LETTER TO THE EDITOR

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Stimulating extended minds across the lifetime for dementia risk reduction

Susanne Röhr's timely call for action against the social determinants of brain health as part of dementia risk reduction initiatives (Röhr, 2021) can be complemented by the concept of the extended mind from cognitive science and neuroethics, which underlines the need for quality lifelong stimulation in dementia prevention.

The extended mind thesis argues that nonbiological features of the environment play an active role in the realization of some mental states (Clark and Chalmers, 1998). This means that "interventions into the environment of agents can count as interventions into their minds" (Levy, 2007). For dementia risk reduction, it is important to see the mind as extended not just in space but also in time: features of the environment in early life play a role in determining the quality of mental states in later life. For example, educational attainment and the degree of physical, mental, and social stimulation across the lifetime affect dementia risk (Livingston *et al.*, 2020). The mind extended through space and time can help us better understand the concept of "reserve," the idea that early experiences help individuals build up resistance against later brain damage (Stern *et al.*, 2020).

Current dementia prevention campaigns and guidelines are still primarily focused on individuals' lifestyle choices rather than their interaction with the environment (Horstkötter *et al.*, 2021). While the lifestyle approach may represent a major public health gain (Livingston *et al.*, 2020), risk reduction could go further as argued by Dr Röhr. For instance, the World Health Organization 2019 guidelines for reducing cognitive decline make no mention of social and structural determinants of health and could be updated to reflect the emerging literature cited by her. Furthermore, Walsh *et al.* (2022) argue that addressing only conscious behaviors for dementia risk reduction at the expense of unconscious behaviors hampers risk-reduction efforts, and, since "the resources required for conscious behavioral change are not evenly distributed … approaches reliant on these resources will widen health inequalities" (e7, ibid). They argue for a whole-population approach to dementia involving environmental interventions that favor unconscious behavioral change, which means intervening in the extended mind across space and time.

What might those environmental interventions look like? Dr Röhr's empirical work as part of the Global Brain Health Institute is taking steps towards a more collaborative vision of dementia risk reduction by asking urban stakeholders how dementia risk-reducing environments might be co-created (Röhr *et al.*, 2022), but more work in this direction is still urgently needed.

Finally, the quality of stimulation of extended minds matters for risk reduction. For example, a study from Denmark found that residential exposure to transportation noise was associated with dementia risk, even after correcting for air pollution, another known risk factor for dementia (Cantuaria *et al.*, 2021). Chronic low-grade stimulation like noise can therefore be a stressor. Thus, policy changes should take into account both the need to improve high-quality stimulation (through education and lifelong learning, physical exercise in sensorially rich environments like parks, and social interaction) and reduce low-quality stimulation (through noise and other environmental stressors).

In conclusion, a complementary way of formulating Dr Röhr's call to address the social determinants of brain health for dementia risk reduction is as follows: we urgently need to maximize high-quality physical, mental, and social stimulation of extended minds across the lifetime for dementia prevention. Framing risk reduction in these ways marks a reconceptualization and reprioritization away from the individual to necessary structural changes in society that could lead to more universal access to safe and stimulating living and working environments. In turn, at the behavioral level, such structural changes could lead to greater conscious and unconscious participation in dementia risk reduction activities. In light of rapidly growing cases of dementia worldwide, I believe this to be a pressing global health priority.

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References

Cantuaria, M. L. *et al.* (2021). Residential exposure to transportation noise in Denmark and incidence of dementia: national cohort study. *BMJ*, 374, n1954. DOI 10.1136/bmj.n1954.

Clark, A. and Chalmers, D. (1998). The extended mind. *Analysis*, 58, 7–19, http://www.jstor.org/stable/3328150

Horstkötter, D., Deckers, K. and Köhler, S. (2021). Primary prevention of dementia: an ethical review. *Journal of Alzheimer's Disease*, 79, 467–476. DOI 10.3233/JAD-201104.

Levy, N. (2007). Rethinking neuroethics in the light of the extended mind thesis. *American Journal of Bioethics*, 7, 3–11. DOI 10.1080/15265160701518466.

Livingston, G. *et al.* (2020). Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. *Lancet*, 396, 413–446. DOI 10.1016/S0140-6736(20)30367-6.

Röhr, S. (2021). Social determinants of brain health need to be addressed in risk reduction of cognitive decline and dementia. *International Psychogeriatrics*, 33, 1249–1251. DOI 10.1017/S104161022100260X.

Röhr, S. *et al.* (2022). How can urban environments support dementia risk reduction? A qualitative study. *International Journal of Geriatric Psychiatry*, 37(1). DOI 10.1002/gps.5626.

Stern, Y. *et al.* (2020). Whitepaper: defining and investigating cognitive reserve, brain reserve, and brain maintenance. *Alzheimers Dement*, 16, 1305–1311. DOI 10.1016/j.jalz.2018.07.219.

Walsh, S. *et al.* (2022). A whole-population approach is required for dementia risk reduction. *The Lancet Healthy Longev*, 3(1), E6–E8. DOI 10.1016/S2666-7568(21)00301-9.

Timothy Daly

Sorbonne Université, Science Norms Democracy UMR 8011, Paris, France

Correspondence should be addressed to: Timothy Daly, Sorbonne Université, Science Norms Democracy UMR 8011, Paris, France. E-mail: timothy.daly@sorbonne-universite.fr

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