

**COMMENTARY****It is time to change our message about hearing loss and dementia****Jan Blustein MD, PhD<sup>1,2,3</sup> | Barbara E. Weinstein PhD<sup>1,4</sup> |  
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Over the past 5 years, members of the scientific community, the media, and commercial interests have spread the message that hearing loss is a risk factor for dementia. While true under the strict epidemiologic definition of “risk,” current science is unsettled as to nature of the hearing loss–dementia link. Yet, the lay public is prone to receive the message as a warning that hearing loss is a harbinger of dementia. It is time to reconsider our message. This is not just because “risk” is so poorly understood or because the evidence is unsettled. It is also because the message has such potential to stigmatize and raise anxieties for people with hearing loss.

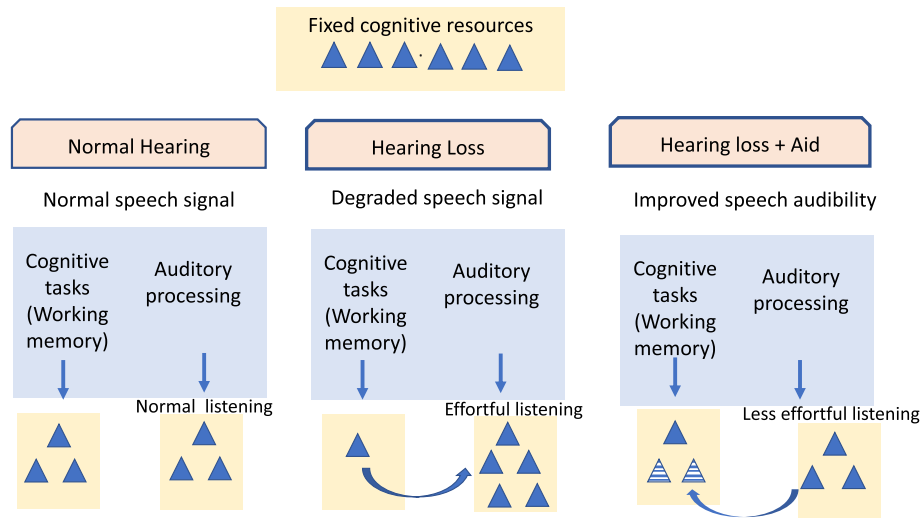
*“...current science is unsettled as to the nature of the hearing loss-dementia link. Yet, the lay public is prone to receive the message as a warning that hearing loss is*

*a harbinger of dementia. It is time to reconsider our message”*

**THE MESSAGE**

The message rests on firm epidemiologic grounds. Several prospective cohort studies have found an association between hearing loss and incident dementia.<sup>1</sup> Media interest in the hearing loss–dementia link accelerated after a 2017 report by a Lancet Commission that declared hearing loss in midlife to be the largest “potentially modifiable risk factor for dementia.”<sup>2</sup>

*The Washington Post* has told its readers that “hearing loss is a major risk factor for dementia. Hearing aids can help.”<sup>3</sup> National Public Radio’s *Weekend Edition Sunday* has said that hearing loss has a “direct link to dementia,” and featured a scientist explaining that hearing loss “actually affect(s) the brain’s structural integrity.”<sup>4</sup> Similar stories have appeared in other major outlets.<sup>5,6</sup>



**FIGURE 1** The cognitive load hypothesis: Allocation of fixed cognitive resources and cognitive task performance under three conditions. With normal hearing the brain receives a normal speech signal and has adequate resources to perform auditory processing alongside other cognitive tasks. With hearing loss, the brain receives a degraded speech signal, necessitating allocation of more cognitive resources to auditory processing, resulting in “effortful listening.” With fewer resources for other cognitive tasks, cognitive performance suffers. When hearing is aided (for example, with a hearing aid or cochlear implant), speech audibility may improve, even to the point that extra resources are no longer needed for auditory processing. Listening may become less effortful, and cognitive performance may improve. Figure adapted from Uchida, Sugiera, Nishita et al. doi [10.1016/j.anl.2018.08.010](https://doi.org/10.1016/j.anl.2018.08.010).

## MESSAGING ABOUT RISK: EPIDEMIOLOGIC CONSTRUCT VERSUS LAYPERSON’S UNDERSTANDING

Scientists are circumspect about the difference between correlation and causation, and epidemiologists know that risk factors are not necessarily causes. Unfortunately for clear communication, “risk” in everyday English implies a warning about an impending adverse event. The US National Institutes of Health advises US citizens that risk is “the chance or likelihood that something will harm or otherwise affect [your] health.”<sup>7</sup> Britannica Dictionary defines health risks as “somebody or something that may cause something bad or unpleasant to happen.”<sup>8</sup> In short, lay misunderstandings of epidemiologic risk reflect confusion about both probability and causation.

## SCIENTIFIC UNCERTAINTY ABOUT THE NATURE OF THE HEARING LOSS–DEMENTIA LINK

Researchers in the field acknowledge that the association is poorly understood, and cite four possible explanations.<sup>9</sup> First, the social isolation that often accompanies hearing loss may depress cognitive abilities. Second, poor cognitive performance may reflect excess “cognitive load”: efforts to understand speech divert the brain from

higher level cognitive tasks. This is consistent with the observation that hearing loss can result in cognitive dysfunction even in the absence of dementia (Figure 1). Third, an unknown factor connected with aging may damage both the brain and the ear. Finally, there is the possibility that hearing loss triggers or augments brain degenerative changes seen in dementia. While a mechanism has not been identified, proponents posit that hearing loss-induced atrophy of the auditory cortex somehow fuels the neuropathologic changes of Alzheimer’s disease (AD) and AD-related dementia.

## DEMENTIA, FEAR, AND STIGMA

Polls show that dementia is one of the most feared of all health conditions.<sup>10</sup> The public associates dementia with dependence and inexorable downward decline.<sup>10</sup> Of course common beliefs can be untrue: many people with dementia retain independence even when they may benefit from help with some daily activities, and the clinical course is variable. But no other common chronic condition carries such fear and stigma.

## STIGMA AND HEARING LOSS

Stigma causes both internal distress (e.g., shame, low self-esteem), but also affects inclusion in the wider social

world (e.g., the ability to secure and maintain employment). Hearing loss is stigmatized by its association with aging (and thus ageism).<sup>11,12</sup> In one ethnographic study, people wearing hearing aids were likened to “doddering old fogies wandering around with horn(s) sticking out of their ear(s).” Hearing loss is associated with stupidity and being “deaf and dumb.”<sup>11</sup>

People with hearing loss often manage stigma through concealment,<sup>13</sup> for example, many seek smaller and more discreet hearing aids.<sup>14</sup> But in the everyday, a key form of concealment is what the hearing loss community calls “bluffing,”<sup>15</sup> or pretending to understand the speech of others. People with hearing loss bluff when the cognitive load of keeping up with conversation becomes overwhelming. It would be hard to overstate the dominance of this strategy.

## **FURTHER STIGMA FOR PEOPLE WITH HEARING LOSS: ASSOCIATION WITH INCIPIENT DEMENTIA**

Public understanding that hearing loss is a prelude to dementia could catalyze greater use of needed hearing health care—a good outcome. But the same public understanding is likely to have negative consequences: people with hearing loss will need to work even harder to burnish their cognitive bona fides. It will put people with hearing loss at risk for social exclusion and discrimination in the workplace, where an older job candidate wearing hearing aids might be vetted with skepticism, and an employee's failed efforts to bluff could be viewed through the lens of dementia risk. It could increase the likelihood of “anticipatory stigma”<sup>16</sup> in the form of dementia anxiety, which is already a significant challenge to healthy aging.<sup>17</sup>

## **IMPROVING FUNCTION FOR THOSE WHO WILL DEVELOP DEMENTIA FOR SEPARATE NEUROPATHOLOGIC REASONS**

Ongoing randomized clinical trials of hearing aids in older people have been billed as tests of whether hearing loss causes dementia, or whether hearing aids can prevent dementia. But in analyzing the results of those trials, if the treatment group has less decline in cognitive performance over time, can we infer that hearing loss causes dementia, or that hearing aids prevent dementia? We think not. It seems just as plausible that hearing aids can help manage cognitive disability for those who are unfortunately destined, for separate neuropathologic reasons, to develop

dementia. This possibility is consistent with what we know about treating hearing loss: hearing aids and cochlear implants help people to function better cognitively.<sup>17</sup>

## **A PARENTHETICAL NOTE ABOUT DEAFNESS**

Hearing loss as discussed here generally refers to age-related hearing loss. A clear message would exclude those who identify as deaf (yes, with a capital “D”). This group uses sign language to communicate and does not rely on their hearing. They would not benefit from better hearing. To our knowledge, there is no evidence that the risk of dementia in this population is any different than the general public.<sup>18</sup>

## **CONCLUSION: MESSAGING UNDER UNCERTAINTY**

Given the complexity and uncertainty of the hearing loss–dementia link, and in view of the potential harms of stigmatization, we favor constructive messages that minimize harm while motivating people to act. One such message might be: “Hearing better can help you think better.” We would omit mention of dementia when addressing the hearing challenges faced by millions of older Americans.

## **AUTHOR CONTRIBUTIONS**

The three authors each participated in drafting and editing the manuscript.

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## **CONFLICT OF INTEREST STATEMENT**

None of the three authors have any conflicts of interest to report.

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The views expressed in this commentary are those of the authors and do not reflect the views of the organizations who provided support for this work.

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