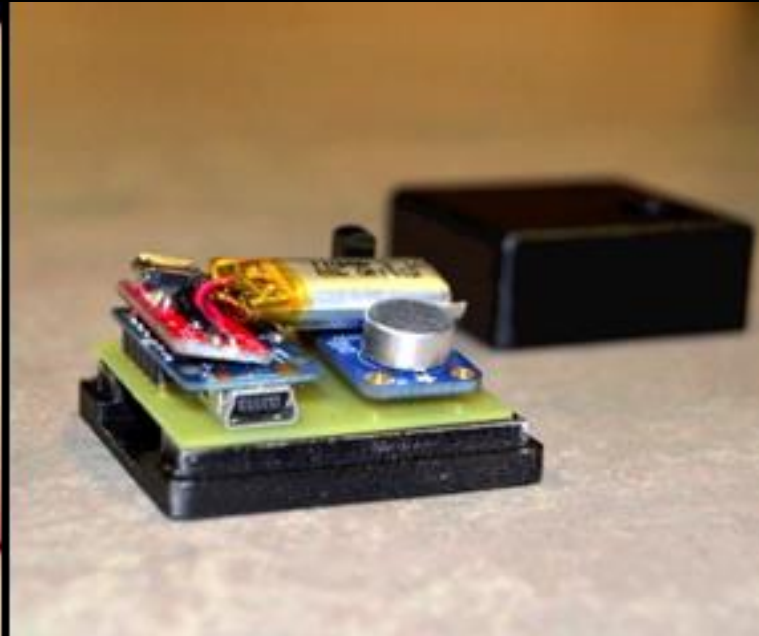




The **perceptions of wearable devices** and the **cultural norms of DHH people** have changed a lot in 20 years.



Vibes



A **2in x 2in** wrist-worn device

Vibration intensity is proportional to the **loudness** of the **sound**

Vibes

A **four-week field study** with DHH 12 users...



Findings



Vibes was used for any required actions, but also for **'experiential' purposes**

"I do bird photography. So, when I was walking in the woods, the device started vibrating [in patterns] like the bird calls. That gives me some indication of how a bird call might sound. Makes me closer to the nature..."

- P3



Findings



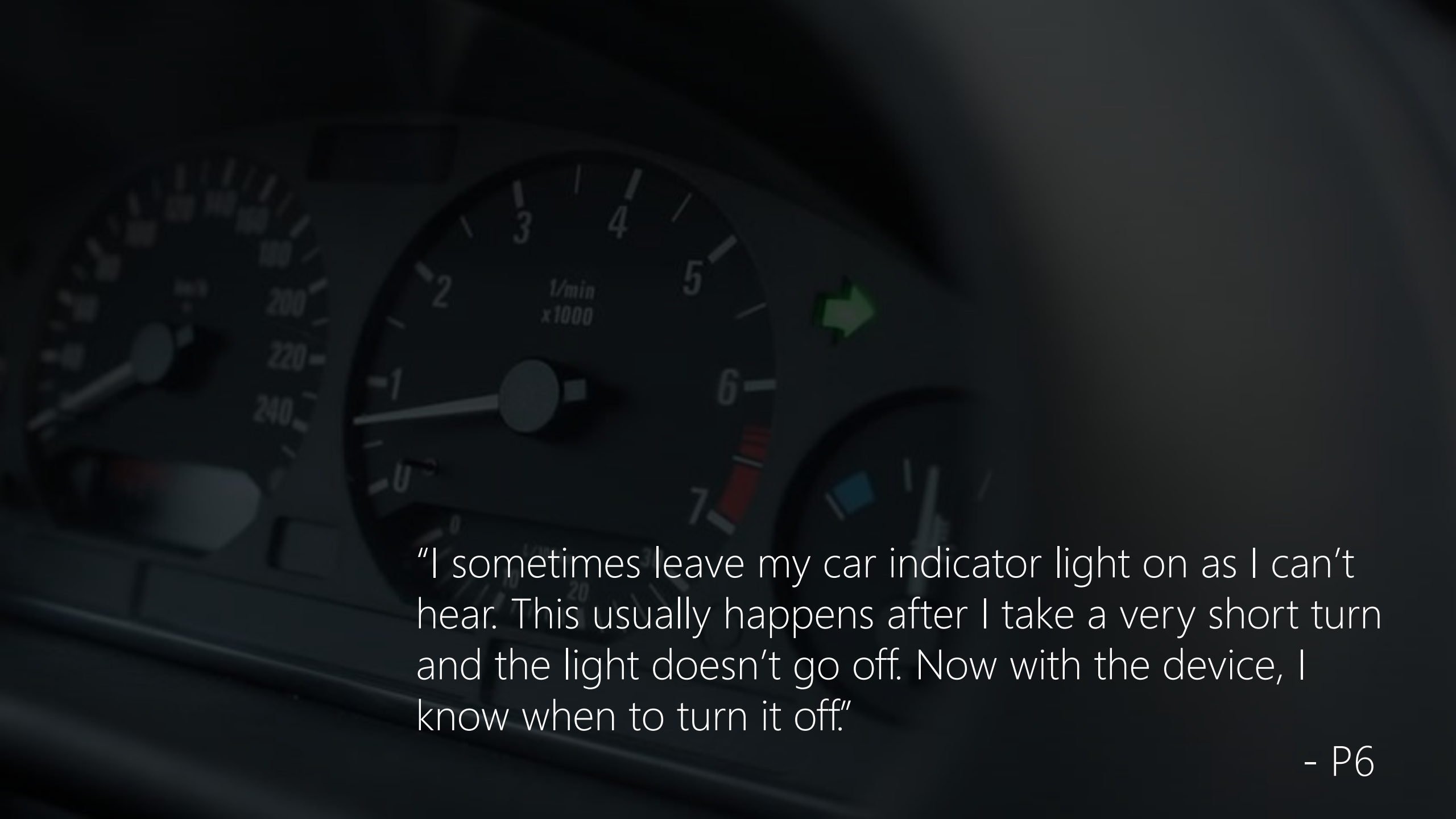
Vibes was used for any required actions, but also for **'experiential' purposes**

Findings



Vibes was used for any required actions, but also for **'experiential' purposes**

Some participants **became more conscious** about their own activities that produce sounds



"I sometimes leave my car indicator light on as I can't hear. This usually happens after I take a very short turn and the light doesn't go off. Now with the device, I know when to turn it off."

Findings



Vibes was used for any required actions, but also for **'experiential' purposes**

Some participants **became more conscious** about their own activities that produce sounds


Findings



Vibes was used for any required actions, but also for **'experiential' purposes**

Some participants **became more conscious** about their own activities that produce sounds

Four participants **stopped using the device** at home

A grayscale photograph of a group of approximately ten people gathered around a large kitchen island. The island is covered with various dishes, including what appears to be a large bowl of soup or stew, and several plates of food. People are engaged in conversation and eating. The background shows a kitchen with white cabinets and a window with blinds. The overall atmosphere is casual and social.

“it provided very little information and I know what [is] going on around my home”.

- P12

Reflection



A woman with her hair in a bun, wearing a white long-sleeved top and dark pants, is sitting in a lotus position on the edge of a pond. She has her eyes closed and her hands resting on her knees in a meditative pose. The background is a lush green forest with sunlight filtering through the trees. The water in the pond is calm and reflects the woman and the surrounding greenery.

Sound helps hearing people **feel immersed and present** in the world.

Future work should continue to examine ways for providing **experiential cues** to DHH people.