

Keep Your Brain Young: Read, Be Bilingual, Drink Coffee

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My grandfather told me about senility, I'm not worried about that. My grandfather said, "When you become senile, you won't know it." (Bill Cosby)

There are three things you can do to stay young mentally and you can do all three at the same time.

Read:

Older people who read more do better on tests of mental ability. In fact they do a lot better. The standard test used to detect dementia is the MMSE, a short test of arithmetic, memory and spatial relations. A research team (Galluccio et al, 2009) found that older people (average age 84) who said they read novels and non-fiction averaged 27.3 on the MMSE, which is in the normal range (27-30). Those who said they only read newspapers averaged 26, which is just below normal (20-26 = "some impairment), but those who said they did no reading averaged 21, well inside the "impaired" range).

Smith (1996) reported that in general older people do not do as well as younger people on reading tests. But older (e.g. age 65 and older) who said they wide variety of types of reading, or genres (e.g. fiction, current affairs or history, religion/inspiration, science/social science/) not only read better than their age-mates who read less widely, but read just as well as younger adults (age 19 to 24) who read just one type of reading material. Smith concludes that "...extensive reading practice may help to ameliorate possible cognitive declines later in life" (p. 217).

A popular research design in dementia studies is to test older people who don't have any signs of problems, and then retest them years later, comparing those who develop problems and those who don't, called "prospective" studies. In one prospective study, Verghese et. al. (2003) reported that 68% of those who developed dementia five years after initial testing said they read books or newspapers frequently (at least several times per week), but 86% of those who did not were frequent readers, a significant difference. Geda and colleagues (2009) recently reported similar results.

One study found that older people (average age 80) were better than younger people (average age 19) on vocabulary and general knowledge, but statistical analysis revealed that age had nothing to do with the difference: The difference was entirely because the older people had read more (Stanovich, West and Harrison, 1995). In the same study, younger people did better on tests of logical thinking and "working memory." More reading meant somewhat less decline in working memory but not in logical thinking.

Be bilingual:

Ellen Bialystok and her colleagues (2007) examined those already diagnosed with dementia. The bilinguals in their sample (those who used two languages on a daily basis since childhood) developed symptoms of dementia about four years later than the monolinguals (age 75.5, compared to 71.4).

Bialystok and colleagues (2004) also studied why bilingualism helps keep you mentally young. As people get older, they have more difficulty at solving problems that require ignoring irrelevant information and focusing just on important information. In other words, they are more easily distracted (now what did I come downstairs for?). Also, younger people are better at keeping information in their memories while solving a problem. Bialystok and associates found that older bilinguals show less of a decline with age than monolinguals in tasks that require keeping information in mind and ignoring distractors. Apparently, the regular use of two languages helps maintain this ability.

Note that Bialystok's studies were with those who had been bilingual since youth and who used both languages regularly. We don't yet know if language acquisition in later life has a positive effect on the brain.

Drink coffee:

Prospective studies show that coffee drinkers show less "cognitive decline" as they age: van Gelder et. al. (2007) found that all of their subjects ("elderly men") got worse on the MMSE over ten years. But non-coffee drinkers declined more, averaging 2.6 points, while coffee drinkers in general declined 1.4 points. The group that did the best were those who drank three cups a day, declining only .6 points, a decline more than four times smaller than the decline experienced by non-drinkers.

Three more prospective studies found that those who developed Alzheimer's or dementia were less likely to be regular coffee drinkers preceding the diagnosis. In one five year study, 71% who did not develop Alzheimer's were coffee drinkers, and 57% of those who developed Alzheimer's were (Lindsay et. al. 2002), and in another five year study, 67% of those considered "cognitively impaired" drank coffee but 76% of those who did not were coffee drinkers (Tyas, et. al., 2001). The difference in this study was not statistically significant, probably because of the small sample size: Only 33 "impaired" subjects were included. Eskelinen et. al. (2009) reported similar results in a 21 year study: The lowest risk for developing dementia and Alzheimer's was found in those who drank 3-5 cups per day.

In a retrospective study, one looking back in time, Maia and de Mendonca (2002) reported that Alzheimer's sufferers consumed an average of between 75 mg of caffeine per day in the 20 years preceding diagnosis. Control subjects, similar subjects without Alzheimer's, consumed an average of about 200 mg per day. (Note: The average cup of coffee has between 80 and 175 mg of caffeine. A Starbucks tall coffee (12 oz.) has 260 mg.).

Studies with mice (Arendash et. al., 2009) suggest that caffeine might be able to reverse the symptoms of Alzheimer's. Researchers included the equivalent of 500 mg of caffeine (5 cups of coffee) in the drinking water of 18-19 month old mice (equivalent to 70 years old in a human) that had been genetically altered to develop memory problems similar to Alzheimer's as they aged. After two months, the caffeinated mice performed as well as normal mice on tests of memory and thinking. Similar memory-challenged mice who drank plain water did not show any improvement. Also, the caffeinated mice had lower levels of the protein linked to Alzheimer's (beta amyloid) in both their blood and brains (Cao et. al., 2009). (Apple juice may also have this effect; Chan and Shea, 2009).

The research, however, provides no evidence that caffeine improved the memory of normal mice, even if administered from youth through old age. The effect, so far, appears to be specific to dementia. Coffee, in other words, keeps you normal but won't make you super-normal.

There is considerable agreement as to the optimal dose of coffee. van Gelder et. al. reported that the optimal dose to slow cognitive loss was three cups a day (more or less was less effective), and Eskelinen et al report that three to five cups per day was associated with the lowest risk of developing Alzheimer's. The dose given to mice was about five cups a day (but experimenters did not study the effect of lower doses).

How about all three together?

We need to know the effect of combining all three, reading, bilingualism and coffee. Note that it is easy to do them at the same time: Hang out at Starbucks (drink about three regular cups of coffee a day, according to the studies cited), and read a book in another language.

I would be happy to volunteer as a subject in such a study. Maybe the experimenters will pay for my coffee.

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