








Health practitioner beliefs regarding the impact of age-based stereotype threat on performance in the cognitive assessment of older adults

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ABSTRACT

Objectives: Health practitioners' understanding of the impact of age-based stereotype threat (ABST) on the cognitive test performance of older adults is not well understood. This study aimed to investigate health practitioners' ability to recognize the influence of ABST in the cognitive assessment of older adults and their perceptions of its impact in practice.

Methods: One-hundred and twenty-nine health practitioners (86% female; *M* age = 39.75, *SD* = 11.50) with experience in conducting cognitive assessments with older adults (mainly psychologists and occupational therapists) completed an online survey assessing demographic and practice characteristics, aging beliefs, a hypothetical cognitive assessment scenario, and perceived impact of ABST on practice.

Results: Overall, health practitioners rated ABST factors in the assessment scenario as less detrimental to cognitive performance than internal and external factors. In a hierarchical regression model, lower recognition of ABST and negative aging beliefs significantly accounted for lower perceived impact of ABST on older adults' cognitive test performance in practice ($R^2 = .37, p < .001$).

Conclusion: Health practitioners may not recognize the influence of ABST on assessment findings, especially if they hold negative aging beliefs. The findings highlight the need to improve health practitioners' knowledge of ABST to increase the validity of cognitive testing in older adults.

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Globally, the number of people aged 60 years and over is expected to double by 2050 (World Health Organization, 2020). A consequence of this trend is increased focus on the detection of pre-dementia syndromes (Le Couteur et al., 2013). Alongside growing demand for the cognitive screening of older adults, concerns have been raised regarding false positive diagnoses of mild cognitive impairment or dementia related to the effects of age-based stereotype threat on cognitive test performance of older adults (Régner et al., 2016).

Pervasive stereotypes exist about people's physical and cognitive competence in older age (Cuddy et al., 2005), which can influence older adults' performance. Specifically, older adults have been shown to underperform on cognitive tests (e.g. memory) in situations that put them at risk of confirming a negative aging stereotype (e.g. older adults have poor memory; Barber, 2020). The phenomenon of age-based stereotype threat (ABST) and its detrimental impact on cognitive test performance is supported by robust evidence from systematic reviews and meta-analyses (Armstrong et al., 2017; Lamont et al., 2015). ABST not only reduces older adults' objective performance to clinical levels of impairment on mental status examinations (Barber et al., 2015; Haslam et al., 2012; Mazerolle et al., 2017) but also inflates subjective cognitive complaints (Bouazzaoui et al., 2016). As such, ABST has significant implications for the conduct and validity of cognitive assessment with older adults (Barber, 2020). Clinically, ABST increases the likelihood of health practitioners incorrectly interpreting underperformance on tests and subjective cognitive complaints as evidence of pathological cognitive decline (Ben-David et al., 2018; Régner et al., 2016).

Blatant and subtle ABST have been examined in research. Blatant forms can involve directly informing older adults of age-related differences (i.e. compared to younger adults) on a test or ability. Subtle forms can involve priming a person's group membership (e.g. asking their age) or referring to a test as assessing memory. Of these, subtle ABST is more likely to occur in clinical settings from practitioners following pre-test procedures or test instructions (Shewach et al., 2019). Asking older adults their age, exploring age-related health concerns, prompting their use of glasses and/or hearing aids, or informing them memory is being tested, are all ways in which health settings (e.g. hospitals, memory clinics) can activate and perpetuate negative age-based representations (Ben-David et al., 2018; Haslam et al., 2018; Scholl & Sabat, 2008). Such cues may prime a person's age-based identity which, in turn, can increase performance expectations and anxiety, reduce working memory, and result in poorer performance (Abrams et al., 2008; Follenfant & Atzeni, 2020; Mazerolle et al., 2012).

Neuropsychological assessment manuals and compendiums (e.g. Lezak et al., 2012; Strauss et al., 2006) stress the importance of preparing patients for assessment and optimizing their performance. They encourage examiners to minimize environmental distractors (e.g. noise) and consider psychological or physical states (e.g. anxiety, fatigue) that may result in poorer performance. However, there is less emphasis on addressing the impact of ABST, such as patients holding negative beliefs about their cognitive abilities and being fearful of dementia (Fresson et al., 2017; Scholl & Sabat, 2008). Clinical guidelines for assessment of older adults (e.g. Laver et al., 2016; Petersen et al., 2018; Pottie et al., 2016) also

typically lack reference to the influence of ABST on performance. This omission is starting to be addressed, with guidelines (e.g. American Psychological Association, 2021) encouraging health practitioners to be mindful of how age biases can interfere with older adults' optimal cognitive performance. Hence, health practitioners who are well informed by research (Barber et al., 2015; Haslam et al., 2012; Mazerolle et al., 2017) may be conscious of ABST in clinical contexts. However, it is unknown to what extent health practitioners can recognize the potential impact of ABST on test performance and understand implications for their practice.

In addition to gauging health practitioners' understanding of the impact of ABST on cognitive test performance, the factors influencing their ability to recognize ABST and its perceived impact on practice are important to ascertain. Research has shown health practitioners' attitudes toward aging can vary according to the frequency and type of contact they have with older adults (Swift et al., 2016). For instance, viewing declining health and function as a normal part of increasing age was more common among primary care practitioners who had worked for a longer period with older adults (Davis et al., 2011).

These associations seem complicated by ageism, which encompasses hostile (i.e. contemptuous prejudice) and benevolent (i.e. patronizing and/or overaccommodating behavior) attitudes toward older adults (Cary et al., 2017). Cary et al. (2017) found hostile and benevolent ageist attitudes predict different outcomes. Of relevance to ABST, those high on benevolent ageism viewed older adults as less competent. Although interventions such as intergenerational contact would suggest greater exposure to older adults reduces ageist beliefs and leads to more positive attitudes (Drury et al., 2016), there is evidence to the contrary for health practitioners (Bettens et al., 2014; Drury et al., 2017). For example, aged care workers who experienced negative interactions with residents were found to generalize benevolent ageist attitudes to other older adults (Drury et al., 2017). Hence, it is conceivable that greater exposure to older adults in clinical contexts and benevolent ageist attitudes may be associated with reduced recognition of ABST and lower perceived impact of ABST on practice.

With increasing numbers of older adults expected to present for cognitive assessment in future, it is imperative health practitioners understand the psychosocial factors influencing cognitive test performance (Ben-David et al., 2018). To understand the extent to which health practitioners believe ABST can impact on cognitive assessments with older adults, it is important to initially assess their ability to recognize ABST in the context of other factors that may influence test performance, based on their pre-existing knowledge (i.e. without being cued or educated about ABST). Accordingly, this study aimed first to investigate health practitioners' ability to recognize the potential influence of ABST in the cognitive assessment of older adults. A hypothetical cognitive assessment scenario was presented, without reference to aging stereotypes or ABST, that required health practitioners to identify factors detrimental to an older adult's cognitive performance. It was hypothesized that health practitioners would identify external (i.e. environmental distractors) and internal (i.e. negative physical and psychological states) factors as significantly more detrimental to cognitive performance than ABST factors (i.e. stimuli priming one's age-based identity and/or negative aging stereotypes).

The second aim was to investigate factors associated with health practitioners' recognition of ABST in the assessment

scenario and their perceptions of its impact on older adults' cognitive test performance in practice, once they had been provided with information about ABST. It was hypothesized that negative aging beliefs, greater benevolent ageism, and more frequent clinical interaction with older adults would be significantly associated with lower recognition of ABST in the assessment scenario and lower perceived impact of ABST. Furthermore, it was hypothesized that lower recognition of ABST in the assessment scenario would be significantly associated with lower perceived impact of ABST in practice, after controlling for health practitioner variables.

Methods

Participants

Health practitioners (including postgraduate trainees) from any discipline with experience in conducting cognitive assessments with older adults (e.g. psychologists, neuropsychologists, geriatricians, psychiatrists, occupational therapists, and speech pathologists) were eligible to participate. Additional eligibility criteria included residing in Australia. Participants' English fluency was inferred from their ability to successfully complete the survey. Participants were recruited from the researchers' professional networks and Australian multidisciplinary professional membership bodies and interest groups (see Procedure).

An a priori power analysis (G*Power 3.1.9.4; Faul et al., 2009) was conducted for sample size estimation for the multivariate analysis. We used a small to medium effect size ($f^2 = .085$) based on previous research examining factors related to ageist beliefs (Davis et al., 2011; Drury et al., 2017). With alpha set at .05, a sample size of 95 participants would have 80% power to detect a significant effect of recognition of ABST in the assessment scenario on perceived impact in practice, controlling for up to seven other predictors.

A total of 185 respondents began the survey. Of these, 12 were ineligible (e.g. practitioners outside Australia) and 13 did not answer any questions. A further 31 respondents did not complete the full survey. Overall, 129 participants met inclusion criteria and completed sufficient survey sections. Sample characteristics are described in the Results section.

Materials

The survey was conducted using the Griffith University Online Research Survey Tool, powered by LimeSurvey (Version 2.59). Piloting was conducted prior to dissemination. A sample of clinical researchers ($n=6$) belonging to a postgraduate laboratory group were presented the survey as a group, completed the survey independently, and provided feedback on its structure, functionality, wording, and the order of questions as they completed the measure. Their feedback was incorporated into the final survey and their data were not used. Following an information sheet, the survey contained 69 questions (see Appendix A) presented across eight pages and took approximately 30 mins to complete. After the survey, respondents had the opportunity to enter a prize draw to win one of five \$50 eGift cards through a separate weblink. All questions prompted a mandatory response with the exception of Australian state (in case they were based overseas) and open-ended responses. The survey comprised the following sections, in the order presented.

Demographic and workplace characteristics

Respondents provided their age, gender, ethnicity, country of residence, Australian state, education, training status (e.g. currently undertaking a postgraduate degree), discipline, years of experience, practice setting (multiple responses permitted), and patient population.

Beliefs and expectations about aging

The 12-item Expectations Regarding Aging survey (ERA-12; Sarkisian et al., 2005) measured respondents' aging beliefs. Items (e.g. 'Forgetfulness is a natural occurrence just from growing old') are rated on a 4-point scale (1 = *Definitely True*, 4 = *Definitely False*). Total and subscale (physical health, mental health, and cognitive function) scores were computed, with lower scores indicating more negative aging beliefs (i.e. expectations of decline in mental health, cognitive, and physical functioning with aging). Internal consistency for the sample was good (Total, $\alpha = .80$).

The 9-item benevolent ageism subscale from the Ambivalent Ageism Scale (Cary et al., 2017) measured respondents' benevolent attitudes toward older adults. Items (e.g. 'Even though they do not ask for help, older people should always be offered help') were rated on a 7-point scale (1 = *Strongly Disagree*, 7 = *Strongly Agree*), with higher scores representing greater benevolent ageism. Internal consistency for the sample was acceptable ($\alpha = .74$).

Level of interaction and scope of practice with older adults

Respondents were asked to indicate their scope of practice and interaction with older adults (i.e. aged ≥ 60 years). Questions included how often (1 = *Never*, 7 = *Almost Always–At least once per day*) they see older adults (personally and professionally), their level of clinical experience with older adults and frequency of cognitive assessments, and the most common referral question received. Respondents were asked to answer these questions according to their usual practice with older adults prior to the COVID-19 pandemic.

Hypothetical assessment scenario

An assessment scenario (see Appendix B), with follow-up questions presented on the same page, measured health practitioners' ability to recognize the potential impact of ABST on cognitive test performance in an assessment context. Participants read a scenario describing an older adult (Mr. Smith) attending a memory clinic for cognitive assessment. The scenario was designed to include ABST stimuli, derived from previous research (Follenfant & Atzeni, 2020; Haslam et al., 2018), that make older adults' age salient and/or reinforce negative age stereotypes. These included attending a memory clinic, reading pamphlets on dementia and stroke, patients' beliefs about age and memory ability, being asked their age, and being told they will complete tests of their memory abilities. The scenario also included factors conventionally recognized as detrimental to assessment performance, derived from neuropsychological assessment guidelines (Lezak et al., 2012; Strauss et al., 2006). These were classified as internal or external factors. Internal factors included personal phenomenon such as physical discomfort (e.g. leg cramp, fatigue from not taking a rest break) and psychological states (e.g. feeling nervous about the appointment, having a dubious attitude toward assessment). External or environmental factors included

distracting stimuli within or near the assessment room (e.g. loud voices from the next room, someone knocking on the door). Five factors from each of these three categories (i.e. ABST, internal, external) were embedded within the scenario (see Table 1).

After reading the scenario, respondents immediately rated each of the 15 factors based on how detrimental they perceived them to be on the older adult's cognitive performance (1 = *Not at all*, 5 = *Extremely*). Presentation order was randomized on each page load. Ratings for each factor type were summed and averaged. Respondents were also asked to rank the five most detrimental factors. A principal component analysis supported the 15 items loaded on three components, which explained 65.6% of the variance. The ABST items loaded on the same component (communalities: .59–.83), and items loaded satisfactorily on the external (communalities: .62–.78) and internal (communalities: .45–.76) components, despite cross-loadings for two internal items (experiencing a leg cramp; feeling doubtful about the need for assessment). Internal consistencies for the three components were good (ABST, $\alpha = .86$; internal $\alpha = .81$; external, $\alpha = .87$).

Perceived impact of ABST in practice

This measure indexed respondents' perceived impact of ABST on older adults' performance in practice. Prior to completing this measure, respondents were provided with a brief explanation of ABST and how it might impact older adults' performance on cognitive assessment. They were then asked to rate the extent (1 = *Not at all*, 5 = *Extremely*) to which they believed ABST impacts the cognitive performance of older adults in general, in their place of practice, and in their broader profession (e.g. 'To what extent do you believe that age-based stereotypes affect the cognitive performance of older adults in general?'). Internal consistency of the 3-item scale was good ($\alpha = .86$).

Procedure

The study was approved by the Griffith University Human Research Ethics Committee (ref no: 2020/636). Participants were recruited via convenience sampling through advertising within the researchers' professional networks via social media and emailing the survey advertisement (see Appendix C) to colleagues and key representatives from national multidisciplinary professional bodies and interest groups in Australia (e.g. Brain Impairment Clinician and Researcher Peer Network, Australian

Table 1. Assessment scenario factors.

Factor type	Factor
ABST	Attending a memory clinic Reading pamphlets about stroke and Alzheimer's disease Mr Smith's belief that declining memory is to be expected for someone of his age Being asked to provide his age Being told he will complete tests of his memory abilities
Internal	Feeling nervous about the appointment Having a lot on his mind about his financial situation and family disagreements Feeling doubtful about the need for the assessment Experiencing a leg cramp Not taking a rest break when offered
External/ environmental	Air conditioning making the room feel quite cold Fluorescent light overhead occasionally flickering Loud voices coming from the next room which was difficult to block out at times Knock on the door by someone checking if the room was available Being seated in an uncomfortable chair

Psychological Society's Psychology and Ageing Interest Group, Neuropsychologists in Australia) whose memberships comprise health practitioners involved in cognitive assessment and/or working with older adults. Snowballing recruitment was also employed in which prospective respondents were encouraged to forward the survey link to their colleagues. The estimated number of people the survey link reached exceeded 2500. The survey was open from 29 October 2020 to 17 February 2021, with initial recruitment mainly occurring in November 2020 and a reminder sent in mid-December 2020.

Data analysis

Data screening and analysis was conducted using SPSS, version 27, following recommendations by Field (2013). In addition to the 13 surveys that contained no responses, 31 surveys contained insufficient data on key sections (i.e. most typically from the hypothetical assessment scenario section onward) and were excluded from analysis. One-way ANOVA or chi-square analyses indicated no differences between excluded participants ($n = 31$) and those retained for analysis ($n = 129$) in age, gender, years of experience, ethnicity, education, and discipline. However, compared to respondents retained for analysis, a higher proportion of those with insufficient data resided outside Queensland (i.e. state where the survey originated), $X^2(1, 160) = 8.43, p = .004$, and were completing ongoing training, $X^2(1, 160) = 5.19, p = .028$.

Data were screened for relevant assumptions prior to analysis. Transformations (e.g. square root) conducted to improve significant deviations from normality (± 1.96) on some variables did not alter the significance of results. Hence, findings based on non-transformed data are reported. Descriptive statistics and repeated measures ANOVA were used to address hypothesis one. Hypotheses two and three were examined using correlations and hierarchical multiple regression. The hypotheses and results of the correlation analysis guided selection of factors examined in the regression. Collinearity statistics indicated acceptable levels of multicollinearity for variables in the regression (Field, 2013).

Results

Sample characteristics

As shown in Table 2, participants' average age was 39.75 ($SD = 11.50$) years, and the majority were female (86%). The sample was highly educated, with most respondents having attained a Doctorate or PhD (46%). Most had completed their professional training (83%), and respondents had an average of 11.77 ($SD = 9.80$) years of experience since attaining their highest qualification (i.e. PhD, Masters, or Honors). Neuropsychology/clinical neuropsychology was the most common discipline, followed by occupational therapy and psychology/clinical psychology. The largest proportion of respondents worked in a public hospital, followed by private practice, and university. The majority of respondents indicated they worked mainly with older adults (57%), followed by younger to middle aged adults (27%), a balance of all ages (13%), or with pediatric patients (2%).

The majority of the sample (69%) endorsed older adults as an area of speciality or expertise and rated themselves as 'quite' or 'highly' experienced in conducting cognitive assessments with older adults. Over half of respondents indicated they 'very frequently' or 'almost always' see older adults in practice (61%) and interact with them outside practice (54%). A large

Table 2. Sample characteristics ($n = 129$).

Characteristics	<i>M (SD)/N (%)</i> , range
Age (years)	39.75 (11.50), 23–72
20–29	31 (24%)
30–39	36 (27.9%)
40–49	34 (26.4%)
50–59	16 (12.4%)
60–72	12 (9.3%)
Gender	
Male	18 (14%)
Female	111 (86%)
Ethnicity	
Australian	106 (82.2%)
European	9 (7%)
Asian	9 (7%)
Other	5 (3.9%)
Australian state of residence	
Queensland	62 (48.1%)
New South Wales	22 (17.1%)
Victoria	38 (29.5%)
Other	7 (5.4%)
Education level (highest attained)	
Bachelor's degree	26 (20.2%)
Honours Degree	18 (14%)
Master's degree	26 (20.2%)
Doctorate/PhD	59 (45.7%)
Training status	
Complete	107 (82.9%)
Ongoing (i.e., postgraduate degree and/or registrar program)	22 (17.1%)
Years of experience (since attaining highest qualification)	11.77 (9.80), 0–40
Discipline	
Psychology/Clinical Psychology	14 (10.9%)
Neuropsychology/Clinical Neuropsychology	63 (48.8%)
Occupational Therapy	43 (33.3%)
Other (e.g., speech pathology)	9 (7%)
Practice setting	
Public hospital	87 (67.4%)
Private practice	36 (27.9%)
University	25 (19.4%)
Other (e.g. private hospital)	27 (20.9%)
Patient population	
Mainly paediatric	3 (2.3%)
Mainly younger to middle aged adults	35 (27.1%)
Mainly older adults	74 (57.4%)
Balance of all ages	17 (13.2%)

proportion of respondents (44%) indicated they 'very frequently' or 'almost always' conduct cognitive assessments with older adults. The highest proportion of the sample indicated they mainly used selected tests or subtests (43%), followed by cognitive screening tests (33%), as opposed to comprehensive test batteries (18%). Respondents most commonly received referral questions regarding assessment and/or diagnosis of memory problems or cognitive decline (53%), followed by assessment of cognitive function following a significant health or neurological event (33%).

Descriptive data and preliminary analyses

Participants generally held neutral beliefs regarding the maintenance of overall health ($M = 63.07, SD = 13.10$), as well as physical health ($M = 51.74, SD = 17.14$) and cognitive function ($M = 54.97, SD = 19.53$), with aging. They held positive beliefs regarding the maintenance of mental health with aging ($M = 82.49, SD = 13.70$) and were low on benevolent ageism ($M = 14.87, SD = 5.34$) relative to non-health practitioner samples (Cary et al., 2017; Sarkisian et al., 2005). Due to few psychologists/clinical psychologists ($n = 14$) completing the survey and the overlap in training backgrounds between psychology and neuropsychology, these were grouped into a single discipline ('psychologists'; $n = 77$) for ease of comparison.

Health practitioner recognition of ABST in the assessment scenario

Participants' ratings of assessment scenario factors are summarized in Table 3. A repeated-measures ANOVA showed participants' ratings of assessment scenario factors differed significantly according to factor type, $F(2, 256) = 222.42$, $p < .001$, $\eta_p^2 = .64$. Post hoc contrasts revealed participants rated ABST factors as significantly less detrimental to performance than external (Mean difference = -0.96 , 95% CI $[-1.11, -0.80]$, $p < .001$) and internal (Mean difference = -0.99 , 95% CI $[-1.11, -0.86]$, $p < .001$) factors. There was no significant difference between ratings for internal and external factors ($p > .05$). Further inspection of ranking data revealed that only 26% of respondents included at least one ABST factor in their top five most detrimental factors.

Occupational therapists rated ABST, $t(71.15) = 3.06$, $p = .003$, internal, $t(118) = 4.00$, $p < .001$, and external, $t(118) = 4.15$, $p < .001$, factors as more detrimental to cognitive performance than psychologists. However, the proportion of respondents who included at least one ABST factor in their top five selections did not differ by discipline, $X^2(1, 120) = 2.23$, $p = .136$. Hence, these

discipline differences were more reflective of a general tendency of occupational therapists to rate factors as more detrimental than psychologists.

Factors associated with ABST recognition and perceived impact of ABST in practice

Small correlations were found between recognition of ABST factors and aging beliefs regarding physical health ($r = .20$, $p = .025$) and cognitive function ($r = .19$, $p = .03$), indicating that those with more positive beliefs regarding the maintenance of these functions with aging were better able to recognize ABST. As shown in Table 4, contrary to expectations, benevolent ageism was not significantly associated with recognition of ABST ($r = -.11$, $p = .20$). No significant associations between years of experience or frequency of interaction with older adults and recognition of ABST were found.

A small positive correlation was found between aging beliefs and perceived impact of ABST on the cognitive performance of older adults in practice ($r = .20$, $p = .026$). Older practitioners ($r = -.34$, $p < .001$) and those with more years of experience

Table 3. Health practitioner ratings of assessment scenario factors and perceived impact of ABST ($n = 124$ – 129).

	Not at all/ Slightly	Moderately	Considerably/ Extremely	<i>M</i> (<i>SD</i>)
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	
Assessment scenario factors				
ABST				2.39 (0.82)
Attending a memory clinic	76 (58.9)	31 (24)	22 (17)	2.44 (1.01)
Reading pamphlets about stroke and Alzheimer's disease	59 (45.7)	38 (29.5)	32 (24.8)	2.78 (1.04)
Mr Smith's belief that declining memory is to be expected for someone his age	74 (57.4)	38 (29.5)	17 (13.2)	2.39 (1.00)
Being asked to provide his age	103 (79.8)	19 (14.7)	7 (5.4)	1.73 (0.98)
Being told he will complete tests of his memory abilities	66 (51.2)	35 (27.1)	28 (21.7)	2.62 (1.08)
Internal				3.38 (0.74)
Feeling nervous about the appointment	19 (14.7)	46 (35.7)	64 (49.7)	3.50 (0.98)
Having a lot on his mind (financial situation and family disagreements)	7 (5.4)	34 (26.4)	88 (68.3)	3.84 (0.88)
Feeling doubtful about the need for the assessment	53 (41.1)	34 (26.4)	42 (32.6)	2.95 (1.14)
Experiencing a leg cramp	23 (17.8)	43 (33.3)	63 (48.9)	3.47 (0.99)
Not taking rest break when offered	33 (25.6)	52 (40.3)	44 (34.1)	3.12 (0.94)
External/environmental				3.35 (0.79)
Air conditioning making the room feel quite cold	37 (28.7)	45 (34.9)	47 (36.4)	3.15 (0.97)
Fluorescent light overhead occasionally flickering	34 (26.4)	49 (38.0)	46 (35.7)	3.22 (0.99)
Loud voices coming from next room	5 (3.9)	38 (29.5)	86 (66.6)	3.87 (0.82)
Knock on door by someone checking if the room was available	35 (27.1)	42 (32.6)	52 (40.4)	3.27 (1.10)
Being seated in an uncomfortable chair	34 (26.4)	45 (34.9)	50 (38.8)	3.22 (0.98)
Perceived impact of ABST on cognitive performance of older adults				2.65 (0.77)
General impact	48 (38.7)	48 (38.7)	28 (22.6)	2.82 (0.91)
Impact in place of practice	67 (54)	49 (39.5)	8 (6.5)	2.42 (0.80)
Impact in broader profession/field	49 (39.5)	55 (44.4)	20 (16.1)	2.70 (0.90)

Table 4. Correlations between socio-demographic and work characteristics, aging beliefs, and ABST variables.

Variable	1	2	3	4	5 (ρ)	6 (ρ)	7	8	9	10	11	12
1. Age	–											
2. Gender ^a	-.10	–										
3. Discipline ^b	-.08	-.15	–									
4. Years of experience	.81***	-.08	.17	–								
5. Frequency older adults seen (ρ)	.03	-.11	.33***	.09	–							
6. Cognitive assessment experience (ρ)	.45***	-.19*	-.01	.48***	.32***	–						
7. ERA Total ^c	-.03	-.10	.21*	.01	.26**	.12	–					
8. Benevolent ageism	-.31***	-.02	-.15	-.27**	-.06	-.13	-.40***	–				
9. ABST factors	-.07	-.12	.29***	-.11	-.02	-.16	.16	-.11	–			
10. Internal factors	-.21*	-.10	.35***	-.22*	.10	-.16	.17	.01	.74***	–		
11. External factors	-.04	-.14	.36***	-.04	.07	-.15	.16	-.03	.60***	.79***	–	
12. Perceived impact of ABST	-.34***	.02	.01	-.32***	-.19*	-.29***	.20*	.06	.46***	.36***	.24**	–

^aFemale = 1, male = 2.

^bPsychologists = 1, occupational therapists = 2.

^cERA = Expectations regarding aging.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 5. Hierarchical multiple regression analysis of health practitioner variables on perceived impact of ABST ($n = 124$).

Variable	R^2	ΔR^2	B	$SE(B)$	β	t	sr^2
Step 1	.28***	–					
Age			-.01	.01	-.15	-1.11	-.01
Years of experience			-.01	.01	-.09	-.68	-.00
Frequency older adults seen			-.12	.05	-.21	-2.36*	-.03
Cognitive assessment experience			-.04	.07	-.07	-.68	-.00
ERA Total ^a			.01	.01	.21	2.48*	.04
Internal factors			.33	.14	.31	2.29*	.03
External factors			-.04	.13	-.04	-.32	-.00
Step 2	.37***	.08***					
Age			-.02	.01	-.22	-1.70	-.02
Years of experience			-.01	.01	-.08	-.61	-.00
Frequency older adults seen			-.09	.05	-.17	-1.94	-.02
Cognitive assessment experience			-.04	.06	-.06	-.61	-.00
ERA Total			.01	.01	.19	2.38*	.03
Internal factors			-.05	.17	-.04	-.27	-.00
External factors			-.03	.12	-.03	-.25	-.00
ABST factors			.42	.11	.45	3.89***	.08

^aERA = Expectations regarding aging.* $p < .05$.** $p < .01$.*** $p < .001$.

($r = -.32, p < .001$), greater frequency of seeing older adults in practice ($r = -.19, p = .03$), and greater experience in conducting cognitive assessments ($r = -.29, p < .001$) had significantly lower perceptions of the impact of ABST in practice. Moreover, greater recognition of ABST factors ($r = .46, p < .001$) in the assessment scenario was significantly associated with higher perceived impact of ABST in practice. Small-to-medium positive associations were found between recognition of internal factors ($r = .36, p < .001$) and external factors ($r = .24, p = .006$) and perceived impact of ABST. Perceived impact of ABST in practice was not related to benevolent ageism ($r = .06, p = .502$) and did not significantly differ according to discipline, $t(114) = .007, p = .995$.

A hierarchical multiple regression (see Table 5) was conducted to determine whether recognition of ABST factors in the assessment scenario was significantly related to perceived impact of ABST in practice after controlling for age, years of experience, frequency older adults were seen, experience in conducting cognitive assessments, aging beliefs, and recognition of internal and external factors in the assessment scenario. The health practitioner variables entered at Step 1 significantly accounted for 28% of the variance in perceived impact of ABST in practice, $F(7, 116) = 6.58, p < .001$. Frequency older adults were seen ($\beta = -.21, p = .020$), aging beliefs ($\beta = .21, p = .015$), and recognition of internal factors ($\beta = .31, p = .024$) each accounted for significant unique variance in perceived impact of ABST. At Step 2, recognition of ABST factors in the assessment scenario was entered and significantly explained a further 8% of the variance in perceived impact of ABST in practice, $F_{\text{chg}}(1, 115) = 15.09, p < .001$. Recognition of ABST factors ($\beta = .45, p < .001$) and aging beliefs ($\beta = .19, p = .019$) each accounted for significant unique variance.

Discussion

This study sought to investigate health practitioners' ability to recognize the potential influence of ABST in the cognitive assessment of older adults as well as their perceptions of its impact on older adults' cognitive test performance in practice, once they were provided with information about ABST. As hypothesized,

health practitioners rated ABST factors in the assessment scenario as less detrimental to cognitive performance than internal and external factors. This may suggest low recognition of ABST by health practitioners or, alternatively, reflect that ABST is perceived to have less detrimental effects on cognitive performance than other factors such as physical discomfort and environmental distractors. Lower recognition of ABST in the assessment scenario, negative aging beliefs, and more frequent exposure to older adults in professional practice were associated with lower perceptions of the impact of ABST on older adults' cognitive test performance in practice. Conversely, greater recognition of ABST in the assessment scenario was associated with the perception that ABST has a greater impact in practice.

Health practitioners holding positive beliefs regarding the maintenance of physical and cognitive function with aging were more likely to recognize the possible influence of ABST in the assessment scenario. As such, holding positive expectations of aging may mean practitioners are less accepting of age-related biases in assessment contexts. Contrary to expectation, benevolent ageism was not significantly associated with ABST recognition, nor perceived impact of ABST in practice. While it was anticipated that holding patronizing views toward older adults and perceiving them as less competent would result in poorer recognition of ABST in the assessment scenario, this was not the case. Years of experience and frequency of interaction with older adults were also not significantly associated with recognition of ABST in the assessment scenario but were associated with perceived impact of ABST in practice. Hence, while greater years of experience and exposure to older adults do not appear to influence health practitioners' ability to recognize ABST, they instead contribute to the perception ABST does not impact on assessments with older adults in practice.

As an important novel finding, the ability to recognize ABST factors in an assessment scenario and aging beliefs uniquely accounted for perceived impact of ABST in practice, after controlling for practitioner age, years of experience, frequency of interaction with older adults, experience in conducting cognitive assessments, and their recognition of internal and external factors. One possible explanation for this finding is, upon learning about ABST through the information provided after the assessment scenario ratings were given, health practitioners who endorsed negative aging beliefs and had not recognized the possible negative impact of ABST on Mr. Smith's test performance were motivated to downplay the impact of ABST in practice. It is further possible that health practitioners with greater experience in working with older adults may feel more confident in their ability to deal with any issues that could undermine a patient's performance. Alternatively, health practitioners with greater experience in working with older adults may have a more fixed view on biological changes associated with aging (Drury et al., 2017), as opposed to recognizing social contextual influences such as ABST (Ben-David et al., 2018).

In support of this, Bettens et al. (2014) found that aged care practitioners typically viewed the cognitive effects of normal aging as consistent with mild Alzheimer's disease, thus reflecting a pathological view of normal aging. Health practitioners working with older adults may come to see poor health and cognitive decline as an inherent part of aging and, as such, may not recognize when age-based categorizations or negative aging stereotypes are salient in assessment contexts, nor be motivated to address their impact on performance. However, those with greater ability to recognize ABST in an assessment context are more likely to perceive the potential impact of ABST

on the cognitive assessment performance of older adults in practice. This finding highlights the importance of continuing professional development programs for practitioners working with older adults targeting lack of knowledge or misconceptions about ABST and using robust evidence (e.g. Armstrong et al., 2017; Lamont et al., 2015) to demonstrate the impact of ABST on assessment performance.

The low recognition or perceived importance of ABST in the assessment scenario may reflect the current sample's lack of training regarding the potential impact of aging stereotypes on older adults' cognitive performance. Notably, ABST is not specifically referred to in clinical guidelines and handbooks on the cognitive assessment of older adults (e.g. Lezak et al., 2012; Petersen et al., 2018). Accordingly, if ABST is not perceived to negatively impact cognitive performance or compromise the validity of assessments, health practitioners are unlikely to be motivated to address it. Overall, the findings highlight a need for cognitive assessment manuals and training to improve knowledge of ABST and encourage health practitioners to view it as posing a similar threat to performance as other psychological and contextual factors that can undermine test performance. More recent practice guidelines for the cognitive assessment of older adults (e.g. American Psychological Association, 2021) refer to the impact of ABST on cognitive test performance and encourage health practitioners to be mindful of how negative age biases can interfere with optimal performance. However, limited guidance is provided as to the ways in which health practitioners can mitigate its impact, especially in clinical practice. This may be reflective of the limited research in this area.

Stimulated by evidence of the impact of ABST on cognitive test performance (Armstrong et al., 2017; Lamont et al., 2015), a recent systematic review (Parker et al., 2022) examined the effectiveness of strategies for overcoming ABST through blatant and/or subtle threat-reducing strategies. Although the evidence was mixed overall, there was preliminary support for the effectiveness of subtle strategies (e.g. highlighting positive qualities associated with aging) for reducing the effects of ABST on cognitive performance (Parker et al., 2022). Strategies aimed at reducing the threat to one's self-integrity posed by ABST are thought to hold promise (Barber, 2017), such as affirming an older adult's worth in an alternative domain of personal importance to alleviate the burden of age-based social identity (Follenfant & Atzeni, 2020). However, further research is needed to evaluate such strategies and guide their implementation into clinical practice.

Swift et al. (2016) provide some practical recommendations for mitigating ageism in healthcare settings. For example, at an organizational level, use of categorizations based on age or age-related deficits (e.g. 'geriatric ward' and 'memory clinic') that segregate older adults and perpetuate negative aging stereotypes, is discouraged. At an individual level, it is recommended health practitioners avoid making a patient's age salient before administering tests (e.g. memory tests) vulnerable to the effects of ABST. Understandably, such strategies of avoiding the priming of age-based categorizations or downplaying the memory component of cognitive assessments may not always be feasible (Haslam et al., 2018). Nonetheless, a useful starting point is for training programs to focus on increasing health practitioners' understanding of how ageism and negative aging stereotypes can impact the cognitive assessment of older adults.

The current findings must be interpreted in the context of various limitations. Specifically, the small, convenience sample of Australian health practitioners may limit the generalizability of our findings. The recruitment sources led to an

overrepresentation of psychologists and overlooked other disciplines involved in the cognitive assessment of older adults (e.g. geriatricians and psychiatrists). Moreover, recruiting participants via professional membership bodies and interest groups (especially those with a focus on brain injury) may have increased the number of health practitioners involved in cognitive assessment following neurological injury as opposed to the assessment of age-related cognitive changes. This may have conflated assumptions around the inevitability of observing poor performance in patients presenting for assessment. The convenience sampling approach may have also biased the findings by including more health practitioners with a stronger interest in aging issues and those more engaged in research and professional networking. The perspectives of health practitioners who do not conduct as many cognitive assessments with older adults or hold this professional interest or practice area may not have been reflected. Recruiting health practitioners who work more often with older adults may have inadvertently biased the main findings toward desensitization to aging stereotypes and reduced recognition of the potential influence of aging stereotypes in cognitive assessments.

As a further limitation, there was a relatively high attrition rate (25%) in terms of participants who initiated the survey but did not complete any or most of the questions, with survey responses typically incomplete from the hypothetical assessment scenario onward. This may suggest that the time commitment and cognitive effort involved in reading and making judgments regarding the assessment scenario was burdensome for some respondents. Participants' English fluency was not screened for, and low English proficiency may have also contributed to the attrition rate. More generally, these limitations highlight the need for some caution in generalizing the findings to the broader population of health practitioners involved in the cognitive assessment of older adults. Use of a broader range of recruitment avenues for different disciplines would help improve the representation of health professions involved in the cognitive assessment of older adults and thus enhance the generalizability of findings.

Overall, health practitioners rated ABST as less detrimental to cognitive performance than internal and external factors in an assessment scenario. Lower recognition of ABST and negative aging beliefs were found to predict lower perceived impact of ABST on older adults' cognitive performance in practice. These findings underscore the need to improve health practitioners' knowledge of ABST and ways to avoid inadvertently activating negative aging stereotypes in assessments. Further research also needs to examine the potential benefits of threat reduction strategies for mitigating the impact of ABST on older adults' cognitive test performance.

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Data availability statement

The data that support the findings of this study are available from the corresponding author, GJP, upon reasonable request.

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Appendix A – consent form and survey

Participant information

Project title: Health professionals' perceptions and practices in the cognitive assessment of older adults

[Ethical clearance and details of investigator team]

Why is the research being conducted?

Older adults (i.e. individuals aged 60 years and over) form an increasing proportion of the global population. A consequence of this trend is an increasing number of older individuals presenting or being referred to healthcare services to screen for age-related cognitive impairment or possible dementia. As such, the cognitive assessment of older adults is becoming an increasing part of the clinical practice of many health professions.

The broad aim of this study is to gain a greater understanding of the perceptions and practices of health professionals who conduct cognitive assessments with older adults. We seek to understand the factors contributing to the performance of older adults on cognitive tests. The findings from this study may contribute to the development of practice recommendations for those who conduct cognitive assessments with older adults.

The research is being conducted as part of the requirements for a PhD in Clinical Psychology for Giverny Parker.

Can I participate?

You are eligible to take part in this study if you:

- are over 18 years of age; and
- are a clinician from any health discipline (including, but not limited to, psychology, neuropsychology, and occupational therapy) whose professional work or training involves, or has involved, conducting cognitive screening and/or assessment with older adults (i.e. individuals aged 60 years and over)

At a minimum, eligible participants will currently be undertaking or have previously completed a professional placement through which they have gained some experience in conducting cognitive screening and/or assessment with older adults.

What will I be asked to do?

You are invited to complete an online survey that will take approximately 15 min of your time. Information collected will include:

- Demographic characteristics and work history;
- Beliefs and expectations regarding ageing;
- Scope of practice and engagement with older adults, and how this may have changed as a consequence of the COVID-19 pandemic;
- Perceptions and practices regarding cognitive assessments with older adults; and
- Questions related to a hypothetical scenario regarding a client attending a memory clinic for cognitive assessment.

The expected benefits of the research

It is not anticipated that you will receive any direct benefits from participating in this research. However, by participating in this study, you will help to improve our understanding of factors influencing the performance of older adults on cognitive testing. Such insights are expected to contribute to the development of practice recommendations for those who conduct cognitive assessments with older adults.

[Details about random prize draw, risks, confidentiality, and privacy statements]

Consent to participate

Please save or print a copy of this information sheet and retain it for your records. By completing the survey, you will be deemed to have consented

to participate in the research. By clicking 'Next' at the bottom of this page, you confirm that you have read and understood the above participant information sheet and that you consent to participate.

Demographic information

The following questions ask you to provide information about yourself and your profession.

Q1: What is your age in years?

- _____ (numerical input only)

Q2: What is your gender?

- Female
- Male
- Other

Q3: Which ethnic group do you identify with?

- Australian
- Indigenous Australian or Torres Strait Islander
- New Zealander
- Maori
- Asian
- Indian
- Middle Eastern
- European
- North American
- South American
- African
- Other: _____

Q4: Please select or indicate your country of residence:

- Australia
- New Zealand
- Other: _____

Q5: If your country of residence is Australia, please select the state or territory in which you reside:

- Queensland
- New South Wales
- Australian Capital Territory
- Victoria
- Tasmania
- South Australia
- Northern Territory
- Western Australia

Q6: What is the highest level of education that you have attained?

- Year 10
- Year 12
- TAFE/Other Certification
- Bachelor Degree
- Honours Degree
- Masters
- Doctorate/PhD
- Other: _____

Q7: Please indicate whether you are still undertaking professional training for your discipline:

- No, I have completed my training
- Yes, I am currently completing an undergraduate degree
- Yes, I am currently completing a postgraduate degree (e.g., Masters, Doctorate, or PhD)
- Other: _____

Q8: In which discipline or profession do you work?

- Psychology (General)
- Clinical Psychology
- Neuropsychology / Clinical Neuropsychology
- Occupational Therapy
- Speech Pathology
- Other: _____

Q9: Please indicate the total number of years of experience you have working in your discipline or profession, since attaining your highest qualification:

- _____ (numerical input only)

Nature of work and client population

The following questions ask you about the nature of your work and the clients (or patients) you see.

Q10: What is the title of your currently held position or role?

- _____

Q11: Select your practice setting (select all that apply):

- Private practice
- Private hospital
- Public hospital
- Government department
- Community organisation
- University
- Residential aged care
- Other: _____

Q12: Which client population do you spend most of your time working with?

- Mainly paediatric (i.e., children and/or adolescents)
- Mainly younger to middle aged adults
- Mainly older adults
- Balance of all ages

Beliefs and expectations about ageing

[12-item Expectations Regarding Aging survey (from Sarkisian et al., 2005) and 9-item benevolent ageism subscale from the Ambivalent Ageism Scale (from Cary et al., 2017)]

Scope of practice and interaction with older adults

The following questions ask you about your scope of practice and level of interaction with older adults (i.e. aged 60 years and over).

We are aware that your usual practice may have been affected by the COVID-19 pandemic. Please answer the following questions according to your usual scope of practice and level of interaction with older adults **PRIOR** to the COVID-19 pandemic.

Q34: In your professional practice, how often do you see clients who are older adults?

- 1;Never
- 2;Very rarely – Once a year
- 3;Infrequently – A few times a year
- 4;Occasionally – Every couple of months
- 5;Frequently – At least once per month
- 6;Very frequently – At least once a week
- 7;Almost always – At least once per day

Q35: Do you consider working with older adults to be one of your areas of specialty or expertise?

- Yes
- No

Q36: Outside of your professional practice, how often do you interact with older adults?

- 1;Never
- 2;Very rarely – Once a year
- 3;Infrequently – A few times a year
- 4;Occasionally – Every couple of months
- 5;Frequently – At least once per month
- 6;Very frequently – At least once a week
- 7;Almost always – At least once per day

Current practices or views on conducting cognitive assessment with older adults

The following questions ask you about your current practices or views about conducting cognitive assessments with older adults (i.e. aged 60 years and over).

For the purposes of this survey, cognitive assessment includes the use of cognitive screening tests (e.g. MMSE, MoCA) as well as more comprehensive assessment batteries (e.g. WAIS, WMS).

We are aware that your usual practice may have been affected by the COVID-19 pandemic. Please answer the following questions according to your usual practices or views with regards to conducting cognitive assessments with older adults **PRIOR** to the COVID-19 pandemic.

Q37: During normal circumstances, how often do you conduct cognitive assessments with older adults?

- 1;Never
- 2;Very rarely – Once a year
- 3;Infrequently – A few times a year
- 4;Occasionally – Every couple of months
- 5;Frequently – At least once per month
- 6;Very frequently – At least once a week
- 7;Almost always – At least once per day

Q38: How experienced do you consider yourself to be in conducting cognitive assessments with older adults?

- 1;Not very experienced
- 2;Somewhat experienced
- 3;Moderately experienced
- 4;Quite experienced
- 5;Highly experienced

Q39: In your role, what is the typical nature of cognitive assessment conducted with older adults?

- N/A – I do not currently conduct cognitive assessments with older adults
- I mostly use cognitive screening tests
- I mostly use selected tests or subtests to assess cognitive function
- I mostly use comprehensive test batteries to assess cognitive function

Q40: With reference to the cognitive assessment of older adults, what is the most common referral question you receive (or have received)?

- Assessment and/or diagnosis of memory problems or cognitive decline (e.g. mild cognitive impairment, dementia)
- Assessment of cognitive function following a significant health or neurological event (e.g. stroke, brain injury)
- Capacity assessment
- Mental health
- Other: _____

Q41: Please select or indicate the names of the cognitive tests or batteries you most commonly use (or would use) when conducting cognitive assessments with older adults (select all that apply). Providing widely known acronyms is welcomed, if you are selecting 'Other':

- Addenbrooke's Cognitive Examination (ACE)
- Mini-Mental State Examination (MMSE)
- Montreal Cognitive Assessment (MoCA)
- Repeatable Battery for the Assessment of Neuropsychological Status (RBANS)
- Rowland Universal Dementia Assessment Scale (RUDAS)
- Wechsler Adult Intelligence Scale (WAIS)
- Wechsler Memory Scale (WMS)
- Other: _____

Q42: How do you (or how would you) introduce cognitive tests to older adults? Please indicate if you adapt or alter standardized manual instructions in any way. Please describe briefly.

- _____

Q43: How do you (or how would you) help an older adult to perform at their optimal level on cognitive assessment so that you can obtain a reliable and valid test score? Please describe briefly.

- _____

Hypothetical assessment scenario

Please read the following assessment scenario and respond to the questions below.

Mr. Smith, a 76-year-old gentleman, was referred to a memory clinic at a local geriatric assessment and rehabilitation service by his General Practitioner

after he expressed concerns about recent forgetfulness. Although nervous about the appointment, he arrived on time and was told to take a seat in the clinic waiting room. There were various leaflets in the room that he picked up and read to fill the time – pamphlets about stroke and Alzheimer's disease, as well as a community exercise program for seniors. Mr. Smith was greeted by the health professional and guided to an assessment room. He noticed the air conditioning made the room feel quite cold and the fluorescent light overhead occasionally flickered. The health professional collected information about Mr. Smith's presenting concerns and history. Mr. Smith explained his memory was not what it used to be but that that was to be expected for someone of his age.

As the discussion progressed, Mr. Smith noticed occasional loud voices coming from the next room which was difficult to block out at times. Mr. Smith told the health professional he had a lot on his mind at the moment; he was concerned about his finances, which had led him to decide to downsize and put his house on the market. He was also not getting along with some of his family members after arguments over the sale. Before the assessment began, Mr. Smith was asked to provide his age to the assessor. It was explained to Mr. Smith that he would be asked to complete a number of different tests, including ones that tested his memory, concentration, and problem-solving abilities. On hearing this, Mr. Smith felt somewhat doubtful of the need for the assessment. Part way through the assessment, there was a knock on the door and the door was opened slightly by someone checking if the room was available; realising the room was in use, the person apologised and closed the door. As the assessment progressed, Mr. Smith found the chair somewhat uncomfortable and noticed a leg cramp which eased with stretching under the table. Halfway through the 90-minute session Mr. Smith was offered a rest break, which he declined.

We are interested in your perceptions of the factors in the assessment scenario that might have affected Mr. Smith's cognitive assessment performance, aside from any possible neuropathological changes or his true abilities.

Please rate the extent to which you believe each of the following factors may have detrimentally affected Mr. Smith's cognitive performance:

	Not at all	Slightly	Moderately	Considerably	Extremely
Q44: Attending a memory clinic	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q45: Feeling nervous about the appointment	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q46: Reading pamphlets about stroke and Alzheimer's disease	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q47: Air conditioning making the room feel quite cold	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q48: Fluorescent light overhead occasionally flickering	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q49: Mr. Smith's belief that declining memory is to be expected for someone of his age	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q50: Loud voices coming from the next room which was difficult to block out at times	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q51: Having a lot on his mind about his financial situation and family disagreements	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q52: Being asked to provide his age	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q53: Being told he will complete tests of his memory abilities	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q54: Feeling doubtful about the need for the assessment	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q55: Knock on the door by someone checking if the room was available	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q56: Being seated in an uncomfortable chair	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q57: Experiencing a leg cramp	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅
Q58: Not taking a rest break when offered	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅

Please select what you believe to be the top five factors, from the assessment scenario, that may have detrimentally affected Mr Smith's cognitive performance during the assessment.

Please order your top five based on how detrimental you consider them to be (i.e. rank them in order of their impact on performance, with your top ranking item being the most detrimental). Please select each factor only ONCE:

- Q59 – #1: _____
- Q60 – #2: _____
- Q61 – #3: _____
- Q62 – #4: _____
- Q63 – #5: _____

Impact of age-based stereotypes

We are interested in your perceptions of the impact of age-based stereotypes on the cognitive performance of older adults.

Society holds pervasive negative stereotypes about ageing and older people (e.g. that older adults are forgetful).

Age-based stereotype threat occurs when an older adult faces a situation (e.g. attending a memory clinic) which increases the salience of their age and puts them at risk of confirming or being judged by a negative stereotype. Consequently, they may underperform on stereotype relevant tasks (e.g. memory tests).

Research has shown that older adults underperform on tests of memory and general cognitive ability when negative age-based stereotypes are salient within a testing context.

Q64: To what extent do you believe that age-based stereotypes affect the cognitive performance of older adults in general?

- 1;Not at all
- 2;Slightly
- 3;Moderately
- 4;Considerably
- 5;Extremely

Q65: To what extent do you believe that age-based stereotypes affect the cognitive performance of older adults in your place of practice?

- 1;Not at all
- 2;Slightly
- 3;Moderately
- 4;Considerably
- 5;Extremely

Q66: To what extent do you believe that age-based stereotypes affect the cognitive performance of older adults in the broader profession or field that you work in?

- 1;Not at all
- 2;Slightly
- 3;Moderately
- 4;Considerably
- 5;Extremely

Q67: Please indicate any additional thoughts that you may have about the impact of age-based stereotypes that was not captured by the above questions:

- _____

Impact of COVID-19 pandemic

We are interested in whether your usual practice with older adults has changed as a result of the COVID-19 pandemic and, if so, how it has changed.

Q68: Please select or indicate one of the following which best describes any changes to your usual practice in conducting cognitive assessments with older adults:

- N/A – I do not conduct cognitive assessments with older adults in my usual practice
- I have continued to see older adults as usual and conduct face-to-face cognitive assessments
- I have adjusted my administration of cognitive assessments with older adults, where possible (e.g., use of online assessment tools, and/or remote assessment via telehealth)
- I have reduced the number of cognitive assessments I conduct with older adults
- I have ceased seeing older adults for the purposes of cognitive assessment
- Other: _____

Q69: Please describe any other relevant impacts of the COVID-19 pandemic on your assessments with older adults: _____

Thank you for completing this survey. Your participation is greatly appreciated!

If you have any questions or concerns with regards to this survey, you can contact the HDR Student Investigator Miss Giverny Parker on (07) 3735 3304 or giverny.parker@griffithuni.edu.au, or the Primary Investigator, Professor Tamara Ownsworth on (07) 3735 3307 or t.ownsworth@griffith.edu.au

If you would like to enter the prize draw, please follow the below link to the separate survey:

[PRIZE DRAW LINK]

Appendix B – hypothetical assessment scenario

Mr. Smith, a 76-year-old gentleman, was referred to a **memory clinic** at a local geriatric assessment and rehabilitation service by his General Practitioner after he expressed concerns about recent forgetfulness. Although nervous about the appointment, he arrived on time and was told to take a seat in the clinic waiting room. There were various leaflets in the room that he picked up and read to fill the time – **pamphlets about stroke and Alzheimer's Disease**, as well as a community exercise program for seniors. Mr. Smith was greeted by the health professional and guided to an assessment room. *He noticed the air conditioning made the room feel quite cold and the fluorescent light overhead occasionally flickered.* The health professional collected information about Mr. Smith's presenting concerns and history. Mr. Smith **explained his memory was not what it used to be but that that was to be expected for someone of his age.**

As the discussion progressed, Mr. Smith noticed occasional *loud voices coming from the next room which was difficult to block out at times.* Mr. Smith told the health professional he had a lot on his mind at the moment; he was concerned about his finances, which had led him to decide to downsize and put his house on the market. He was also not getting along with some of his family members after arguments over the sale. Before the assessment began, Mr. Smith was **asked to provide his age** to the assessor. It was explained to Mr. Smith that he would be asked to complete a number of different tests, including ones that **tested his memory**, concentration, and problem-solving abilities. On hearing this, Mr. Smith felt somewhat doubtful of the need for the assessment. Part way through the assessment, there was a *knock on the door and the door was opened slightly* by someone checking if the room was available; realising the room was in use, the person apologised and closed the door. As the assessment progressed, Mr. Smith found the *chair somewhat uncomfortable* and noticed a leg cramp which eased with stretching under the table. Halfway through the 90-minute session Mr. Smith was offered a rest break, which he declined.

Bold text = ABST factors

Underlined text = Internal factors

Italic text = External/environmental factors

Appendix C – email and social media advertisement

Subject: Invitation to participate in a survey on cognitive assessments with older adults

Dear health professional/researcher,

Have you ever wondered whether older adults' performance on cognitive testing reflects their actual abilities?

My name is Giverny Parker and I am completing a PhD in Clinical Psychology at Griffith University, under the supervision of Professor Tamara Ownsworth.

My research seeks to understand the various factors that might contribute to older adults' performance on cognitive tests and practices which may help to facilitate their optimal performance.

Such insights may contribute to practice recommendations for health professionals conducting cognitive assessments with older adults.

To help us achieve this important objective, please consider participating in a 15-minute survey on your perceptions and practices regarding cognitive assessment of older adults.

Any health professional with experience in conducting cognitive assessments with older adults is eligible to participate.

The study has received ethical clearance by Griffith University's Human Research Ethics Committee (GU HREC Ref No: 2020/636).

Participation is voluntary and your responses will be anonymous.

You will be invited to enter a random prize draw to win **1 of 5 x \$50 Amazon.com.au eGift Cards.**

If you are interested in learning more and taking part, please click on the weblink below:

[SURVEY LINK]

Please also consider forwarding this email to any colleagues who you think may be interested in participating.

Thank you for your time.

Yours sincerely,

Giverny Parker

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