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To cite this article: Malwina A. Niechcial, Eleftheria Vaportzis & Alan J. Gow (2019) People’s views on preserving thinking skills in old age, Educational Gerontology, 45:5, 341-352, DOI: 10.1080/03601277.2019.1627054

To link to this article: https://doi.org/10.1080/03601277.2019.1627054

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Published online: 14 Jun 2019.

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People’s views on preserving thinking skills in old age

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ABSTRACT

Changes in thinking skills are commonly experienced by older adults, though large variation exists. Such changes are one of the top concerns of people as they get older. Public perceptions of those changes could be used to effectively communicate with them about ways to improve their thinking skills. This study explored people’s views about maintaining and improving thinking skills with age in a UK-wide survey completed by respondents aged 40 and over. Respondents answered an open-ended question “What would be one piece of advice you would give to someone to maintain or improve their thinking skills with age?”. Responses from 3,165 individuals (95% of the survey sample) were analyzed using content analysis. Three main themes emerged: keeping fit and healthy in mind and body; staying engaged with the world around you; and attitudes to prevent decline. Respondents thought that keeping physically and mentally active, being sociable, having a purpose in life and positive attitude, and preventative strategies could help maintain thinking skills. Adults aged 40 and over in the UK thought there are things that can help preserve thinking skills with age. The survey findings support previous research, extending the findings to adults in the UK. Understanding people’s beliefs can inform better communication with them about what can benefit thinking skills. Effective communication should provide resources and advice in the same way other public health messaging is carried out (such as that regarding heart health).

Introduction

Age-associated changes in thinking skills are one of the top concerns for older people, and understanding the determinants of these changes remains a research priority (Brayne, 2007; Winblad et al., 2016). In 2015, an American Association of Retired Persons (AARP) survey found that 73% of respondents were worried about their thinking skills declining in the future, while 45% of people aged 65 and over believed their own abilities had declined over the preceding 5 years (AARP, 2015). Different domains of thinking skills develop and change in characteristic ways across the life course. For example, aspects of memory, executive functions, processing speed and reasoning are more age-sensitive (Hedden & Gabrieli, 2004; Park & Reuter-Lorenz, 2009), and it is suggested there may be shared variance in decline across different domains (Wilson et al., 2002). Moreover, the decline in processing speed, which starts when people are in their 20s or 30s (Der & Deary, 2006), has been linked to age-related slowing in other cognitive functions (Salthouse, 2009). Cognitive ageing is a pressing issue for individuals as well as society; people aged 65 and over will soon outnumber children aged under 5 (World Health Organisation, 2011). Helping people to live a healthier life...
physically and in terms of retaining cognitive abilities) can prolong functional ability and independence in older age (Lloyd et al., 2014).

In general, people can be prone to holding negative stereotypes about ageing, as evident through numerous studies (Hummert, 2011; Levy, 2009). A recent report on ageing has found a discrepancy between views of ageing held by experts and the general public (Lindland, Fond, Haydon, & Kendall-Taylor, 2015). The authors reported that experts see ageing as a normal process, abundant in opportunities for social and civic contribution. In contrast, according to the report, the public have a more negative understanding of the ageing process, resulting in ageing being dreaded and fought against (Lindland et al., 2015). On the contrary, a recent study (Weiss, Job, Mathias, Grah, & Freund, 2016) reported that people aged 18–77 were more likely to reject fatalistic views of ageing. Given those conflicting views, the current study sought to explore the beliefs about cognitive ageing among adults aged 40 and over in the UK.

Previous studies have reported that individuals’ views of ageing can have tangible effects on how healthy they will be in later life (Wurm, Diehl, Kornadt, Westerhof, & Wahl, 2017), with worse cognitive performance reported for those who hold more negative views (Levy, Zonderman, Slade, & Ferrucci, 2011). Similarly, those who perceived their ageing more favorably or reported feeling younger than they really were tended to stay healthier (Spuling, Miche, Wurm, & Wahl, 2013) and lived longer than those with less positive self-perceptions or a higher subjective age (Rippon & Steptoe, 2015; Sargent-Cox, Anstey, & Luszcz, 2013). Bowling’s work (Bowling, 2006, 2008) found that psychosocial aspects of ageing, such as having a positive outlook, in addition to aspects of physical and mental functioning, engagement in leisure activities and social relationships, were important to people in the UK. Older people in Scandinavian countries mentioned factors such as a positive attitude, good health, independence and a purpose in life together with sufficient resources, creating opportunities, and feeling valued (Hörder, Frändin, & Larsson, 2013). Understanding people’s own views about the ageing process can inform strategies and campaigns to encourage engagement in brain-healthy behaviors and activities.

In recent years, the AARP have been conducting surveys about brain health in the United States to better understand people’s beliefs about age-related changes in thinking skills (AARP, 2015, 2017a, 2017b). Modelled after that work, we conducted a UK-wide survey to explore the understanding of, and beliefs about, cognitive ageing among adults aged 40 and over (Vaportzis & Gow, 2018). The results from the AARP brain health surveys and our own work (AARP, 2015; Vaportzis & Gow, 2018) suggest the majority of adults aged 40 and over (94% of AARP sample and 91.4% of our respondents) generally believe that thinking skills can be improved with age. There is general support for three domains of activity that promote brain health: physical, social and intellectual (Fratiglioni, Paillard-Borg, & Winblad, 2004; Rowe & Kahn, 1997). Previous studies suggest that increased physical fitness (Kosmat & Vranic, 2017; Simone & Haas, 2009), large social network size (Bennett, Schneider, Tang, Arnold, & Wilson, 2006; Gow et al., 2005) and satisfaction with social engagement (AARP, 2017a), as well as engagement in mentally demanding activities (Schooler & Mulatu, 2001), are related to better cognition.

Despite growing evidence for potential interventions for cognitive decline (for example, the Synapse project utilizing real-world activities, such as quilting and photography as potential interventions; Park et al., 2014; Park & Reuter-Lorenz, 2009), a more recent AARP survey reported that 35% of the respondents did not know what activities might be beneficial for brain health (AARP, 2017b). The findings of our own UK-wide survey (Vaportzis & Gow, 2018) were consistent with those of AARP: 41.1% of the respondents were not sure or did not know how to keep their brains healthy. It is important to ensure this lack of knowledge is remedied as people are living for longer, and therefore, are more likely to experience cognitive decline. Mass media is making information about brain-healthy behaviors more readily available, such as Age UK’s Staying Sharp web pages (Age UK, 2017). Public health messaging via mass media was found to have an overall beneficial effect on health-related behaviors (Wakefield, Loken, & Hornik, 2010). This work found that mass media campaigns can produce positive changes in health-related behaviors on a large scale but longer and better funded campaigns could create continued exposure to such content.
Researchers in cognitive ageing are currently trying to find effective interventions and protective lifestyle factors to help people age more healthily (e.g., Park et al., 2014; Vaportzis, Martin, & Gow, 2017). To provide benefit, the results of such work have to be effectively communicated to the public. This communication should explain what cognitive ageing is and how to maintain or improve cognitive functioning, also recommending activities beneficial to thinking skills (Blazer, Yaffe, & Liverman, 2015). In contrast with some previous studies (Hummert, 2011; Levy, 2009), the AARP surveys (AARP, 2015, 2017a, 2017b) as well as our own (Vaportzis & Gow, 2018) have found that respondents generally believe that thinking skills can be improved with age, although a high proportion of respondents did not know what activities are beneficial to thinking skills. Cognitive decline is a frequently feared aspect of ageing, with many respondents already noticing changes in their own thinking skills (AARP, 2015). Building on the previously reported quantitative findings from our survey (Vaportzis & Gow, 2018), the current paper explores beliefs regarding improving thinking skills with age among adults aged 40 and over in the UK. The objectives of this paper were to examine what respondents believe can be done to improve thinking skills with age and whether factors such as age, education and gender are associated with those beliefs.

Methods
Participants

"What Keeps You Sharp?" was a UK-wide survey conducted between November 2016 and February 2017. Respondents were 3,330 adults aged 40 and over. They completed the survey online or in hardcopy, which explored their attitudes and beliefs to how their thinking skills might change with age (Vaportzis & Gow, 2018). Online data collection was facilitated through a market research company, Survey Sampling (n = 2,327). The online survey was additionally circulated via social groups, GP practices, our participant database and contacts with Age UK and Age Scotland (n = 883). Our team distributed survey hardcopies and the second author (E.V.) visited community centres to directly recruit the oldest-old and those without access to the Internet (n = 120). The project was approved by the University’s Ethics Committee. All respondents gave informed consent either in writing or by agreeing to four consent questions included at the start of the online survey.

From the 3,330 responses, the completion rate for the relevant open-ended question was 96% (n = 3,188). The intended sample was adults aged 40 and over, therefore 23 respondents who reported to be younger than 40 were excluded. Responses of those not reporting their age were included in the analysis (n = 58). The analytical sample was therefore 3,165 (95% of the overall respondents), comprising 1,832 females (57.9%), 1,275 males (40.3%), with 5 respondents identifying as ‘other’ (0.2%) and 53 not reporting their gender (1.7%). Most of the respondents identified as white British (90.0%, n = 2847). The mean age was 59.9 years old (SD = 11.0, range 40–92). Of 3,165 respondents, 669 (21.1%) were aged 40–49 years, 822 (26.0%) were 50–59 years, 902 (28.5%) were 60–69 years, 624 (19.7%) were 70–79 years and 90 (2.8%) were aged 80 years and over. To aid analysis, we created three age groups: ‘middle-aged’ comprising 40–59 year olds (n = 1,491, 47.1%), ‘young-old’ comprising those aged 60–79 (n = 1,526, 48.2%) and ‘old-old’ made up of 80–92 year olds (n = 90, 2.8%). Additionally, we grouped highest education levels as follows: ‘lower education’ (primary school, some secondary school and secondary school), ‘middle education’ (college or other training and professional degree) and ‘higher education’ (undergraduate and postgraduate degree). Following those new groupings, 842 (26.6%) completed lower education (comprising 14 who completed primary school, 63 completed some secondary school and 765 completed secondary school), 1,133 (35.8%) completed middle education (comprising 629 who completed college or other training and 504 completed a professional qualification) and 1,099 (34.7%) completed higher education (comprising 657 who had an undergraduate university degree and 442 held a postgraduate university degree). Thirty-nine respondents (1.2%) chose ‘other’ education. Responses may not total 3,165 because of missing data.
Survey

The survey contained a number of questions related to cognitive ageing, including when respondents thought different thinking skills declined and whether they believed thinking skills can be maintained or improved with age (reported previously; Vaportzis & Gow, 2018). The current paper focuses on responses to the open-ended question: “What would be one piece of advice you would give to someone to maintain or improve their thinking skills with age?” We included the open question to give respondents a chance to put things into their own words but also to end the survey on a positive note. The question asked for “one piece of advice” to make the responses more focused. We felt if we asked for advice in more open terms the respondents may not feel confident enough to respond.

Data analysis

Qualitative descriptive approaches examine the perceptions of those experiencing a particular phenomenon, although it can often be useful to also understand what beliefs and attitudes are common. The data were, therefore, analyzed using a content analysis approach (Elo & Kyngäs, 2008). Vaismoradi and colleagues (Vaismoradi, Turunen, & Bondas, 2013) compared content and thematic analyses, and noted that content analysis enables simultaneous qualitative and quantitative analysis of data sets in which the descriptive method goes beyond counting of codes by searching for deeper meaning.

Respondents’ answers were often made in short-comment style, listing the items respondents felt beneficial to improving or maintaining their thinking skills with age, although some respondents gave longer answers. Using Excel, the responses were cleaned by the first author (M.A.N.), correcting spelling and grammatical mistakes, and put in a table. Long reflections were condensed ensuring all important topics were captured. Negative remarks (e.g., Don’t be inactive) were coded as positive (e.g., Keep active) to aid analysis.

The first step of content analysis is to code the data. The codes are then collected under categories before being clustered together to find themes that best describe the dataset. Abiding by this framework, specific examples given by respondents (i.e., “exercise regularly”) were assigned a code (i.e., physical activity), followed by a category (i.e., activity). The categories were counted by number of respondents and not number of times one respondent mentioned a particular category. The first and second authors independently coded the first 20 responses and compared their codes. Discrepancies were discussed, consensus was reached and a coding template was devised. The first author then coded the rest of the data following the template. Upon completion of the first coding round, the first and second authors discussed appropriate codes for responses that did not fit the coding template. The first author then checked all the coded responses for consistency. Once completed, the categories were given a number to help with the quantitative analysis (e.g., activity was coded as 1). Using Excel, all of the comments in the numbered categories in the table were summed. The categories were then grouped to form the overarching themes. All of the qualitative analyses of data were performed by the first author in Excel with no help from any specialist software.

Additional statistical analyses were performed on the themes, grouping by age, gender and highest education level to explore whether there were any associations with the respondents’ answers. The results were analyzed by four factorial ANOVAs and reported here.

Results

Overview of responses

The analytical sample comprised 3,165 responses to the question “What would be one piece of advice you would give to someone to maintain or improve their thinking skills with age?”. Two thousand nine hundred and ninety-seven respondents (94.7%) gave at least one example of particular activities and attitudes, of which 966 respondents (30.5% of the analytical sample) provided more than one example (coded separately, resulting in multiple codes per respondent). One hundred and sixty-eight
respondents (5.3%) had no advice to give or their responses were difficult to categorize, and were therefore grouped as ‘other’. For example, one participant responded “Average”, while another’s response was “Decline of thinking skills”. Of those in the ‘other’ category, 111 (3.5%) had responded they did not know.

From the responses, three overarching themes emerged: keeping fit and healthy in mind and body; staying engaged with the world around you; and attitudes to prevent decline. All categories, themes and example quotations reflecting those themes are given in Table 1.

**Keeping fit and healthy in mind and body**
Keeping fit and healthy in mind and body consisted of respondents’ suggestions to keep active mentally, physically and spiritually as well as having a healthy lifestyle. The majority of respondents (71.3%, n = 2,258) suggested keeping active (both mentally and physically) as a way to help keep thinking skills sharp (e.g., “Keep active in mind and body”). Of those respondents mentioning keeping active, 81 (2.6%) referred to the phrase ‘use it or lose it’ or a variant of it. Those respondents believed that disuse of thinking skills would result in their deterioration (e.g., “As regards your brain: if you don’t use it, you lose it”). Two hundred and seventy-five respondents (8.7%) mentioned having a healthy lifestyle as important to their cognitive health. These suggestions included having a healthy diet, getting enough sleep and watching one’s alcohol intake: “Look after yourself in all ways (diet, sleep etc.)”. Lastly, spirituality was named as relevant to having a sharp mind by 6 respondents (0.2%) in their suggestions for meditation and prayer alongside activity (e.g., “Meditation and exercise”; “Try reading, doing crossword puzzles and pray”).

**Staying engaged with the world around you**
Staying engaged with the world around you included respondents’ suggestions for social activity, having an interest in things, having a purpose in life, and keeping engaged. Four hundred and six respondents (12.8%) recommended keeping socially active to counteract the effect of ageing on thinking skills (e.g., “Get a dog, so you have company when walking”; “Try to keep sociable, loneliness

<table>
<thead>
<tr>
<th>Theme</th>
<th>Category (n)</th>
<th>Illustrative quotes</th>
</tr>
</thead>
</table>
| Keeping fit and healthy in   | Activity (2258) | Read and exercise more  
| mind and body                |              | Keep active in mind and body  
|                              | Healthy      | Eat plenty of organic food loaded with minerals and vitamins and exercise regularly  
|                              | lifestyle     | Look after yourself in all ways (diet, sleep etc.)  
|                              | Spiritual     | Meditation and exercise  
| Staying engaged with the     | Social (406) | Try to keep sociable, loneliness has a massive impact of thinking skills  
| world around you             |              | Walking in the fresh air and having a pet for companionship  
|                              | Interest      | Keep interested in people and what’s going on around you  
|                              | Engagement    | Keep being interested in as many things as possible  
|                              | Purpose       | Keep involved with people and activities  
|                              | (65)          | When people retire, they fall apart because there is no purpose, we all need to pursue different hobbies etc. to keep mentally/physically fit  
|                              | (31)          | Don’t assume as you age that mentally you will decline and always keep a positive attitude  
|                              | Attitude (839) | React when you first notice a drop in attention. It is not a passing phase; it is a new direction  
|                              | Awareness     | Watch out for changes, declining skills and immediately seek medical advice  
|                              | (91)          | Prevention is better than cure  
|                              | Get help      | Build the foundations for your later life as early as you can  
|                              | Prevention    | Try to keep living independently and dealing with those challenges  
|                              | (33)          | Independence  
| Note. The figures in the category column reflect the number of coded responses.
has a massive impact on thinking skills"). One hundred and seven respondents (3.4%) mentioned keeping interested in the world as helpful to one’s thinking skills: “Keep interested in people and what’s going on around you”. Sixty-five respondents (2.1%) recognized the need to keep engaged with the world and other people to keep the brain active: “Engage with the world and don’t make your world small”. Similarly, having a purpose in life was named as important to brain health by 31 respondents (1%). This notion was echoed in calls to learn new things, have hobbies and projects, and to help others: “When people retire, they fall apart because there is no purpose, we all need to pursue different hobbies etc. to keep mentally/physically fit”.

**Attitudes to prevent decline**

Attitudes to prevent decline saw respondents cite the importance of attitude, awareness of one’s own condition, preventing decline and seeking assistance when changes are noticed, as well as maintaining independence as vital factors in retaining mental skills. Just over a quarter of respondents (26.5%, \( n = 839 \)) referred to attitudes, such as having a positive attitude in their advice to ‘think young’: “Don’t assume as you age that mentally you will decline and always keep a positive attitude”. Being aware of one’s own ability levels by monitoring for any changes was mentioned by 91 respondents (2.9%) as a way to keep the brain sharp: “React when you first notice a drop in attention. It is not a passing phase; it is a new direction”. Related to this, 44 respondents (1.4%) suggested seeking professional advice when changes are noticed: “Watch out for changes, declining skills and immediately seek medical advice”. Thirty-three respondents (1%) stated they would advise other people to focus on prevention of decline in the first place: “Prevention is better than cure”. Finally, 6 respondents (0.2%) framed their advice with regards to maintaining independence as a key driver to maintain thinking skills: “To maintain your (...) independence and not become a dribbling vegetable, find things that stretch your mind, never stop learning”.

Additional analyses were performed to explore suggestions of respondents in different socio-demographic groups (age, gender and highest education level). Those three groups were used as independent variables in three factorial (2x2x3) ANOVAs (one per theme, illustrated in **Tables 2**–**4**). An additional factorial (2x2x3) ANOVA was performed on those who specifically said they did not know what to advise to see who was least likely to know what can help improve thinking skills with age (illustrated in **Table 5**). The analyses were first run with all two- and three-way interactions included, but the non-significant three-way interactions were then removed to report the current results. Follow-up analyses are included for all significant results.

From the statistical analyses it emerged that females were more likely than males to provide advice within the staying engaged with the world around you theme (mean difference = 0.125, \([95\% \text{ CI 0.068, 0.181}]\) (**Table 3**). Those in the middle-aged group were less likely to provide such advice

<table>
<thead>
<tr>
<th>Keeping fit and healthy in mind and body</th>
<th>n (%)</th>
<th>F-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>932 (73.1%)</td>
<td>0.228</td>
<td>.633</td>
</tr>
<tr>
<td>Female</td>
<td>1391 (75.9%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle-Aged</td>
<td>1122 (75.3%)</td>
<td>0.011</td>
<td>.989</td>
</tr>
<tr>
<td>Young-Old</td>
<td>1132 (74.2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old-Old</td>
<td>66 (73.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower education</td>
<td>617 (73.3%)</td>
<td>0.012</td>
<td>.988</td>
</tr>
<tr>
<td>Middle education</td>
<td>857 (75.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher education</td>
<td>817 (74.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender × Age group</td>
<td>1.411</td>
<td>.244</td>
<td></td>
</tr>
<tr>
<td>Gender × Education group</td>
<td>0.228</td>
<td>.796</td>
<td></td>
</tr>
<tr>
<td>Age group × Education group</td>
<td>1.317</td>
<td>.261</td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Percentages given are a proportion of respondents within that sub-group. For example, percentage of males whose response was counted within this theme is the proportion of all males in the analytic sample. Differences are significant at \( p < .05 \).
Table 3. Results of ANOVA on staying engaged with the world around you theme with frequencies and percentages for gender, age and education groups.

<table>
<thead>
<tr>
<th>Staying engaged with the world around you</th>
<th>n (%)</th>
<th>F-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>148 (11.6%)</td>
<td>18.630</td>
<td>.000</td>
</tr>
<tr>
<td>Female</td>
<td>391 (21.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle-Aged</td>
<td>193 (12.9%)</td>
<td>22.939</td>
<td>.000</td>
</tr>
<tr>
<td>Young-Old</td>
<td>323 (21.2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old-Old</td>
<td>23 (25.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower education</td>
<td>129 (15.3%)</td>
<td>0.500</td>
<td>.606</td>
</tr>
<tr>
<td>Middle education</td>
<td>181 (16.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher education</td>
<td>223 (20.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender × Age group</td>
<td>0.982</td>
<td>.375</td>
<td></td>
</tr>
<tr>
<td>Gender × Education group</td>
<td>2.511</td>
<td>.081</td>
<td></td>
</tr>
<tr>
<td>Age group × Education group</td>
<td>1.271</td>
<td>.279</td>
<td></td>
</tr>
</tbody>
</table>

Note. Percentages given are a proportion of respondents within that sub-group. For example, percentage of males whose response was counted within this theme is the proportion of all males in the analytic sample. Differences are significant at $p < .05$.

compared with the young-old (mean difference = −0.088, [95% CI −0.121, −0.054]) and the old-old (mean difference = −0.154, [95% CI −0.253, −0.054]).

For the attitudes to prevent decline theme, there was an interaction between gender and education group for respondents providing this advice (Table 4). Highly educated females were more likely to provide advice within that theme compared with males (mean difference = 0.130, [95% CI 0.042, 0.218]) and females (mean difference = 0.171, [95% CI 0.091, 0.251]) in the lower education group, and males who completed middle education (mean difference = 0.106, [95% CI 0.026, 0.186]). Additionally, females in the lower education group were less likely to provide advice within this theme compared with women who completed middle education (mean difference = −0.099, [95% CI −0.180, −0.019]) and highly educated males (mean difference = −0.107, [95% CI −0.196, −0.019]).

For the ‘don’t know’ category, respondents’ age had an effect on the likelihood of them responding in this way (Table 5). Those in the middle-aged group were more likely to say they didn’t know what to advise compared with the young-old (mean difference = 0.029, [95% CI 0.013, 0.045]) and the old-old (mean difference = 0.050, [95% CI 0.020, 0.098]).

Discussion

The “What Keeps You Sharp?” survey explored views about cognitive ageing among adults aged 40 and over in the UK. The survey looked specifically at beliefs about the factors that might improve thinking skills in old age. In analyzing the open-ended question “What would be one piece of advice
you would give to someone to maintain or improve their thinking skills with age?”, three main themes emerged: keeping fit and healthy in mind and body; staying engaged with the world around you; and attitudes to prevent decline.

Consistent with the literature on healthy ageing and cognitively-protective factors (AARP, 2015, 2017a, 2017b; Bowling, 2006, 2008; Park et al., 2014), most of our respondents mentioned staying active, having a healthy lifestyle and diet, social contact and having a positive attitude. The majority of our respondents named being active as a single effective way to improve thinking skills with age. For example, respondents expected keeping physically active and learning new skills to be beneficial, a view supported by empirical intervention work (Chan, Haber, Drew, & Park, 2014; Park et al., 2014; Vaportzis et al., 2017). Though potentially intuitive, this is a potentially important finding; future work can build on this belief to encourage people, regardless of age, to learn new things as a way to benefit their thinking skills now and in the future, in turn helping them remain independent and active contributors to their community.

Many of our respondents cited having a positive attitude as key to age more successfully, also supporting previous work on attitudes towards ageing (for Bowling, 2006, 2008; Hörder et al., 2013; Wurm & Benyamini, 2014). It has previously been reported that the lives of those with a positive outlook are longer and healthier (Rippon & Steptoe, 2015; Sargent-Cox, Anstey & Luszcz, 2013; Spuling et al., 2013). Perhaps our respondents believe this to be true. Having a purpose in life was also cited as important, although to a lesser extent than may have been expected. Purpose in life was previously rated as the most important from a list of 19 lifestyle or behavioral factors (Vaportzis & Gow, 2018), consistent with findings from a US sample on which many of the “What Keeps You Sharp?” survey questions were based (AARP, 2017a). In the AARP survey (AARP, 2017a), 94% rated having a sense of purpose in life as ‘somewhat important’ or ‘very important’. The qualitative findings reported here therefore lend partial support to that previous work.

The survey respondents also mentioned healthy and active lifestyles, together with remaining independent as desirable. This is in line with Karppinen et al. (Karppinen, Laakkonen, Strandberg, Huohvanainen, & Pitkala, 2016); respondents saw maintaining social contact with friends and family, and meeting new people, as important. As well as keeping in touch with people, some of our respondents mentioned having a pet for companionship, to encourage venturing out of the house and make new acquaintances. Benefits of owning a dog for social and physical activity aspects in adults have also previously been reported (Cutt, Giles-Corti, Knuiman, & Burke, 2007).

The statistical analyses carried out here have revealed that women were more likely than men to recommend being socially active and engaging with people in activities (advice falling within the staying engaged with the world around you theme). This may be because women are more likely to do those things than men in the first place. Similarly, those in the youngest age group were least likely to provide such advice. It may be because benefits to cognitive functioning may be more easily

<p>| Table 5. Results of ANOVA on don’t know category with frequencies and percentages for gender, age and education groups. |</p>
<table>
<thead>
<tr>
<th>Don’t know</th>
<th>n (%)</th>
<th>F-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>53 (4.2%)</td>
<td>0.502</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>54 (2.9%)</td>
<td>13.770</td>
</tr>
<tr>
<td>Age group</td>
<td>Middle-Aged</td>
<td>74 (5.0%)</td>
<td>1.535</td>
</tr>
<tr>
<td></td>
<td>Young-Old</td>
<td>32 (2.1%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td></td>
<td>Old-Old</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Education group</td>
<td>Lower education</td>
<td>50 (5.9%)</td>
<td>0.066</td>
</tr>
<tr>
<td></td>
<td>Middle education</td>
<td>37 (3.3%)</td>
<td>1.785</td>
</tr>
<tr>
<td></td>
<td>Higher education</td>
<td>20 (1.8%)</td>
<td>1.739</td>
</tr>
</tbody>
</table>

Note. Percentages given are a proportion of respondents within that sub-group. For example, percentage of males who said they did not know is the proportion of all males in the analytic sample. Differences are significant at p < .05.
associated with physical and mental engagement rather than social activities. The benefits of social engagement may also not be as well publicized as benefits of those other types of engagement. Respondents in the older age groups may also have a more direct experience of social engagement having a positive impact on thinking skills, whether their own experience or that of others. And it is possible that as participation in physically and mentally challenging activities may become increasingly difficult with age, social activities can continue to be an accessible form of engagement. Moreover, those in the highest education group were also most likely to suggest advice within this particular theme because they may be more aware of the benefits engagement with people and activities can provide to our thinking skills.

Females in the lowest education group were also least likely to provide advice in line with the attitudes to prevent decline theme, with those in the highest education group being most likely to provide such advice. It is possible that as the level of education increases, so does people’s awareness of how our attitudes and mind-sets can influence our wellbeing and capacities (both mental and physical). Those results can be used as conversation-starters to ensure everyone, regardless of their age, gender and educational background, knows how their thinking skills can be improved in later life to help their independence and quality of life.

Although the majority of respondents gave specific advice or examples of activities that might benefit brain health, a small percentage (less than 4%, n = 111), did not know what to advise. That contrasts with findings from the 2017 AARP survey (AARP, 2017b) and our own quantitative findings (Vaportzis & Gow, 2018), where 35% and 41.1% of respondents respectively, did not know which activities might be beneficial for brain health. Based on those quantitative findings it might have been expected that a larger proportion of respondents would not be able to provide specific advice for brain health. It is possible that the open question we asked was important to our respondents and that is why we observed such a high number of completed responses. This could also be an artefact of the methodology used here, in that the rate of completion of this particular open-ended question may have been higher because of the wording used. Respondents were more likely to provide an answer when asked specifically to provide ‘one piece of advice’ to keep their thinking skills sharp. However, when we asked people whether they knew how to keep their brains healthy we observed a higher proportion of those who didn’t know. Additionally, participants in the youngest age group were least likely to provide advice. Taken collectively, it remains important to consider who might be least likely to know what is beneficial as that will affect their ability to make positive lifestyle choices. Furthermore, it is important to ensure that those giving examples of specific activities, and therefore perhaps likely to do those activities, are citing factors that are well-supported by empirical evidence.

A strength of this study was the large number of responses collected, providing a breadth of views from people aged 40 and over across the UK. The results converge with those reported in the US and elsewhere in Europe. Similar surveys should be carried out in different countries to compare the understanding of brain health and brain-healthy activities across different cultures. Among the limitations, we cannot refer to the wider context of our respondents’ lives. Conducting thorough interviews would have yielded more in depth accounts of respondents’ views on the topic, though it would not have been feasible with the number of respondents taking part in this study. In the future, follow-up interviews with a targeted group of respondents would be appropriate to explore their responses. Another limitation of this study is the relatively small proportion of those taking part via face-to-face recruitment. Those with access to the internet are likely to differ on a number of sociodemographic variables to those without, which may therefore affect the representativeness of the data collected. It would be valuable to explore the understanding of what brain-healthy activities are among those from more deprived areas or with varying levels of education, for example, and similarly, how those groups differ in their actual participation in such activities.

“What Keeps You Sharp?” was the first UK-wide survey asking adults aged 40 and over about their attitudes and beliefs around cognitive ageing, including what they would advise other people to do in order to maintain or improve their thinking skills with age. The importance of new learning was highlighted by our respondents, which is consistent with the findings from
intervention research. Engagement in new activities may support ‘staying sharp for longer’, allowing older adults to fully participate in the community and prolong their independence. The findings could, therefore, inform further in-depth studies of adults’ perspectives on maintaining their thinking skills. Those studies could also explore the choice of topics and specific questions to include in such projects, and more specifically, the development of clear brain health messaging using people’s current knowledge as the entry point. Previous research reported discrepancies between expert and lay views about ageing. Experts tend to view ageing more favorably and recognize the challenges and opportunities that come with it. In contrast, the public tend to see ageing as fixed and a burden, marked by loss of skills and loved ones. Increased awareness could ensure that public’s views are more in line with the experts’ understanding to help people age more successfully and preserve their thinking skills into older age (Blazer et al., 2015). Brain health messaging should follow other campaigns for public health, such as those reviewed by Wakefield and colleagues (Wakefield et al., 2010). Future investigations should look at whether advice on brain health is communicated as well as advice surrounding other health-related issues, and whether exposure to such communication produces tangible changes in behaviors to specifically benefit brain health. The kinds of factors commonly cited in this paper (e.g., keeping active, having a purpose in life and social contacts), could also be utilized by local authorities or groups working with older people to help start conversations about maintaining or improving thinking skills, and thus independence.

In exploring older adults’ beliefs about cognitive ageing, specifically what might maintain or even improve thinking skills in later life, many respondents thought that being active (physically and mentally), keeping a positive attitude and preventing decline, together with staying engaged and being sociable, may all be beneficial. The findings presented here can be used to support mass media campaigns to raise awareness of brain-healthy behaviors. Additionally, those caring for and working with older adults could use these findings to direct attention towards lifestyle choices that can optimize brain health and independence with age.

Acknowledgments

The authors thank colleagues from Age Scotland, NHS Lothian, the City of Edinburgh Council, the Scottish Older People’s Assembly, Education Scotland, Age UK, Kaarin Anstey (University of New South Wales), Ian Deary (University of Edinburgh), Mike Martin (University of Zurich), Kaisu Pitkälä (University of Helsinki) and Christina Röcke (University of Zurich) for their input during the development of the survey.

Disclosure statement

We have no conflict of interest to declare.

Funding

This work was supported by Velux Stiftung under Project no. 1034 to A.J.G.

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