

Young and restless, old and focused: Age differences in mind-wandering

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New research suggests that older adults can be more focused, less impeded by anxiety and less mentally restless than younger adults. The research team at the Trinity College Institute of Neuroscience (TCIN) show that older adults appear to mitigate the negative aspects of cognitive decline by increasing motivation and adopting more efficient strategies to suspend the wandering mind when focus is required.

The study, published in the journal *Psychology and Aging* is the first to adjudicate between competing theories of age-related [mind-wandering](#) dominant in the field. It highlights the influential roles of affective and motivational factors in driving age-related differences in unintentional mind-wandering and provide reasons to be less persuaded by previous cognitive resources accounts.

The human mind has a natural and frequent tendency to wander. In everyday life, our thoughts often stray from the here-and-now. Mind-wandering is broadly defined as the mental state whereby our attention shifts away from a [task](#) or our current environment to unrelated and self-generated mental content. Recent research within

healthy aging populations has demonstrated a confusing yet consistent finding of reduced mind-wandering frequency with advancing age.

Although different theories have been suggested to explain this finding, previous studies have been afflicted by varying methodological challenges for capturing incidences of mind-wandering. As such, the neuropsychological mechanisms underlying age-related differences in mind-wandering remain unclear. Further, there is a lack of research exploring the mechanisms underlying different mind-wandering dynamics; specifically, mind-wandering that occurs with and without intention.

Considering the phenomenon of global population aging, and in light of the reported benefits (e.g. creativity, problem-solving) and costs (e.g. poorer sustained attention and clinical outcomes) of mind-wandering, it is important to investigate the impact of aging on mind-wandering. Sustaining our attention is an important ability that underlies much of our cognition and its decline is linked with an increased risk of falls, a factor contributing to the loss of independence and reduced quality of life in older adults. Therefore, research on different attentional states is vital for shaping our understanding of the brain and the natural aging process and may help inform future interventions targeted at promoting healthy aging.

The Dockree Lab team at TCIN, in a collaboration with Prof Alan Smeaton from Dublin City University, investigated whether the nature and frequency of mind-wandering changed with age, and explored the specific mechanisms underlying unintentional and intentional mind-wandering. They employed a multi-faceted methodological approach whereby healthy younger and community-dwelling older adults completed a series of standardized cognitive and neuropsychological tasks and performed a computerized sustained attention task that periodically asked participants to report on their current mental state. Compared to previous

studies, the task was well-suited to measure mind-wandering as the task was non-demanding and presented gradually unfolding targets that placed greater reliance on endogenous attentional control.

Key Findings

- Older adults exhibited a lower tendency for mind-wandering, both unintentionally and intentionally, than younger adults. In total, older and younger adults reported mind-wandering 27% and 45%, respectively, in response to the thought probes throughout the task.
- Younger and older adults demonstrated similar task performance; although, older adults performed with less variability indicating overall better focus.
- Despite poorer performance on standard cognitive tests, older adults exhibited lower levels of anxiety and depression, fewer subjective attentional difficulties, and greater task-related motivation than their younger counterparts.
- The analyses also highlight the adaptive qualities of older adults who were able to reduce their unintentional mind-wandering through their lower levels of anxiety and greater task motivation than the more mentally restless younger group. Contrary to executive resource accounts of mind-wandering, the cognitive variables did not further contribute to this model.
- The team observed an association between intentional mind-wandering and increased false alarms on the task, which was mediated by more inconsistent responding, particularly in the young who were more restless in their approach. Considering that younger adults' higher variability did not incur a relative cost to their performance compared to older adults, they have more resources available to adaptively switch between focus and more explorative mind-wandering states.
- Older adults, on the other hand, exploit greater focus toward the task, with less bias toward mind-wandering. We suggest this is an adaptive quality of successful aging—when context demands it, older

adults suspend the wandering mind to mitigate potential costs.

The team suggests that dispositional and strategic factors be considered in future studies exploring mind-wandering across the lifespan. The research, therefore, highlights the nature and correlates of different mind-wandering dimensions and provides new insight into how unintentional and intentional mind-wandering processes change with age.

Catherine Moran, Ph.D. candidate, School of Psychology and lead author said, "Age-related cognitive decline in later life represents a leading cause of disease burden and loss of functional independence. Despite these challenges, there is a consistent and perhaps, puzzling finding of reduced mind-wandering with advancing age. Our research, supported by the Irish Research Council, provides new insight into the influence of the natural aging process on mind-wandering. We highlight the adaptive strategies and positive qualities adopted by older adults that led to a beneficial reduction in their mind-wandering and equivalent performance with younger adults. Dissecting the mechanisms underlying different cognitive processes may be important indications of successful aging."

Dr. Paul Dockree, Associate Professor, Psychology and co-author/lead investigator said, "'Old and absentminded' is a phrase, which is recognized in common parlance, but it does not hold universal truth. Our research suggests that older adults can be more focused, less impeded by anxiety and less mentally restless than younger adults. Importantly, [older adults](#) appear to mitigate the negative aspects of cognitive decline by increasing motivation and adopting more efficient strategies to suspend the wandering mind when focus is required. This research is in keeping with Trinity's Research Theme of Aging, which promotes a more in depth understanding of cognitive changes as we age, with a view to establishing a more age-friendly and inclusive society."

More information: Catherine N. Moran et al. Young and restless, old and focused: Age-differences in mind-wandering frequency and phenomenology., *Psychology and Aging* (2021). [DOI: 10.1037/pag0000526](https://doi.org/10.1037/pag0000526)

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