BMJ Open

Cultural validation of the Addenbrooke's Cognitive Examination Version III Urdu for the British Urdu-speaking population: a qualitative assessment using cognitive interviewing

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ABSTRACT

Objectives Our research determined whether the Addenbrooke's Cognitive Examination Version III (ACE-III) Urdu eliminated cultural bias through a qualitative assessment of its understanding and acceptability within the British Urdu-speaking population, employing cognitive interviews.

Method We aimed to recruit 25 participants fluent in speaking and writing Urdu, over the age of 60 years, able to give informed consent and who did not have a history of cognitive impairment. Participants were administered the ACE-III Urdu, and cognitive interviews were conducted, which involve obtaining verbal data on the individual's perception of the assessment overall, their understanding of the mental processes behind how they interpreted questions within the assessment and how they produced appropriate responses. This allows us to gauge the participants' overall thoughts on the Urdu ACE-III before applying question-formatted prompts to every ACE-III Urdu item.

Results We recruited 25 participants, 12 women (48%), ranging from ages 60 years to 85 years (M=69.12, SD=6.57), all from Greater Manchester. Participants came from varied socioeconomic backgrounds, with 22 identifying as Pakistani, one as British Pakistani and two as East African. Across 19 ACE-III Urdu items, 7 required changes based on participant feedback: item 5a: fluency; items 6, 18 and 19: memory; items 12 and 13: language; and item 17: visuospatial abilities. The need for some of these changes was realised after 21 participants, due to persistently reoccurring issues, and these were applied before the last four participants. Overall, the ACE-III Urdu was considered easy and straightforward by all 25 participants, who understood items and felt the ACE-III Urdu was appropriate, not just for them, but for British Urdu speakers in general.

Conclusion Our cognitive interviews determined the ACE-III Urdu was acceptable, especially with regards to cultural context, but further changes were made to ensure understanding. Therefore, we adapted the ACE-III Urdu in accordance with feedback, resulting in our finalised version being culturally validated.

Strengths and limitations of this study

► We have demonstrated a robust cultural validation technique that is not time consuming and is easy to conduct with no specialist expertise.
► Our research was conducted in a culturally sensitive manner.
► We recruited participants from various educational backgrounds and also had representation from both genders, and the number of participants we recruited ensured thematic saturation.
► During recruitment, a more robust screening process to assess the participants' cognitive health would have been preferable but were limited due to a paucity of psychometrically validated cognitive assessment scales available for British Urdu speakers and would have run the risk of false positive and negative scores. Our convenience sample could also not determine that our sample was statistically representative of our target.
► Though we were able to identify a pattern of difficulty in five items after 21 interviews and address these, this should ideally have been recognised earlier and perhaps applied half way through the sample instead.

Dementia affects 46.8 million people globally, with 5%–7% prevalence in those over 60 years.[1][2] In the UK, this results in over 800 000 suffering from dementia, predicted to rise to 1 million in 2025,[3] becoming one of the top five causes of death.[4]

Ethnic minority groups are at high risk for dementia with the increasing number of elderly in these groups[5] and a higher prevalence among those who do not speak English.[6] South Asians, accounting for 6.3% of the UK population,[7] are no exception, with approximately 17.7% of British South Asians over the age of 50 years.[8] Estimations of this population and rates of dementia show that South Asian elderly between 65 years and

79 years have the highest prevalence for dementia in the UK and second highest for those above 80 years.[9]

This prominence is attributed to relevant health issues common in British South Asians, such as vascular diseases and type 2 diabetes,[10] but we also see a lack of suitable cognitive assessments that interfere with the detection and intervention of dementia.[11] Diagnoses via cognitive assessments lead to higher rates of false positive scores and overestimated cognitive impairment[12] within British South Asians,[13] and of false negative scores, so assessments fail to detect dementia until it is too late for early interventions.[11 14]
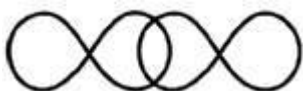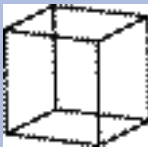
One reason is that cognitive assessments are designed in Western countries for specific English-speaking populations,[15] standardised on memory disorder clinic outpatients, the vast majority are well-educated Caucasians.[16] Therefore, they are ill suited to the needs of British South Asian elderly who are accustomed to cultures of their native countries, with 73% relying on their first language.[17]

Culture impacts performance on cognitive assessments, influencing perception of and responses to assessment items,[18] and translation does not account for this.[13] As British South Asians are scoring lower on assessments that have different cultural contexts than the ones they are familiar with, there is a need for assessments for this population, countering effects of cultural bias that arise when a target population differs from the population the assessment was originally designed for.[13 18]

We translated and culturally adapted a cognitive assessment for the British Urdu-speaking population, The Addenbrooke's Cognitive Examination Version III (ACE-III), which is a gold standard diagnostic tool for detecting dementia[19 20] (see table 1). It assesses five

Table 1	Items of the Addenbrooke's Cognitive Examination Version III
Item number	**Task/question**
1: Attention – orientation	Ask the day, date, month, year, season, floor, street/hospital, town, county and country.
2. Attention – registration	Say the words lemon, key and ball and ask them to repeat and try to remember.
3. Attention – concentration	Ask to take 7 away from 100 and keep taking 7 away from the new number for 5 trials (Serial 7's).
4. Memory – recall	Ask for the three words from 2. Attention – registration.
5a. Fluency – letters	Ask for as many words as they can think of starting with the letter 'P', not including names of pronouns, in 1 min.
5b. Fluency –animals	Ask for the names of as many animals as they can think of in 1 min.
6. Memory –anterograde	Say the name and address 'Harry Barnes, 73, Orchard Close, Kingsbridge, Devon' and ask them to repeat and try to remember.
7. Memory –retrograde	Ask for the name of the current Prime Minister, name of the woman who was Prime Minister, name of the USA president and name of the USA president who was assassinated in the 1960s.
8. Language –comprehension	Place a pencil and paper in front. Ask to 'place the paper on top of the pencil', 'pick up the pencil but not the paper' and 'pass me the pencil after touching the paper'.
9. Language –writing	Ask to write two or more complete sentences about their last holiday/weekend/Christmas, without using abbreviations.
10. Language –repetition	Say the words caterpillar, eccentricity, unintelligible and statistician and ask them to repeat.
11. Language –repetition	Say the proverbs 'All that glitters is not gold' and 'A stitch in time saves nine' and ask them to repeat.
12. Language –naming	Show 12 images and ask them to name each.
13. Language –comprehension	Ask to point to 'the one which is associated with the monarchy', 'the one which is a marsupial', 'the one which is found in the Antarctic' and 'the one which has a nautical connection' from the 12 images provided.
14. Language –reading	Ask them to read the words sew, pint, soot, dough and height.
15a. Visuospatial abilities – infinity diagram	Ask them to copy the following:
15b. Visuospatial abilities – wire cube	Ask them to copy the following:
15c. Visuospatial abilities – clock	Ask them to draw a clock face with numbers and the hands at ten past five.
16. Visuospatial abilities	Ask them to count the number of dots without pointing.
17. Visuospatial abilities	Ask them to identify the fragmented letters K, M, A and T.
18. Memory – recall	Ask for the three words from 6. Memory – anterograde.
19. Memory – recognition	For each word of the name and address that could not be recalled, give the options listed and ask to identify which word it was.

cognitive domains: attention, memory, fluency, language and visuospatial abilities.[20] Through methodology described elsewhere, we translated the ACE-III into Urdu (Nadine Mirza, the translation and cultural adaptation of the ACE-III for a British Urdu-speaking population), a popular South Asian language that is the fourth most spoken in the UK, and culturally adapted it for British Urdu speakers.[7]

This paper details the research, following the above-mentioned translation and cultural adaptation process, which was required to determine whether the ACE-III Urdu eliminated cultural bias through a cultural validation process (Nadine Mirza, The translation and cultural adaptation of the ACE-III for a British Urdu-speaking population). Cultural validation differs from psychometric validation in that it does not determine how the assessment compares against other standardised assessments or within a healthy population versus a clinical one and demonstrates whether an assessment is detecting or measuring what it was designed to do so.[19]

Instead, cultural validation determines whether the translation is understandable and whether the cultural adaptation allows for understanding and acceptability of the assessment within a target population (Nadine Mirza, The translation and cultural adaptation of the ACE-III for a British Urdu-speaking population). To ensure robust translated and culturally adapted assessments, they should undergo a cultural validation followed by a psychometric validation.

This research conducted cultural validation through a qualitative assessment of the understanding and acceptability of the ACE-III Urdu within the target population by employing cognitive interviews. The cognitive interviewing process was originally developed to identify and amend errors in survey questions and is now used by survey centres, government agencies, research firms and even lay persons to develop assessments.[21 22] It determines whether an assessment is generating the responses it was designed for.[21]

The process involves administering the assessment and obtaining verbal data on the individual's perception of the assessment overall, their understanding of the mental processes behind how they interpreted questions within the assessment and how they produced appropriate responses.[21] The data can be obtained through a think aloud approach, which involves minimal intervention in facilitating the individuals' responses, or through verbal prompting, which uses direct questions.[21 23]

Our review of translations and cultural adaptations of the ACE-III[24] found no adaptors undertaking such a detailed cultural validation process. Therefore, we assessed whether our ACE-III Urdu was suitable and acceptable within the British Urdu-speaking population through administering the ACE-III Urdu and conducting cognitive interviews with lay persons from our target population.

METHODS

Participants

This research was to be conducted within British South Asian communities of Greater Manchester. We aimed to recruit 25 participants[25] fluent in speaking and writing Urdu, over the age of 60 years, able to give informed consent and who did not have a history of cognitive impairment.

The principal researcher, NM, was matched to the target population, fluent in English and Urdu and familiar with British South Asian culture. She underwent training for recruiting ethnic minorities to research in a culturally sensitive manner.[26]

Participants would be voluntarily recruited via convenience sampling from the local Pakistani Community Day Centre, community libraries, mosques, shopping centres and through snowball sampling. Participants would be provided with an information sheet, available in Urdu and English, and in accordance with University of Manchester Research Ethics Committee policy, and the cultural sensitivity training[26] would be given 24 hours to decide if they wished to participate. NM would contact them to confirm a location, date and time.

Materials

Participants would be provided with consent forms and demographics sheets, available in Urdu and English. A pen is needed for scoring, and a timer, pencil and paper are required for the assessment.

The ACE-III Urdu was developed as part of our Dementia in Ethnic Minorities study for a British Urdu-speaking population (Nadine Mirza, The translation and cultural adaptation of the ACE-III for a British Urdu-speaking population). This was through a robust methodology that required developing guidelines on translating and culturally adapting the ACE-III, with rationale justifying changes, and then using these guidelines along with qualitative data from focus groups with Urdu-speaking lay persons and experts within the field to translate and culturally adapt the ACE-III for British Urdu speakers (Nadine Mirza, The translation and cultural adaptation of the ACE-III for a British Urdu-speaking population).

For our cognitive interviews, we planned to adopt a verbal prompting approach, which is deemed less burdensome for participants.[21] This allows for guiding participants through thought processes they underwent while attempting the assessment. We aimed to use verbal probes and prompts about comprehension and meaning and requests to paraphrase questions.[21 23 27] This would be facilitated by a semistructured interviewing schedule translated into Urdu (see supplementary file 1 appendix 1).

Questions gauge the participants' overall thoughts on the Urdu ACE-III before applying question-formatted prompts to every ACE-III Urdu item as follows:
1. What they thought the item had asked and why.
2. If they can paraphrase the item.

3. What mental processes were behind their responses and why.
4. How difficult the item was.
5. Any other suggestions regarding its translation and cultural adaptation.

Procedure and analysis

NM aimed to conduct interviews at the Pakistani Community Centre or the participants' residences. After informed consent is obtained, participants would be administered the ACE-III Urdu over a period of 20–30 min. Participants would be provided with their overall score and a breakdown of their scores across cognitive domains.

Following this, NM would undertake a retrospective probing technique; participants would be administered the cognitive interview after they attempted the ACE-III Urdu, allowing them to attempt the assessment in its natural flow without interference from probing.[21] On completion, participants would be asked if they had questions.

Simultaneously, if reoccurring issues with certain ACE-III Urdu items emerged across participants at this data collection stage, changes according to participant feedback would be applied to only those ACE-III Urdu items, and they would be administered to the remaining participants.

All interviews would be audio recorded and transcribed verbatim, from Urdu to English where necessary, to allow for familiarity with the data. A thematic analysis would identify themes focusing on participant acceptability and overall perceptions of the ACE-III Urdu. Transcripts would be analysed on a semantic level, and data relevant to ACE-III Urdu items were highlighted.[28]

Extracts would be regarded independently and grouped such that every item had several extractions relating to it. Groups of extracts would be reviewed to identify underlying themes relevant to participant understanding and acceptability of the items of the ACE-III Urdu. Themes would be reviewed and refined, with supporting quotes from transcriptions.

Proposed suggestions for changes to the ACE-III Urdu would be reviewed. Item by item it would be decided if the culturally adapted version of an item needed to be further adapted according to these suggestions, and changes would be applied where needed.

Patient and public involvement

There would be no patient or public involvement.

RESULTS

We successfully recruited 25 participants, 12 female (48%), from ages 60–85 years (M=69.12, SD=6.57), from Greater Manchester (See table 2). Participants came from varied socioeconomic backgrounds, with 22 identifying as Pakistani, 1 as British Pakistani and 2 as East African. Based on participant feedback, changes were applied to finalise the ACE-III Urdu (see table 3).

Table 2 Participant characteristics

Pt	First language	Second language	Highest level of education
1	Urdu	Punjabi and English	BSc
2	Punjabi	Urdu	BA
3	Urdu	Punjabi	GCSE
4	Punjabi	English, Urdu and Arabic	Graduate
5	Urdu	English	BA; LLB
6	Punjabi	English and Urdu	Matric
7	Urdu	English	BA; LLB
8	Punjabi	English, Urdu, Gujrati and Swahili	FA (12 years)
9	Punjabi	Urdu	Matric (10 years)
10	Punjabi	English and Urdu	Sixth Level
11	Urdu	English and Punjabi	BA
12	Urdu	English and Punjabi	FA (12 years)
13	Urdu	English	Matric (10 years)
14	Punjabi	English and Urdu	Postgraduate
15	Urdu	English	BA
16	Punjabi	English and Urdu	Matric (10 years)
17	Punjabi	English, Urdu, Gujrati and Swahili	GCSE
18	Punjabi	English and Urdu	CA
19	Punjabi	English and Urdu	BA
20	English	Punjabi and Urdu	MRCP
21	Punjabi	English and Urdu	Graduate
22	Punjabi	English and Urdu	Diploma
23	Punjabi	English and Urdu	Matric (10 years)
24	Urdu	English	MSc
25	Punjabi	English and Urdu	AAT

Though the finalised version incorporated the feedback of all 25 participants' cognitive interviews, after 21, we became aware of reoccurring issues in responding to items 6, 12, 13, 18 and 19. These were perceived as

Table 3 Changes applied to the ACE-III Urdu

Item	Suggestions	Justification
5a: Fluency	The letter ک was shown when giving the example of the task.	Participants would become confused when listening to the demonstrative example of the task, focusing on the letter ک and confusing it with the similar sounding letter ق. Showing it would allow participants to know which letter we were referring to.
6: Memory	The address was changed to 73, Station Road, Stockport, Cheshire.	The address, though a UK address, was deemed too difficult to pronounce for the average Urdu-speaking person. Participants would struggle to repeat the words, and this affected their ability to memorise them. An address that used elements better known to the British Urdu-speaking elderly was developed.
12: Language	i. The image for a book was changed. ii. The image for the suitcase was changed. iii. The image for the bear was changed.	i. According to some participants, the image for a book could be mistaken for a folder as the pages were not clear. This was changed to a clearer image of a book. ii. According to some participants, the image of the suitcase could be confused with other objects such as a plain box or a toaster. This was changed to the image of a more modern wheeled suitcase. iii. The image of the bear was not clear and participants would confuse it for other four-legged wild animals. This was changed to a more realistic and clearer image of a bear.
13: Language	Questions were rephrased slightly: 'Which one is related to our head' and 'These days, which one is related to travel'.	The questions were rephrased slightly for clarification. Participants would become confused when referring to 'the head' and were able to understand better when changed to 'our head'. Participants would often indicate a camel when asked, 'Which one is related to travel' due to historical context. Changing it to include 'these days', allowed for participants to automatically consider the suitcase as the only option.
17: Visuospatial Abilities	The letters were erased further.	The letters were considered easily recognisable by participants at the current level of erasure so more was required.
18: Memory	Refer to Item 6: Memory.	Refer to Item 6: Memory.
19: Memory	Alternate address elements were developed in line with the changes made to the original address: Station Place/Oak Road, Kingsbridge/Longsight.	Refer to Item 6: Memory.

consistently ambiguous or not understandable. We decided to apply changes to these five ACE-III Urdu items based on the participants' feedback before resuming cognitive interviews with the remaining four participants. They reported better responses to these particular items, finding them easy to understand, retain and repeat.

Overall perception

The ACE-III Urdu was considered an easy and straightforward assessment. Participants understood items and felt the ACE-III Urdu was appropriate for them and British Urdu speakers in general.

> **P12:** I understood all of it. I understood everything that you were saying. […] I found it easy. Not hard.
> **P24:** It was easy. Straight forward, you know? Everything was straightforward […] and there was nothing vague about it.
> **P25:** *It's okay. It's just fine. Straight forward test.*

Item 1: attention

This item was considered straightforward, asking for simple information such as the date or the building the individual is in.

> **P1:** First task- that was just personal information […] whether I know who I am, where I am. Whatever. Just some basic information […] You couldn't make it any simpler.

When someone may not know answers to the questions, participants proposed reasoning other than cognitive impairment. One suggested remembering the date is harder during the holidays as they are not attending to weekly responsibilities, reducing importance of knowing the exact date.

> **P19:** During the holidays it's a bit difficult. Otherwise, during the weekdays the children go to school but these days there are holidays.

Participants, especially women, were less aware of the specifics of their address, such as the 'county', because matters related to their address were handled by their spouses.

> **P19:** I'm telling you I never bothered. That's why I- the address, actually lots of things with me- I, you know never paid attention I tell you. I don't bother with these things. I don't pay attention because my husband knows all these things. He tracks these things.

The education of the individual was also called into question, as participants believed it could affect responses.

P5: This depends on whether they are educated, you know? Yeah, those who know a little, then they will give the answer quickly. Others will give it with a bit of difficulty.

Item 2: attention and item 4: memory
The objects 'lemon', 'bell' and 'ball' were regarded as easy to repeat and remember, commonly known and average Urdu speakers should be able to complete these items.

P11: They come in everyday use, in daily routine. Children play with a ball. Average things come before you over and over again. Lemon is in the kitchen every day. And the bell rings at the door every day.

P13: Lemons are used at home, the children play with balls and bells are rung by visitors so these were ordinary items.

P24: Well, they're every day things. I mean, you always say 'lemon'. 'Ball' as you say, it's a normal sort of word.

Item 3: attention
The 'Serial 7's task' was considered slightly difficult by a majority of the participants. Participants understood what they were being asked to do and attributed difficultly to the task itself.

P11: It's not very difficult but obviously, in mathematics, in counting […] add 7 and 3, that's sort of more easy and like this backwards? Yeah, I did have to stress a little bit in the mind that I didn't say the wrong thing.

P13: I know this so it wasn't hard for me but it will be for people […], those who don't know mathematics.

Those who perceived the task to be easy attributed it to a past profession that involved numbers.

P24: Well, I'm an accountant so it was easy for me. But for somebody else, you know they would start thinking about it and count on their fingers. Do that sort of thing.

One argument to suggest older Urdu speakers should perform well on this task was the assumption that elderly have more practice with mental calculations as they did not use a calculator.

P19: It's difficult but you have to concentrate because you're doing it off by heart. […]our previous generation did even better off by heart because back then everyone memorised off by heart. The later generation can't do things off by heart as long as we have these laptops. Calculators they use.

Item 5a: fluency
Participants felt the common belief was that Urdu speakers, if fluent, should complete this item successfully.

P24: It's not a difficult letter to- with the language you know? Maybe someone who doesn't speak Urdu so much, you know, will find it difficult to struggle.

However, it was acknowledged that few words start with (chay) چ as compared with other letters, presenting this task as a challenge.

P3: چ is such a letter […] that very few words start with. […] Well, I mean for the average person it's a bit difficult- a bit.

P13: I knew fewer words beginning with the letter چ like 'chai' (tea, like 'chup' (be quiet).

P14: No it was just چ, which means it's just unusual after- not to say, yeah after a long time چ, I didn't even remember. Yes, it's not that common (bay) ب (alaf) اthat is, yeah but چ is an unusual word.

Prior to the task, an example is given in the item using the letter ک (kaaf). This example confused a few participants as it sounds very similar to ق (qaaf).

P11: Ugh Yes. With 'kaaf', understanding- there are two 'kaaf'. 'Qaaf' with the two dots and the stick 'kaaf' so for that- like if you show the picture to a patient, that with this kaaf.

Item 5b: fluency
This item was considered straightforward because we are surrounded by various animals.

P3: Because animals, they're coming and going.

P11: Did not find it difficult at all. Animals' names are often remembered by a person so.

P24: I just read out the ones that immediately come to mind. Also, you come to a point, you know, you start thinking, oh what kind of animal should? I say, oh bird! You know reptiles, you remember thousands of them, you know, or hundreds of animals you know. You see them all the time on television or natural life.

Item 6: memory; item 18: memory; item 19: memory
There were contrasting opinions regarding elements of these items, all of which required repeating, remembering or recognising a name and UK address.

The name was regarded positively as 'Haroon Butt' is a common name that is acceptable and culturally appropriate.

P5: Haroon Butt, this is a common name because nowadays, what's their name? The Butts rule in Pakistan.

P24: It's fairly common. Butt is- big community of Butts here […] And Haroon is a common name.

Participants would make a connection to someone in their life named Haroon to recall the name.

P11: The name Haroon for people I've heard often, like in my family there is the name Haroon. In friends

as well. So because of this reason maybe I did not find the name difficult in remembering.

P19: Because this is my uncle's name too, Haroon. […] It was a connection. Haroon Chaudhry is his name. 'Chaudhry Haroon Butt' sahib is what I thought.

Alternatively, the address was considered difficult to pronounce, causing issues in repetition and poor recall and recognition scores across the first 21 participants. Participants stated an average Urdu speaker would not be able to remember the address.

P5: Name is easy to remember but the address, 73 what is it? Orchard Close, that they might forget[…] and secondly, Kings… Kingsbridge. They might forget that too.

At times it was different aspects that posed difficulties, such as an area they may have never visited or heard of. They felt these difficulties would extend to the general British Urdu-speaking elderly.

P3: Orchard is rare- ugh a rare name. Like street names you know? They're easy names normally, more often than not. Orchard Close is a very rare name.

P11: I forgot Devon, because Devon I hear very little. Had it been Manchester I would not have forgotten. […] I feel that the average Urdu speaking people or it's possible that people slightly older in age than me they- they might find it difficult with names like this.

P14: Kingsbridge. Never been there. If it had been any other town, Leicester, Birmingham or to wherever I've been- I've never been to this town you see- bridge… so that's why you see, normally I make connections you see.

Participants put forward suggestions for more culturally appropriate addresses.

P5: To make it easier for example, have a Manchester address. My suggestion would be to have a local address, a main road. Or a more famous street for example, Slade Lane, which everyone knows about. Or Dickenson Road.

These suggestions were considered, and the address was changed (see table 3). The updated version was administered to the last four participants who found it easy to pronounce, repeat and remember and deemed it acceptable for other British Urdu speakers.

P24: Names are all common names. Station Road is everywhere […] Every town, every village has a Station Road.

Item 7: memory
The consensus was that success on this item depends on one's understanding of current affairs and knowledge, which they should know while living in the UK, and lack of this knowledge was not limited to British South Asians.

P5: David Cameron resigned and Theresa May came along […] if you watch television or read the newspapers those people would know.

P24: For me it wasn't difficult at all obviously, knowing these things. Again, its peoples' knowledge. A lot of English people on the street, you ask the Prime Minister, you will find so many saying no idea. So, especially this one because she's so new.

'Name of the current Prime Minister'
This was considered the most difficult question, but this may be due to recent changes in the British government at the time of this research (David Cameron stepping down from the role of Prime Minister, replaced by Theresa May). Participant's felt that if enough time passed, this question would become easier once the state of government was more stable.

P3: No, no. Those are easy. It's just- the UK has changed so remembering May's name is difficult. After one or two years every person will remember.

P11: Did not find it difficult but because she just came into power her name is not that familiar so because of this.

'Name of the first female Prime Minister'
This was considered easier by participants due to the historical significance of Margaret Thatcher, the first female Prime Minister of the UK. Many participants remembered the identifier 'The Iron Lady', which led to the memory of the name Margaret Thatcher.

P1: Margaret Thatcher was the- the- a big thing. It made big headlines, big sensation. People- majority hated her because she was Tory- because she was posh.

'Name of the USA president'
This was considered easy even if participants did not read newspapers or watch the news on television, as the president at this time, Barack Obama, had been in presidency for two terms and is spoken about frequently.

P19: Because he- mention of America. Otherwise it's not a part of knowledge.

P22: Because it's been 8 to 10 years with him.

'Name of the princess who died in a car crash in the 1990s'
Participant's considered this an easy question due to Princess Diana's prominence when she was alive and the historical and global significance of her death.

P19: Diana is in history. When I was here earlier, when I first got married I knew about her accident. The history, that's why.

P24: Diana, obviously you know she was popular. People would know. Can't find someone who has no idea who she was.

Item 8: language
This item was deemed culturally appropriate with no need for adaptation.

Item 9: language
Most participants focused on the topic of holidays and wrote about Pakistan, where they would spend vacations.

P19: I wrote a very simple sort of obviously- you said holidays so I wrote about holidays. So no it was not very difficult.

Participants acknowledged this may not simple for all of the British Urdu-speaking population as some of them may not have the literacy skills needed.

P5: This depends, not everyone can do this task. Someone who's at least a little educated can do this. Here, people my age, many are illiterate […] but orally they can say it but they don't know how to write it.

Item 10: language
Though all participants completed the task there were differing opinions regarding whether these words were familiar enough to be generalised to the British Urdu-speaking population or if they were complex and only suitable for a specific group of Urdu speakers.
Some knew these words from childhood.

P11: I did not find it difficult because in my childhood my uncle used to ask me these. These are my childhood memory.

P14: Because ugh childhood- I had memorised […] a common word, so it's easy you see. Yes, should do easily- Urdu speaking should do. Not maybe people who come from Punjab or haven't been educated.

Others reflected on how a person's level of education would affect their ability to repeat these words.

P5: These words that you've said. Only educated people would be able to understand it better, to know of its background. Yes, so it would be easy for him but for others it'd be a bit of a struggle.

There was consideration for the translated word 'Constantinople'.

P5: I've been a student of history. Constantinople became Istanbul. So for me, ugh we've been studying this since 1960. […] No ordinary person would know of Constantinople, that what is it? Someone who's studied history, yes. That too, religious history. Islamic history I mean. He would know what is called Constantinople.

Item 11: language
The phrases were regarded as easy to repeat as they were commonly known. It was believed average Urdu speakers should be able to easily complete this item.

P3: They are everyday phrases. Every person uses them.

P5: This is a common phrase, a common phrase.

Item 12: language
Participant's perceived images positively and found them acceptable, easy to recognise, clear of what they represented and culturally appropriate. They were considered to be everyday objects that British Urdu speakers would be familiar with.

P11: Yes, definitely, because all these things are for everyone. Easy in asking- in looking, in recognizing because things used in the kitchen, things put on shelves, for reading, in houses, the random animals, these with ease.

P19: You see these things everywhere. Like the peacock. Everyone here knows this and they know this. And I know this. I recognised them, I understood. Just this one- I couldn't remember the word tortoise. Tortoise. No- no- I thought this- this I couldn't get the word out for it.

Yet, despite the approval of these images, certain aspects were mentioned for further improvement by the first 21 participants regarding the book and the suitcase.

P11: To me I found them clear, um for the book a bit- like a folder and a book, that looks a bit confusing […] make it a bit more obvious. And the suitcase of this is a bit confusing, like a briefcase.

P22: This bag, the way this bag is drawn. It's not proper. It looks like a brief case type or is it a ladies small bag.[…] This- it doesn't look right.

Eyesight was considered as a variable that may affect performance on this item, so it was suggested the images should be bigger.
These changes encompassed the updated version administered to the last four participants, who determined the images were easier to see with no ambiguity.

Item 13: language
There was a consensus that British Urdu speakers should be able to answer the questions without issue.

P11: Everyone knows about a camel. This is a desert animal and everyone knows of this, that it walks with a big shell, and ugh the one related to the head that becomes the hat. Everywhere, wherever you go whatever the culture may be this is multicultural- hat- multicultural hat.

However, some indentified how aspects of these questions may not be known to general British Urdu speakers and how some questions may cause ambiguity, with the possible solution of multiple answers.

P5: That's common. 100% would know. Because everyone takes a suitcase on travels. […] Has a shell… yes, this is a little difficult because only tortoises have

shells. […] Everyone knows about a tortoise but not everyone knows that it has a shell.

P14: Camel is all over the history. Used camels for travelling. […] Nowadays, it's suitcase. But in my generation before it was camel. […] So people who are 75 or 80 they might start with camel, like car.

Therefore, appropriate changes were made after the first 21 participants and the updated versions applied to the last four participants, who were able to answer the questions without issue.

Item 14: language
The words were considered to be well known words that Urdu speakers would be familiar with.

P2: Yes. Definitely, will read in the correct way.

P24: Those are straightforward easy words. There's nothing difficult about them.

Item 15a: visuospatial abilities; item 15b: visuospatial abilities
Participants understood tasks, and it was the attempt at drawing the image they found difficult.

P3: In drawing- ugh a person may be weak but they recognise […] Doing drawing it's been a long time having left drawing. […] What I mean is I haven't drawn very much. It's been so long.

P11: For me, to double this number 8 I did not face any difficulty but for me- to make this box into a 3D picture, for me was a little- I felt that, how do I make the lines?

Item 17: visuospatial abilities
Majority of participants found the blacked out letters easily recognisable to themselves and for average Urdu speakers. In fact, participants claimed this task was too easy and measures should be taken to complicate it further.

P3: They should be a bit more blurry […] take out another dot, take out a dot here, make it a bit more difficult. It's very easy. Because the shape of these were as the letters are and there was a little change made in them. Recognising them was not difficult at all.

DISCUSSION
Our cognitive interviews assessed the understanding and acceptability of the ACE-III Urdu among British Urdu-speaking older adults, and the reception to this ACE-III Urdu was positive. Participants found it easy, straightforward and culturally acceptable with simple and unambiguous language. Majority of items were comprehensible, and participants understood the tasks being asked. None of the items were deemed offensive or inappropriate.

However, there were reoccurring issues with five items, such as 6, which was difficult for the first 21 participants

consistently. The original address was too difficult to pronounce and understand and not commonly heard of, which affected the participant's ability to repeat, recall and recognise it. Participants also had issues with the images in item 12 and scored low on item 13 due to the questions being perceived as vague, with the possibility of multiple answers.

Therefore, after conducting 21 interviews and observing these continuous perceptions of these five items being ambiguous or not understandable, we adapted them according to participant feedback before resuming interviews with the remaining participants who found them easy to understand, retain and repeat, suggesting the later version was improved.

Visuospatial abilities tasks, particularly items 15a–15c, were considered difficult by majority of participants across all 25 cognitive interviews. However, participants stated they understood the task, but performance was low due to drawing ability. Negative responses to the task were not attributed to the quality of our translation or cultural adaptation. The same response was seen with item 3, which required participants to conduct the 'Serial 7's' task. It was understood by all and deemed culturally acceptable, but the nature of the task was regarded as complex.

A summary of cognitive interviews determined the ACE-III Urdu was acceptable with regards to cultural context, but a few changes would have to be made to ensure understanding. Therefore, we adapted the ACE-III Urdu in accordance with feedback, resulting in our finalised version for now.

We acknowledge limitations, first in the nature of our sampling and participant selection. A convenience sample could not determine that our sample was statistically representative of our target population, and we were unable to incorporate a more thorough screening of cognitively healthy participants as there is a paucity of psychometrically validated cognitive assessments available for British Urdu speakers. Second, though we were able to identify a pattern of difficulty in five items after 21 interviews and address these, this should ideally have been recognised earlier and applied halfway through the sample instead. Third, our ACE-III Urdu, while culturally validated, cannot immediately be implemented into practice until it undergoes a psychometric validation. This would be the next and final stage of the ACE-III Urdu's development, within a British Urdu-speaking population with dementia versus healthy controls.

Despite this, we were still able to demonstrate a robust cultural validation technique and demonstrated that it is not time consuming, easy to conduct and required no specialist expertise. Our participants were also a good mix of age and socioeconomic and educational backgrounds, split across gender. We also ensured thematic saturation.[25]

Our research was also conducted in a culturally sensitive manner that incorporated engagement with the relevant communities, matched researcher attributes to the target

population, incorporated cultural sensitivity training and provided materials in English and Urdu to accommodate for language preference. This illustrates the measures that can be undertaken to ensure cultural sensitivity of research undertaken within ethnic populations.

Overall, we detailed the qualitative assessment procedure needed to ensure cultural validation of cognitive assessments that have been adapted for various ethnic populations, indicating user involvement through the cognitive interviewing process. This can allow for cultural validation to be considered as an essential undertaking before conducting psychometric validation of any translated and culturally adapted assessment.

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