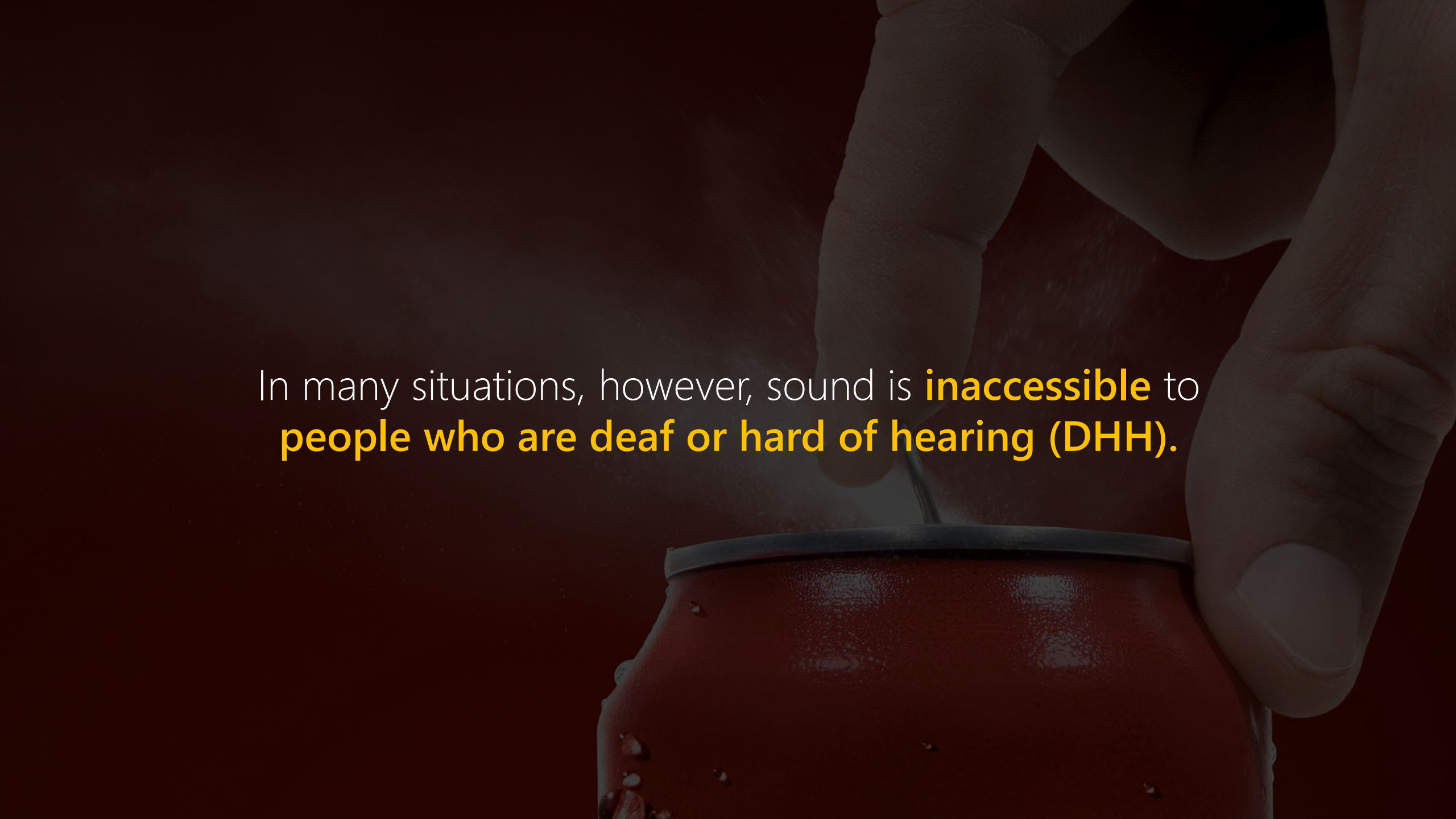
Field Study of a **Tactile Sound Awareness Device** for Deaf and Hard of Hearing Users

Dhruv "DJ" Jain, Brendon Chiu, Steven Goodman,
Chris Schmandt, Leah Findlater, Jon E. Froehlich

Please turn on subtitles if you haven't :)

The world is filled with a
rich diversity of sounds


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

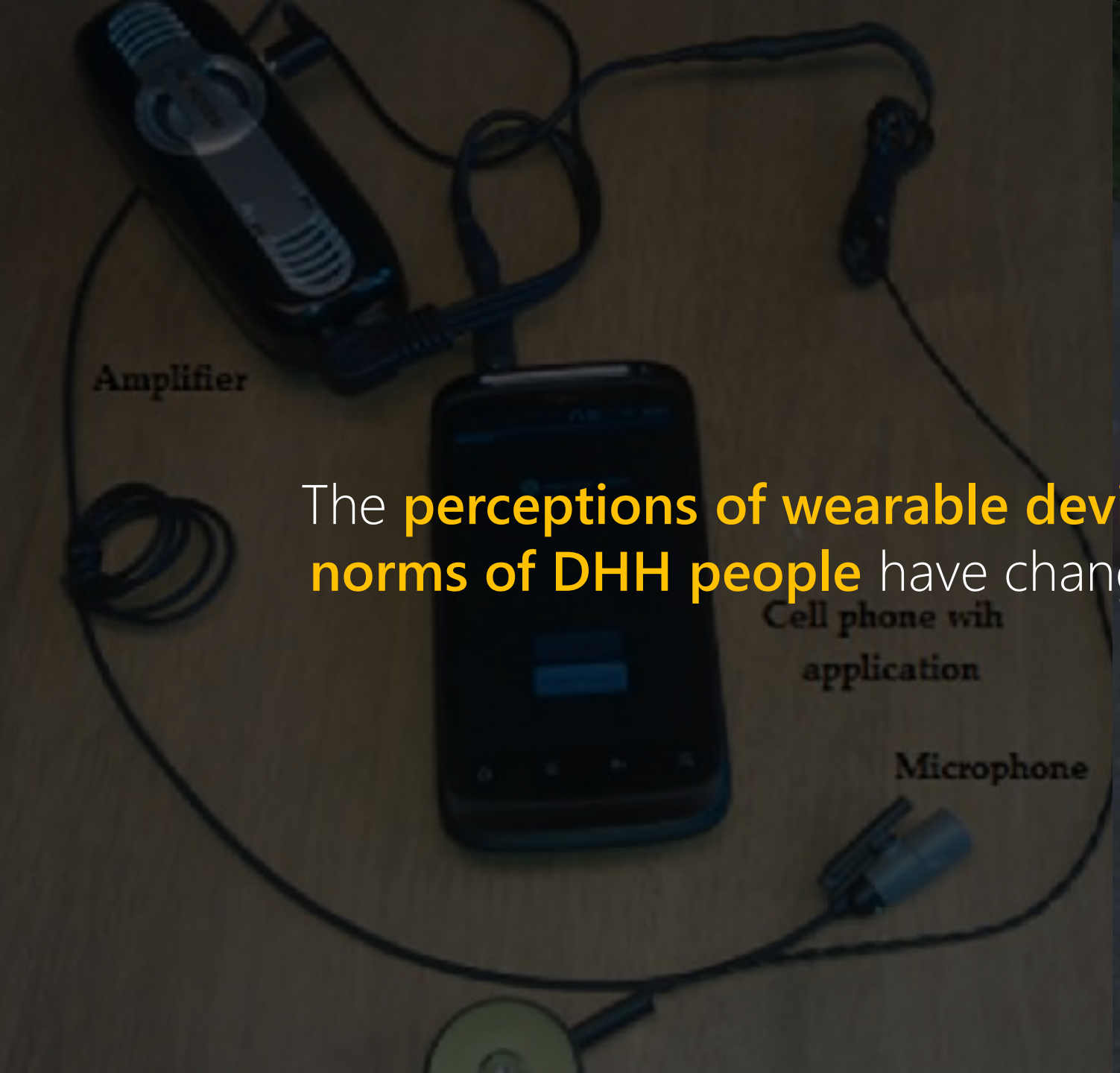
Hearing Aid **and** Cochlear Implant

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

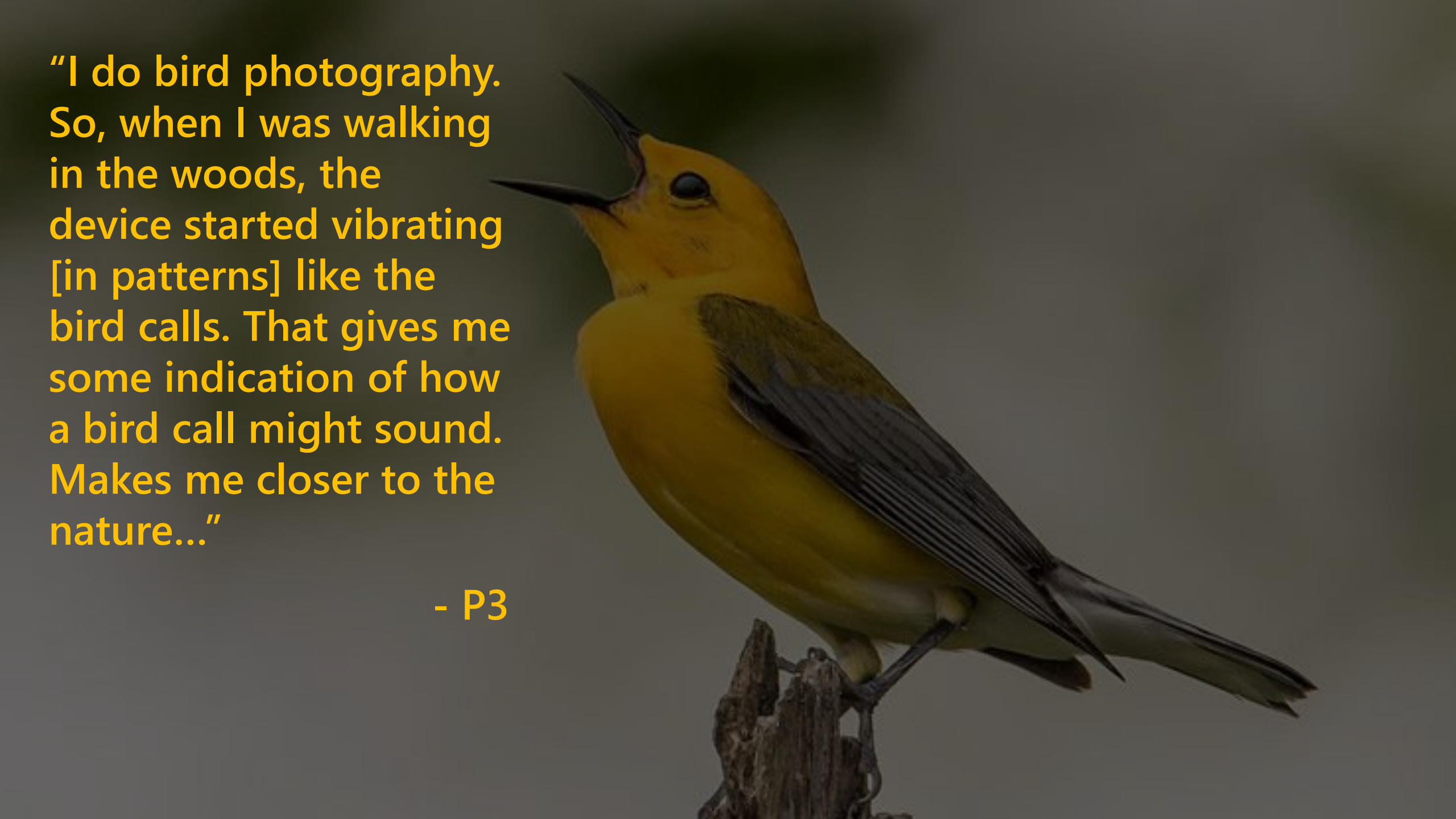
Vibration intensity is proportional to the **loudness** of the **sound**

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

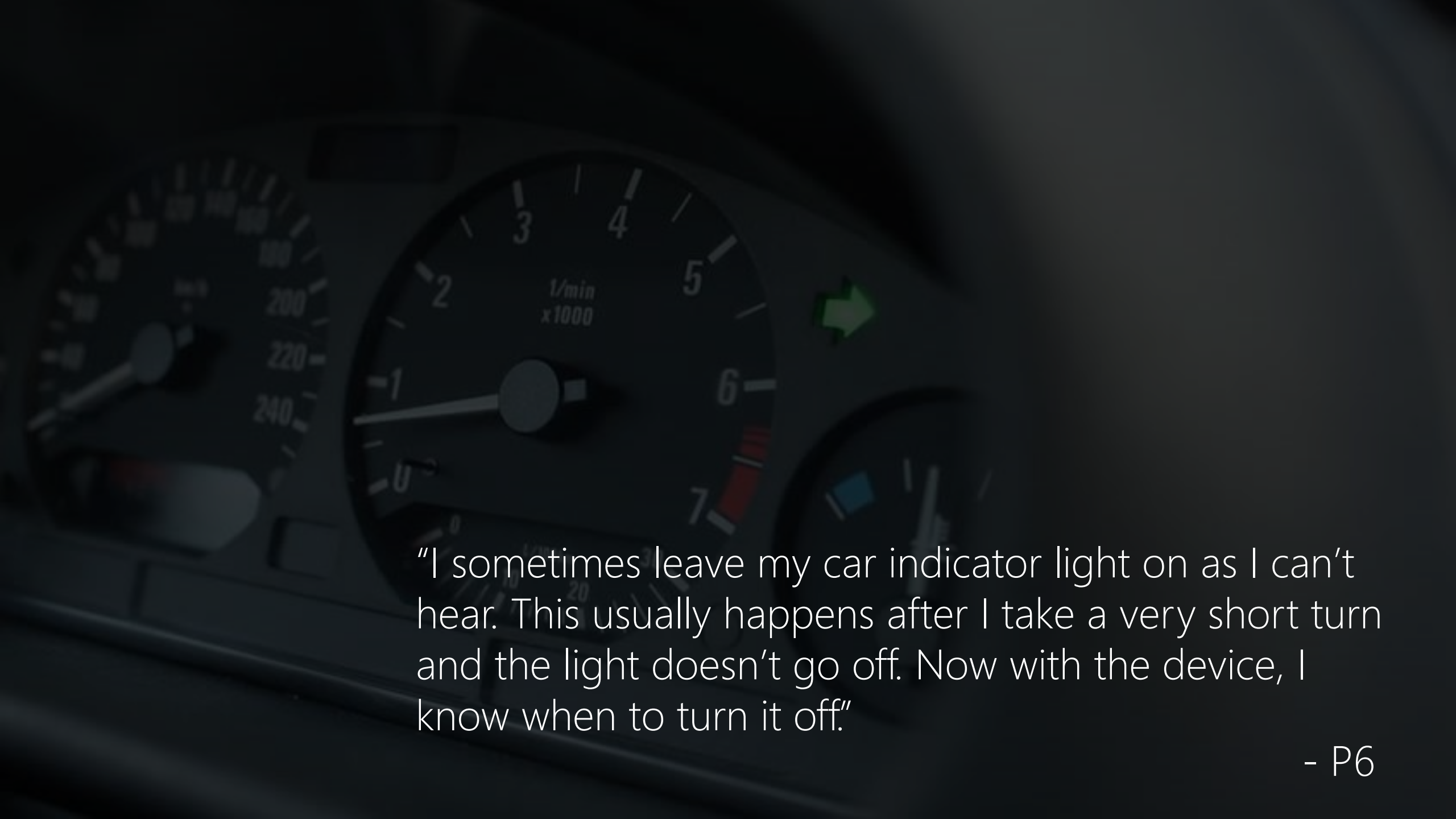
Findings

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."

- P6

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**

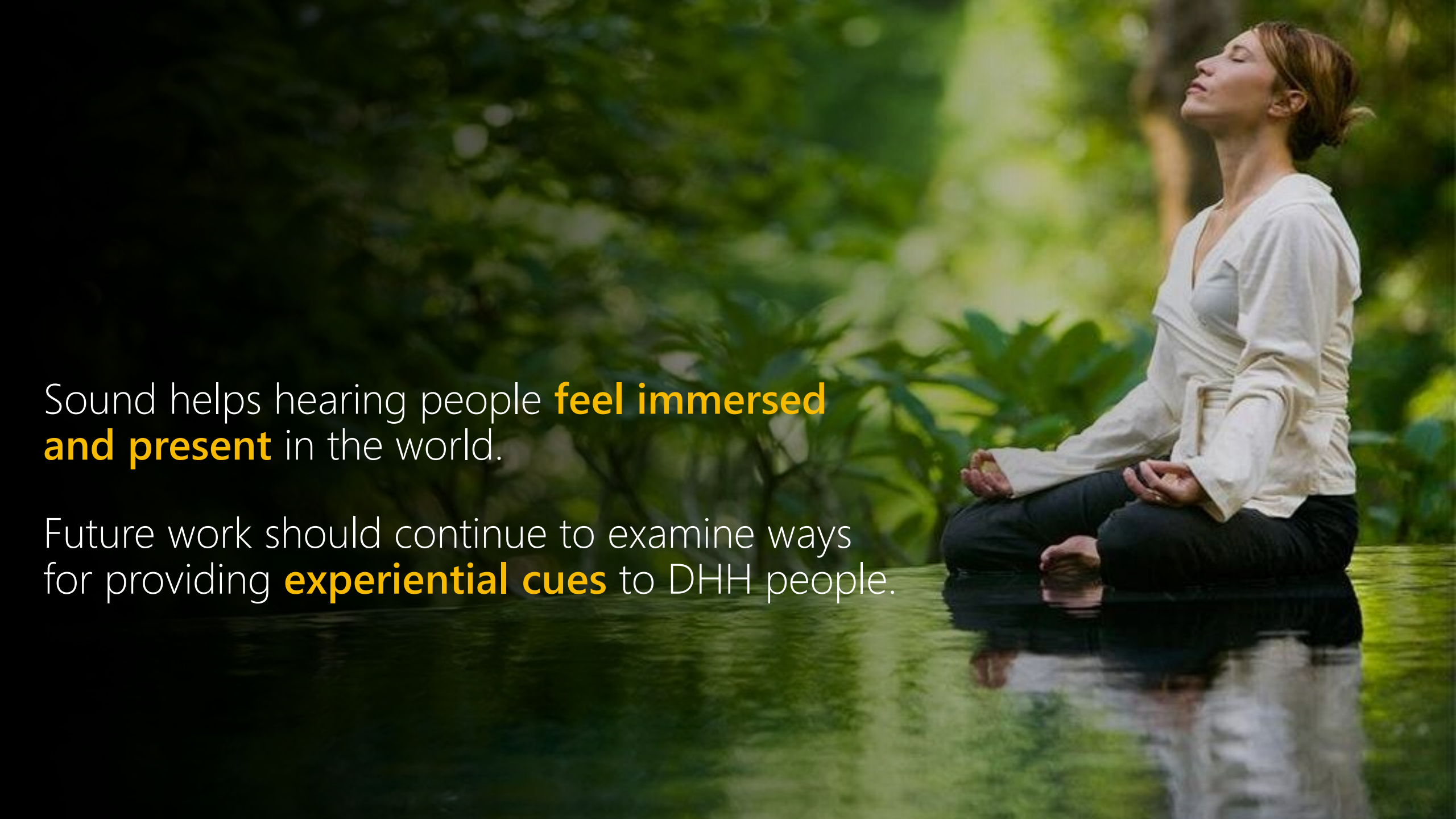
Some participants **became more conscious** about their own activities that produce sounds

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

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

- P12

Reflection



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.