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Corresponding author:
Barbara J. Sahakian;
Email: bjs1001@cam.ac.uk

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Reading and associations with brain health, cognition, well-being, and mental health

Barbara J. Sahakian[1], Vicki Perrin[2] and Christelle Langley[1]

[1]Department of Psychiatry, University of Cambridge, Cambridge, UK and [2]The Queen's Reading Room, UK

Abstract

Growing recognition of the importance of prevention in mental health has led to increased interest in modifiable lifestyle factors that support brain health, cognition, and well-being. This editorial examines evidence for an accessible and low-cost protective factor across the lifespan, namely reading for pleasure. Drawing on subjective surveys and objective studies using longitudinal, neuroimaging, and behavioral methods, we highlight converging findings that link reading engagement with improved brain and mental health, better cognitive performance, and reduced risk of cognitive decline. Survey data in adults suggested that reading was associated with reduced stress, greater empathy, enhanced well-being, and decreased loneliness. Longitudinal cohort studies further indicate that cognitively stimulating activities, particularly reading, are associated with a lower risk of dementia and slower cognitive decline, even among individuals with lower educational attainment. In childhood and adolescence, early reading for pleasure has been linked to better attention, memory, executive function, academic achievement, and fewer mental health problems. Neuroimaging findings suggest that reading is associated with structural and functional differences in brain regions supporting executive control, emotional regulation, and social cognition. Importantly, these benefits appear independent of socioeconomic background. Book club studies may suggest additional social benefits of reading in groups. Together, the evidence supports reading for pleasure and engaging in book clubs as scalable interventions, which may promote cognitive reserve, resilience, and lifelong mental well-being.

Introduction

While people have long been aware of the importance of prevention and early detection of physical health problems, only recently are they becoming aware that the same principles apply to well-being and mental health. In part, this awareness has developed due to increasing numbers of people with mental health disorders. The World Health Organization (WHO) has found that more than 1 billion people are living with mental health disorders, with conditions such as anxiety and depression inflicting immense human and economic tolls (World Health Organisation, 2025b). Globally, about one in seven 10- to 19-year-olds experience a mental disorder, accounting for 15% of the disease burden in this age group. Depression, anxiety, and behavioral disorders are among the leading causes of illness and disability, and suicide is the third leading cause of death for those aged 15–29 years, highlighting the urgent need for mental health support in adolescence (World Health Organisation, 2025a).

However, another driver is the understanding that there are environmental factors that affect our brain health, cognition, mental health, and physical health, which can be modified through behavior change. Therefore, by improving lifestyle behaviors, people can improve brain health and cognition and reduce the risk of mental health disorders and physical illnesses (Sahakian & Langley, 2025). This emphasizes the importance of 'preventive psychiatry', whereby reducing the risk of mental health disorders is the aim and where building resilience and cognitive reserve can promote that aim. Resilience may mitigate the effects of stress, and cognitive reserve can provide a buffer against cognitive decline with aging and the risk of dementia.

A number of evidence-based lifestyle factors that can support brain health, cognition, and well-being have been identified (Sahakian & Langley, 2025). In this editorial, we focus on reading for pleasure but also consider the importance of social connectedness. Reading for pleasure, also often referred to as 'voluntary reading', 'leisure reading', or 'recreational reading', has been defined by the National Literacy Trust as 'reading that we do of our own free will, anticipating the satisfaction that we will get from the act of reading' (National Literacy Trust et al., 2006). Reading for pleasure can be print but also digital materials, including books, eBooks, magazines, comics, and graphic novels. This focus is motivated by evidence showing that social isolation and loneliness are common across the lifespan (World Health Organisation, 2023) and that engaging in reading or book clubs may help reduce these experiences (The Reader, 2023). Additionally, reading from an early age has been associated with lasting benefits for brain function, cognitive skills, and mental health later in life (Sun et al., 2024). The main aims of this editorial are to

highlight the importance of reading for pleasure as a means of supporting brain health, cognition, and overall well-being, and to stimulate interest in research in this area.

While reading by children and adolescents is declining, reading is associated with increased literacy attainment and mathematical ability

Unfortunately, it seems that reading in children and adolescents is declining and may in fact be the lowest since recording began. Data from the Annual Literacy Survey in 2024 (National Literacy Trust, 2024) and 2025 (National Literacy Trust, 2025) show a continued and worsening decline in reading enjoyment and frequency among children and adolescents, especially boys aged 11–16. Gender and socioeconomic gaps also widened in 2025, with girls continuing to read daily at higher rates than boys and the gap increasing to 6.2 percentage points, while children who did not receive free school meals were more likely to read daily (19.4%) than those who did (15.8%). Despite declining engagement, the 2025 findings highlight clear opportunities to reengage young readers: 2 in 5 children and young people said they were motivated to read when material related to a favorite film or TV series (38.1%) or matched their interests or hobbies (37.1%), 3 in 10 (30.9%) were attracted by an interesting cover or title, and 1 in 4 (26.6%) valued having the freedom to choose what they read. Importantly, even those reporting low enjoyment still recognized reading's educational value, with nearly half saying it helps them learn new words or new things, and many choosing to read song lyrics, news articles, fiction, comics, and fan fiction. Together, these findings suggest that aligning reading with personal interests and familiar media may be key to reversing the downward trends. This indicates that reading for pleasure is key to stimulating greater reading. Crucially, evidence from 2024 underscores why reversing these trends matters: children and adolescents who enjoyed reading (n = 1,211, M = 109.13) or read daily (n = 789, M = 109.49) achieved significantly higher reading scores on the STAR Reading assessment than those who did not enjoy reading (n = 2,593, M = 102.65) or did not read daily (n = 3,026, M = 103.35), clearly demonstrating the strong link between reading engagement and literacy attainment (National Literacy Trust, 2024).

Reading may also confer benefits for mathematical development, as the two domains share several cognitive and neural mechanisms. A growing body of research suggests that skills central to reading, such as phonological awareness, procedural memory, and executive functions, also play an important role in mathematical learning. This overlap is particularly relevant for mathematical tasks that rely on verbal numerical representations, word problems, and the retrieval of arithmetic facts, indicating that strengthening reading-related abilities may positively influence math performance (Chu, VanMarle, & Geary, 2016; LeFevre et al., 2010; Slot, Van Viersen, De Bree, & Kroesbergen, 2016). Supporting this view, a study of 156 children with a mean age of 4.8 years found that bilingual children with stronger verbal skills outperformed their monolingual peers on mathematics tasks with verbal components, though not on nonverbal tasks, highlighting the importance of language in certain aspects of mathematical reasoning (Bonifacci, Tobia, Bernabini, & Marzocchi, 2016). Longitudinal evidence further underscores the association: in a study of 554 children with an average age of 6.5 years at baseline, followed over 12 years, average and high levels of reading performance were associated with subsequent gains in mathematical growth, particularly among children who initially performed below average in math (Erbeli et al., 2021). Together, these findings suggest that reading development may support mathematical achievement over time, especially in areas where language and numerical processing intersect.

The benefits of reading for pleasure based on survey data

Surveys have suggested that reading can have several benefits for adults, particularly for well-being and to reduce feelings of loneliness and improve social connection. One survey of 4,164 adults suggested that reading offered significant benefits for well-being, particularly in fostering empathy, personal growth, and stress relief (Quick Reads, 2015). Even with just 30 minutes of reading per week, nearly two-thirds of readers (64%) reported a better understanding of other people's feelings, compared with fewer than half of nonreaders (48%). Books also inspire positive life changes, with 27% of readers motivated to seek a new job or end an unhealthy relationship, and 36% encouraged to travel after reading a book. Reading supports personal development, as 20% of readers said they began taking better care of their health and 19% took up a new hobby. In terms of empathy and emotional regulation, 50% of readers reported becoming more tolerant of different beliefs, while 17% said they stay calm during disagreements, compared with just 5% of nonreaders. Reading also emerged as the most popular method for stress relief, with 38% choosing books as their ultimate way to unwind; notably, just 6 minutes of reading was found to reduce stress levels by 68%. More people surveyed turn to books for comfort (35%) than to wine (31%) or a hot bath (10%).

In addition, the Reader Survey from the Shared Reading Groups Programme in 2022 (The Reader, 2023), which included ~2,000 participants, suggested a positive impact of reading on health and well-being. Nearly three-quarters of respondents (74%) reported that reading had a beneficial effect on their mental health and overall well-being, while over 40% said it helped them feel more connected to others (41%) and less alone during lockdown (42%). The survey also highlighted the lasting influence of early reading experiences, with over two-thirds of participants (65%) saying they enjoyed being read to as a child. Among younger adults aged 18–34, reading was shown to play a particularly important role in reducing loneliness: 59% said reading made them feel more connected to others, 56% felt less alone during the pandemic, and 44% expressed a wish that they had someone to read with. These survey findings align with the results of a study conducted by The Queen's Reading Room in early 2024 (The Queen's Reading Room, 2024), further supporting the social and emotional benefits of reading.

Importantly, participation in book clubs also appears to confer emotional and social benefits. A qualitative study of 168 tenth-grade students found that students reported identifying with characters, gaining insight into others' lived experiences, including global perspectives, and experiencing personal development. Specifically, 42.9% reported increased connection and affiliation, 61.2% reported greater understanding of others' perspectives and values, and 14.3% reported feeling less lonely (Banas, Valley, Chaudhri, & Gershon, 2024). Similarly, a systematic review of 11 studies concluded that shared reading among older adults improved well-being and reduced loneliness and social isolation (Milani et al., 2025). Together, these findings indicate that fiction reading and shared reading experiences may improve social cognition, social connectedness, and well-being across the lifespan. In addition, training programs of reading for pleasure may help reduce stress in the classroom and may lead to better learning outcomes (Whiting, Wass, Green, & Thomas, 2021).

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It should be noted that survey data are subjective and not objective, and some of these surveys may be biased as they are likely to include predominantly regular readers. Therefore, it has to be considered that these survey data may not reflect the general population, particularly people who read less frequently. Nonetheless, survey data is self-report data, which can reflect on an individual's lived experience.

The importance of reading for pleasure in early childhood

The breadth and depth of the Adolescent Brain Cognitive Development (ABCD) Study makes it an especially valuable resource for examining how early life experiences shape later cognitive, emotional, and brain development. Its large, nationally representative sample, rich longitudinal design, and inclusion of data on when children begin reading for pleasure provide a strong foundation for investigating the long-term impacts of early reading habits. This dataset directly underpins the recent high-quality objective evidence linking early reading for pleasure with adolescent outcomes, which highlights the importance of reading for enjoyment from a young age (Sun et al., 2024).

The findings from the Sun et al. (2024) study showed that reading for pleasure in early childhood was associated with long-lasting benefits for brain health, cognition, and academic achievement, including improvements in attention, inhibitory control, working memory, and episodic memory. Using data from 10,243 adolescents aged 9–11 in the ABCD cohort, followed up at ages 11–13, we found that approximately half (51.8%) began reading for pleasure early in childhood (3–10 years), while the remaining 48.2% had lower levels of early reading (0–2.5 years). Those who read for pleasure early experienced fewer mental health problems, reduced inattention, and better behavior in adolescence, alongside lower levels of stress and depression and improved social interactions. They also maintained healthier lifestyles, including less screen time and more sleep. In addition, they had higher educational attainment. At the neural level, early reading was associated with larger cortical areas and volumes in brain regions linked to language, cognition, and emotional regulation, including the superior temporal, occipital, supramarginal, and left angular gyri, as well as frontal and insula regions, and subcortical regions such as the parahippocampal cortex, anterior cingulate, orbitofrontal cortex, ventral diencephalon, and thalamus. These structural differences were associated with better cognitive performance, including verbal learning, memory, attention, and executive function, and fewer psychopathological symptoms, suggesting that reading for pleasure in early childhood may help support the development of neural circuits underlying language, cognition, and emotional well-being. Importantly, these benefits persisted even after controlling for multiple potential confounders, such as age, sex, BMI, puberty, race/ethnicity, family structure, and socioeconomic factors including parental education and household income, indicating that the positive effects of early reading are not likely driven by wealth or parental education (Sun et al., 2024). Overall, the findings indicate that encouraging early reading for enjoyment is a powerful and accessible strategy, which may improve cognitive development, mental health, and overall well-being, and may help mitigate some of the negative effects of poverty on adolescent brain development (Noble et al., 2015; Noble & Giebler, 2020). It is important to control for possible confounds, as was done in the Sun et al. (2024) study; however, these are not always controlled for in other studies. Therefore, the benefits of reading are likely associated with neurodevelopmental brain structural differences and cognitive and academic improvements, as well as environmental stimulation when reading with others, which is additionally associated with benefits in social cognition and well-being.

Cognitively stimulating leisure activities and reduced risk of cognitive decline and dementia

A body of longitudinal evidence indicates that cognitively stimulating leisure activities, particularly reading, are associated with slower cognitive decline and a reduced risk of dementia in older adults. In a study of 5,437 cognitively healthy adults aged 55 years and older, individuals who frequently engaged in cognitive activities (e.g. reading) and playing certain games (e.g. chess) were significantly less likely to develop cognitive impairment over a 5-year follow-up period (Wang et al., 2006). Similarly, Wilson et al. (2002) followed 801 participants aged 65 and above for 4.5 years and reported that engagement in cognitively stimulating activities, including reading newspapers, magazines, and books, was associated with a 33% reduction in the risk of Alzheimer's disease. Consistent with these findings, a study of 469 individuals aged 75 years and older without dementia at baseline found that reading was associated with a 35% reduced risk of dementia over a mean follow-up of 5.1 years (Verghese et al., 2003).

More recent research further supports the cognitive benefits of reading. Chang, Wu, and Hsiung (2021) examined 459 older adults who reported being cognitively well, of whom 36.82% engaged in regular reading activities. Participants in the reading group demonstrated better performance across all cognitive tests compared with nonreaders, although no significant differences were observed in brain MRI measures. Importantly, in this study, regular engagement in reading activities appeared to mitigate the negative effects of lower educational attainment, as individuals with fewer years of formal education who read more frequently demonstrated better cognitive performance than their nonreading counterparts. In the 1,962 adults, who were over the age of 64 and followed up 4 times over 14 years, frequent reading (at least once per week) was associated with a significantly reduced risk of cognitive decline over 6, 10, and 14 years, and importantly, this protective effect was observed across all educational levels, indicating that reading may help mitigate the impact of lower educational attainment on later-life cognitive decline (Wang et al., 2022). This finding is similar to the study in adolescents demonstrating that reading has beneficial effects, even in low socioeconomic families (Sun et al., 2024), and therefore reading may be a low-cost intervention that may promote better brain health and cognition, as well as having other benefits. Taken together, these longitudinal and cross-sectional findings suggest that reading seems to be a protective factor against cognitive decline and dementia in later life and may play a particularly important role in mitigating the cognitive disadvantages associated with lower educational attainment.

Neural correlates of reading across the lifespan and how reading affects the brain

A meta-analysis examining the neural basis of reading in both children and adults demonstrated a largely shared pattern of reading-related brain activation across age groups (Martin, Schurz, Kronbichler, & Richlan, 2015). Specifically, consistent activation was observed in the left ventral occipito-temporal cortex, inferior frontal gyrus, and posterior parietal regions, areas central to visual word recognition, language processing, and attentional control.

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Age-related differences were also evident; studies involving children showed greater convergence of activation in the left superior temporal and bilateral supplementary motor regions, whereas studies of adults demonstrated higher convergence in bilateral posterior occipito-temporal regions, the cerebellum, and the left dorsal precentral cortex. These findings suggest that while the core reading network is established early in development, it continues to be refined and specialized across the lifespan for optimal efficiency.

Research has demonstrated that reading ability and reading experience are associated with measurable structural changes in the brain across childhood and adulthood, affecting both white matter connectivity and grey matter volume. In children aged 8–13, stronger reading ability has been linked to greater white matter integrity, particularly within left-hemisphere pathways that support language processing. Using diffusion tensor imaging, one study found that performance on the Word Identification subtest of the Woodcock Reading Mastery Test Revised was associated with higher fractional anisotropy in the bilateral superior corona radiata (with the largest cluster in the left hemisphere), as well as in the right anterior corona radiata and the body of the corpus callosum (Beaulieu et al., 2005). These findings suggest that proficient readers show more efficient and organized neural connectivity in networks critical for language, phonological processing, and interhemispheric communication.

Importantly, structural brain changes are not limited to naturally stronger readers; targeted intervention is also associated with measurable neural growth. A longitudinal study of 11 children with dyslexia aged 7–11 reported that an 8-week training program focusing on mental imagery, articulation, and tracing of letters, letter groups, and words significantly improved reading skills, some of which were sustained at an 8-week follow-up (Krafnick, Flowers, Napoliello, & Eden, 2011). These behavioral gains were accompanied by significant increases in gray matter volume in the left anterior fusiform gyrus/hippocampus, left precuneus, right hippocampus, and right anterior cerebellum. After training ended, the gains were maintained, indicating lasting structural adaptation associated with literacy development.

Reading-related brain differences are also evident in adults. In young adults aged 18–25, greater print exposure was associated not only with better reading ability but also with increased cortical thickness in key language-related regions, particularly the angular gyrus (BA39) and the inferior frontal gyrus triangularis (BA45) (Goldman & Manis, 2013). Print exposure was defined as familiarity with author names and book and magazine titles. Notably, variations in cortical thickness appeared to be attributable to reading experience independently of reading skill, suggesting that simply engaging in reading may shape brain structure. This suggests that reading for pleasure in any format has benefits, and demonstrates the importance of reading something you enjoy (Sun et al., 2024). Furthermore, literacy training in functionally illiterate adults has been shown to increase gray matter volumes in regions such as the superior temporal gyrus, angular gyrus, superior parietal lobe, and lateral occipital cortex. These structural changes were correlated with improvements in reading and writing ability, and in some cases appeared to reduce or eliminate previously observed differences (Boltzmann et al., 2017). Taken together, this body of evidence suggests that reading both reflects and may actively help to shape brain development, underscoring the importance of promoting literacy and fostering pleasurable reading experiences across the lifespan.

Functional imaging research also suggests that reading fiction, particularly stories rich in social content, engages brain networks involved in social cognition, such as theory of mind, or understanding how another person might think or behave. In a study of 26 young adults aged 19–26 who read literary passages while undergoing fMRI scanning, distinct subnetworks of the default mode network (DMN) were found to respond to different aspects of the texts (Tamir, Bricker, Dodell-Feder, & Mitchell, 2016). The DMN, which has been linked to social behavior, mood regulation, motivational processes (Raichle, 2015), and creative thinking (Lloyd-Cox, 2024), showed differentiated activation patterns: the medial temporal lobe subnetwork responded preferentially to vivid passages regardless of social content, whereas the dorsomedial prefrontal cortex subnetwork responded more strongly to passages with social and abstract content. Importantly, individuals who reported reading fiction more frequently demonstrated better social cognitive performance, and activation in the dorsomedial prefrontal cortex subnetwork mediated the relationship between reading socially rich fiction and social cognitive ability.

Conclusion

Given its accessibility and relatively low cost, early reading interventions may represent a practical and scalable strategy for supporting brain health, cognitive development, and well-being, particularly among children in lower-income households who may be at greater risk of educational disadvantage. Policies that promote early reading habits, through schools, libraries, book clubs and community initiatives, have the potential to help mitigate some of the adverse effects of poverty on brain development and learning trajectories, offering long-term developmental and academic benefits. Reading also remains valuable across adulthood; engaging with books is associated with enhanced well-being, reduced stress, and greater empathy, likely through its stimulation of emotional and social-cognitive processes. In middle-aged and older adults, cognitively stimulating activities such as reading have been linked to slower cognitive decline and a reduced risk of dementia, underscoring its potential role in healthy brain ageing. Nevertheless, although converging evidence points to widespread cognitive and neural benefits, the precise brain mechanisms through which reading exerts these positive effects are not yet fully understood, and further experimental research is needed to establish causal pathways. In addition, it would be important to know whether plasticity in the adult brain can promote better brain structure, cognitive function, and well-being for those adults who take up reading for pleasure later in life. In collaboration between the University of Cambridge and The Queen's Reading Room, we aim to pursue these important questions and deepen our understanding of how reading shapes the brain and supports cognitive reserve, resilience, and well-being across the lifespan.

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