Interpreter-mediated neuropsychological assessment: Clinical considerations and recommendations from the European Consortium on Cross-Cultural Neuropsychology (ECCroN)

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ABSTRACT

Objective: With increasing international migration, societies have become increasingly diverse worldwide. Although neuropsychological assessment is influenced by several diversity characteristics, language barriers have repeatedly been identified as one of the main challenges to cross-cultural neuropsychological assessment in migrant populations. Importantly, neuropsychologists are often required to conduct interpreter-mediated neuropsychological assessments without any graduate training or continuing education on the topic. To address this gap, the objective of this paper is to provide guidelines for interpreter-mediated neuropsychological assessment. **Method:** A European Consortium on Cross-Cultural Neuropsychology (ECCroN) task force conducted a conceptual literature review and provided recommendations for good practice and working principles to inform the preparation and administration of interpreter-mediated assessments. **Results:** ECCroN takes the position that it is the responsibility of neuropsychologists, as well as the institutions or organizations that employ them, to ensure effective communication between themselves and their patients. This may be accomplished by preparing for an interpreter-mediated assessment by engaging an appropriate interpreter, which in most circumstances will be a professional in-person interpreter speaking the same language(s) or dialect(s) as the patient, and considering practical, language, and cross-cultural issues.

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During the assessment, reasonable steps should be taken to proactively manage the proceedings and adopt a communication style that facilitates effective patient-directed communication, and when interpreting test data and determining formulations and diagnoses, the limitations of interpreter-mediated assessment should be carefully considered. **Conclusion:** Adhering to the provided recommendations and working principles may help neuropsychologists provide competent interpreter-mediated neuropsychological assessments to linguistically diverse patients.

Introduction

International migration and globalization are currently changing societies throughout most world regions (McAuliffe & Triandafyllidou, 2021). Although a certain degree of diversity has always been present in European countries, diversity levels have increased greatly over the last decades (Nielsen, 2022). In 2019, 11% (82 million people) of Europeans were international migrants, of which approximately originated from, and had migrated within, Europe, while the other half originated from outside of Europe (International Organization for Migration, 2019). These figures have increased steadily over the last 30 years with the United Nations currently listing more than 200 countries of origin (United Nations, 2015).

In Germany and the United Kingdom, approximately half of the migrant population primarily speak a language different from the host country's native language at home, and in the United Kingdom 11% report having limited English proficiency (DESTATIS, 2018; Reino, 2019). In other European countries, linguistic diversity in migrant populations is more pronounced. For instance, in Denmark, approximately three-quarters of non-European first-generation migrants speak a language other than Danish at home, and 34% report having limited proficiency in Danish (Udlændige-og Integrationsministeriet, 2019, 2020). In the Netherlands, 90% of Turkish and Moroccan first-generation migrants speak a language other than Dutch at home, and 30% of the Turkish and 39% of the Moroccan migrants report having limited proficiency in Dutch (Van Tubergen & Kalmijn, 2008). Similar trends are reported in traditionally multicultural countries, such as the United States of America (USA), Canada, and Australia, where the number of people speaking a language other than English (or French in Canada) at home is about 20%, 13%, and 21%, respectively (Australian Bureau of Statistics, 2017; Dietrich & Hernandez, 2022; Statistics Canada, 2022). Unsurprisingly, language barriers have repeatedly been identified as one of the main challenges to neuropsychological assessment in migrant populations (Franzen et al., 2020, 2022; Nielsen, 2022; Nielsen et al., 2011). In addition to linguistic variation in migrant populations, countries may themselves contain culturally and linguistically diverse groups, e.g. Catalan and Basque speakers in Spain, which also need to be taken into account in conducting assessments.

Although it is recommended that patients with limited proficiency in the host language should be seen by a bilingual neuropsychologist (Byrd et al., 2010; Franzen et al., 2022; Judd et al., 2009; Klipfel et al., 2022), providing bilingual

neuropsychologists to all patients with migration backgrounds is currently not feasible (Franzen et al., 2020, 2023; Judd et al., 2009; Plejert et al., 2015). While there are bilingual European neuropsychologists conversant in European languages (e.g. English, German, French, and Spanish), and American and Canadian bilingual neuropsychologists conversant in English, Spanish, and French, only few speak relevant migrant languages such as Punjabi, Vietnamese, Arabic, or Chinese languages. Additionally, simply speaking a language does not necessarily imply that one has cultural awareness or competence to administer and interpret the results from a cross-cultural neuropsychological assessment. Little is known about diversity among neuropsychologists in most parts of the world. However, most neuropsychologists in Northern America are White and there are reported ethnic and gender differences in pay and career progression (Klipfel et al., 2022). These economic and career considerations for neuropsychologists deserve further attention, especially given that despite incentives aimed at increasing diversity in the field (Irani, 2022), insufficient progress has been made.

Although artificial intelligence may be helpful in providing direct translations and teleneuropsychology may help ensure access to bilingual neuropsychologists providing remote assessments in the future (Sala et al., 2021), several technical, ethical, legal, assessment, and training issues need to be resolved before wider implementation of these technologies (Brearly et al., 2017). Thus, to avoid assessments being conducted in patients' non-native language, which is likely to lead to biased results (Nielsen, 2022), interpreter-mediated neuropsychological assessments are often required to assess linguistically diverse patients in their native language (Franzen et al., 2020, 2022; Fujii, 2018; Fujii et al., 2022; Nielsen, 2022).

The importance of using interpreters is supported by the European Consortium on Cross-Cultural Neuropsychology (ECCroN) (Franzen et al., 2022) and by the ethical guidelines of several national psychological associations (e.g. American Psychological Association, 2017; Australian Psychological Society, 2007; Canadian Psychological Association, 2017; The British Psychological Society, 2017). While the use of interpreters is crucial for providing competent neuropsychological services and is associated with reduced miscommunication, improved clinical outcomes, and increased patient satisfaction (Fujii et al., 2022; Haralambous et al., 2018), interpreter-mediated neuropsychological assessment also raises several clinical, ethical, and diagnostic dilemmas. For example, it is more costly, and time- and energy consuming (Haralambous et al., 2018; Judd et al., 2009; Searight & Searight, 2009, Veliu & Leathem, 2017); access to interpreter services varies widely between countries (Franzen et al., 2020); interpreters may not be familiar with the topics, terminology, and procedures in neuropsychological assessments (Fujii et al., 2022; Majlesi & Plejert, 2018; Plejert et al., 2015; Veliu & Leathem, 2017); and most neuropsychological instruments have not been developed and properly validated for interpreter-mediated assessment (Nielsen, 2022). Also, the quality of training of professional interpreters differs widely between countries (Fujii et al., 2022; Plejert et al., 2015; Raval & Tribe, 2014; Torkpoor et al., 2022), with neuropsychologists generally working with interpreters without any specific training in (neuro)psychological assessment.

In line with the National Academy of Neuropsychology (Judd et al., 2009), ECCroN recommends that, regardless of their language and cultural background,

neuropsychologists should take responsibility for ensuring that they are trained in cross-cultural and cross-linguistic work, which includes becoming familiar with interpreter-mediated neuropsychological assessment (Franzen et al., 2022). ECCroN takes the position that, as a general principle, it is the responsibility of the neuro-psychologists, as well as the institutions or organizations that employ them, to ensure effective communication between themselves and their patients. Lack of experience and skills may lead to disengagement in interpreter-mediated neuropsychological assessment given that resources to support practitioners are generally lacking. Although general guidelines are available for psychologists working with interpreters (e.g. American Psychological Association, 2017; Australian Psychological Society, 2007; Miletic et al., 2006; Tribe & Thompson, 2017), only few provide specific recommen-dations for neuropsychological assessment (Fujii et al., 2022). To address this gap and support neuropsychologists in facing the challenges of interpreter-mediated neuro-psychological assessment, an ECCroN task force led by the first author conducted a conceptual literature review and provided recommendations for good practice and working principles to inform the preparation and administration of interpreter-mediated neuropsychological assessments of linguistically and culturally diverse patients. The task force consisted of eight multilingual clinicians and researchers, who represented eight different cultural heritages and 12 languages, and had conducted a mean of 51 interpreter-mediated assessments (range: 0–200).

Assessing the need for an interpreter

Whenever possible, the need for an interpreter should be determined prior to the first meeting with a culturally and/or linguistically diverse patient. If the decision regarding whether it would be appropriate to use an interpreter is made during or after the first meeting, both the neuropsychologist and patient may prefer not to involve an interpreter if they view the patient's proficiency in the host language to be sufficient (CISOC, 2013; Franzen et al., 2020; Rivera et al., 2008). Furthermore, some patients report feeling belittled when interpreters are involved (Torkpoor et al., 2022; Tribe & Thompson, 2017). However, the need for an interpreter does not only depend on the patient's language proficiency, but also on the purpose, nature, complexity, and implications of the interpreter-mediated encounter (American Educational Research Association et al., 2014; CISOC, 2013; Miletic et al., 2006). Importantly, non-native speakers who give the impression of having conversational fluency in the host language may be slower or not completely competent in taking tests that require host-language comprehension and literacy skills (American Educational Research Association et al., 2014; Stålhammar et al., 2022). So it is unlikely that only conversational fluency in a language will be sufficient for neuro-psychological assessment, unless an intended purpose of the assessment is to evaluate if the patient has sufficient academic comprehension and literacy skills in the language in relation to some external criteria, e.g. requirements related to employment. Similar considerations should be made by bilingual or multilingual neuropsychologists before they decide to conduct assessments in a non-dominant language.

Apart from being proficient in two or more languages, the interpreter may also have an important role as a cultural broker, potentially helping to reduce perceived stereotype threat and identifying cultural and/or social issues impacting the assessment (Haralambous et al., 2018; Miletic et al., 2006; Tribe & Thompson, 2017). It is important to consider that interpreters are not only there for the patients, but also to enable neuropsychologists to do their job competently. This may be especially evident during neuropsychological testing, but also during the intake interview and assessment feedback. As a rule of thumb, interpreters should be involved whenever the neuropsychologist is not proficient in the patient's primary language. Speakers with a good level of proficiency in the host language may still benefit from interpreters when specialized terminology is used, or complex and sensitive matters are discussed (Rivera et al., 2008). Further, as neuropsychological assessments can be stressful, complex, and/or unfamiliar, being assessed in a non-native language could be an unnecessary additional stressor (CISOC, 2013; Miletic et al., 2006). The decline of second language proficiencies with age (Haralambous et al., 2018), and the preferential impact of neurocognitive and neuropsychiatric disorders (e.g. Alzheimer's disease, post-traumatic stress disorder) on second language proficiency should also be considered (Nickels et al., 2019; Plejert et al., 2015).

Recommendation

Unless otherwise specified, interpreters should be involved, in the first instance, in assessing linguistically and culturally diverse patients. A summary of specific recommendations for interpreter-mediated neuropsychological assessment is provided in Figure 1.

Considerations and preparation before the neuropsychological assessment

Determining the preferred language

When the neuropsychologist is not proficient in the patient's primary language and the need for an interpreter has been established, it is important to first identify the preferred or best language or dialect for the patient. Notably, it should not be assumed that someone originating from a certain country has the official language of that country as their first language (Judd et al., 2009; Miletic et al., 2006). In several countries, there is more than one official language that is used in formal and academic contexts, with additional other languages or dialects used in informal and social contexts. For instance, Urdu is the official language in Pakistan, but most people speak Punjabi or another regional language or dialect as their first language (Ashraf et al., 2021). Many Syrian and Turkish people speak a Kurdish dialect as their first language rather than Arabic and Turkish (Nielsen & Staios, 2023). While the regional languages or dialects are mainly spoken languages, the language used in schools and any literacy obtained will usually be in an official language. In such multilingual contexts, some words, concepts, and knowledge may be more readily understood and accessed through different languages (American Educational Research Association et al., 2014; Judd et al.,

Before the assessment
Engage an appropriate interpreter ● The interpreter should preferably originate from the same country as the patient, and when necessary, be matched to the patient on dialect, gender, age, ethnicity, or religion. ● Professional, preferably accredited, interpreters should be engaged whenever possible. ● Generally, interpreter-mediated assessment should be conducted with an in-person interpreter. **Prepare for the assessment** ● Consider practical issues, e.g., related to the longer time typically needed for the assessment and seating configurations. ● Allow time for a pre-assessment briefing of the interpreter to explain the purpose and content of the assessment and discuss roles and expectations. ● As interpreter-mediated assessment usually also entails cross-cultural assessment, efforts should always be made to acquire at least basic knowledge about a patient's culture prior to the assessment. ● Select a test strategy and test battery that is appropriate for interpreter-mediated assessment.

During the assessment
Take responsibility for controlling the proceedings ● Begin the assessment by briefly introducing everyone and explaining their roles, the purpose of the assessment, and how it will proceed. ● Insist that everything being said is interpreted throughout the assessment and, if necessary, remind the interpreter to interpret verbatim. **Adopt an appropriate communication style** ● Speak directly to the patient using straightforward and simple language, adjust the pace of speech and length of sentences to facilitate effective interpreting, and take reasonable steps to ensure that everything is understood by everyone. ● End the assessment by summarizing the main points and conclusions and inquire about any final questions.

After the assessment
● Allow time for a short post-assessment meeting with the interpreter to clarify content or issues that were unclear during the assessment, provide mutual feedback, and debrief the interpreter, when appropriate. ● Consider and make direct reference to the limitations of interpreter-mediated assessment when writing the neuropsychological report.

Figure 1. Recommendations for interpreter-mediated neuropsychological assessment.

2009; Olson & Jacobson, 2015; Rivera et al., 2008), and language mixing or code-shifting is often an integral part of everyday language use (Franzen, van den Berg, Ayhan et al., 2023; Nielsen et al., 2023) (see vignette in Box 1). Thus, in the context of multilingualism and inherent language mixing, unless important to the construct being assessed, we generally recommend accepting responses in any language spoken by the patient and interpreter, rather than insisting on responces in a single predetermined language.

> **Box 1.** Vignette.
> Mr. Aslan was a 62-year-old Turkish immigrant living in Germany who was referred to neuropsychological assessment due to memory complaints. Prior to the assessment, he was contacted by his neuropsychologists to establish if there was a need for an interpreter and to identify the preferred language. During this conversation, Mr. Aslan was able to describe aspects of his family and everyday life in German, but clearly struggled with expressing and understanding the details of more complex subjects. Mr. Aslan indicated that his German proficiency was okay for speaking but poor for reading and writing. He explained that he had Kurdish ethnicity and spoke Kurdish, Turkish, and German. Kurdish was the main language spoken at home by his family during his childhood and he was fluent in Kurdish but unable to read or write it. He described himself as being almost fluent in Turkish. He could also read and write in Turkish, which was the taught language throughout his five years of formal schooling. At home, he mainly spoke Kurdish and Turkish with his wife, generally a mix of Kurdish, Turkish and German with his adult children, and only German with his grandchildren. Although Mr. Aslan´s primary language was judged to be Kurdish, he was clearly multilingual and mixed or switched between Kurdish, Turkish, and German in his everydag language use. Therefore, it was decided to be best to involve a Kurdish interpreter originating from Turkey, who would be likely to have a similar multilingual language practice and speak the same Kurdish dialect as Mr. Aslan.

It also needs to be considered whether an interpreter who is proficient in the preferred language is also proficient in the specific dialect spoken by the patients (Judd et al., 2009; Torkpoor et al., 2022; Tribe & Sanders, 2014). For instance, Arabic is spoken across at least 22 countries spanning the Middle East, North Africa, and the Horn of Africa, but each country has its own dialect(s), with some being incomprehensible between countries and regions (Fasfous & Daugherty, 2022). Similar issues arise in Spanish dialects that differ across Spanish-speaking countries (Buré-Reyes et al., 2013; Gasquoine, 2001; Judd et al., 2009). Thus, in most circumstances it is preferable to try to match the interpreter and patient on country of origin, and it may be relevant to try to match the interpreter and patient on sex, age, ethnicity, and/or religion (CISOC, 2013; Franzen et al., 2020; Miletic et al., 2006; Tribe & Thompson, 2017). The latter may be particularly relevant in assessments involving gender-based violence, discussion of taboo/stigmatized topics, or in assessment of refugees (Veliu & Leathem, 2017). For instance, it may be important to be aware of the wider politics and subsequent choice of interpreter if assessing patients originating from areas of conflict (CISOC, 2013; Tribe & Thompson, 2017). For example, people from former Yugoslavia mostly speak the same language, but ethnic and religious discordance between the patient and interpreter may create tension in the working relationship. A caveat of this approach is that some patients may come from a small ethnic community or speak a very specific dialect, and as a result may know the interpreter from other settings (Tribe & Thompson, 2017). In such circumstances, there should be a fine balance between establishing a good match and maintaining privacy/confidentiality.

Recommendation

The interpreter should preferably originate from the same country as the patient, and where necessary, be matched to the patient on dialect, sex, age, ethnicity, and/or religion. However, it is acknowledged that this is not always possible.

Engaging a qualified interpreter

Although family members often fulfill matching criteria and some patients may insist upon having family members interpret for them due to trust, confidentiality, or other

concerns (CISOC, 2013; Franzen et al., 2020; Tribe & Thompson, 2017), guidelines for working with interpreters in mental health settings generally argue against using family members as interpreters as this practice can result in different problems with confidentiality, place family members in uncomfortable roles that may undermine their relationships, and frequently result in inaccurate interpretations (American Psychological Association, 2017; Australian Psychological Society, 2007; CISOC, 2013; Fujii et al., 2022; Miletic et al., 2006; Tribe & Thompson, 2017). Family members may also have their own agendas (Rivera et al., 2008; Tribe & Thompson, 2017), and the use of family members as interpreters has been related to problems with inadequate interpretation of medical terminology, obscuring of the patient's explanatory models, difficulties in assessing the patient's level of insight, and exclusion of the patient from the conversation (Kilian et al., 2014; Manly & Espino, 2004; Rivera et al., 2008; Searight & Armock, 2013; Zendedel et al., 2018; Zhang & Wang, 2021). Thus, as general rule it is not appropriate to use family members as interpreters.

However, considering the differences in access to, and utilization of, interpreter services within and between countries (Franzen et al., 2020; Nielsen, 2022; Rosenstein, 2023), neuropsychologists may need to resort to the use of untrained ad-hoc interpreters, including family members, due to cost and scheduling issues (Hadziabdic & Hjelm, 2019; Satinsky et al., 2019). When interpreter services are unavailable or unable to provide an interpreter speaking a specific language or dialect, using family members as interpreters may be the most appropriate option. In these situations, it is important that the neuropsychologist is aware of the limitations of this practice. Interpreting is a highly skilled role that improves with formal training experience (Flores, 2005; Flores et al., 2003; Haralambous et al., 2018; Plejert et al., 2015). In some settings, neuropsychologists may be able to use bilingual neuropsychological test technicians or psychometrists, e.g. psychology or medical students trained and supervised in the administration and scoring of neuropsychological tests (Puente et al., 2006). In such circumstances, the neuropsychologist should ensure that the psychometrist has adequate language and psychometric skills in the test language, and if the psychometrist also functions as an interpreter, it is important to ensure that the psychometrist is qualified to interpret (Judd et al., 2009).

Professional interpreters are mostly fluent bilingual individuals with sufficient training and experience to interpret with consistency and accuracy, who adhere to a code of ethics for interpreting. However, using professional interpreters also comes with challenges (Franzen et al., 2020; Veliu & Leathem, 2017). As referred to earlier, the accreditation, certification, and quality control of interpreters vary widely across countries and even within agencies (Plejert et al., 2015), and many may have difficulties interpreting effectively when administering clinical rating scales or neuropsychological tests, which require high demands on the abilities of the interpreter (Casas et al., 2012; Plejert et al., 2015). Crucially, even accredited, or certified medical interpreters are typically not trained in cognitive assessment (Majlesi & Plejert, 2018; Plejert et al., 2015; Torkpoor et al., 2022) and may have little experience with cognitive communication difficulties, neuropsychological terminology, and procedures for neuropsychological testing (Fujii et al., 2022; Veliu & Leathem, 2017). Little is known about how this may affect the assessment, but a current randomized controlled trial is aiming to improve the quality of interpreter-mediated cognitive assessments and

dementia-related health consultations through online training in dementia knowledge, cross-cultural communication, briefings and debriefings, interpreting skills, and interpreting ethics (Brijnath et al., 2022). Additionally, even professional interpreters may, either deliberately or unconsciously, act as the patient's advocate. They may have their own cultural standards and understandings, which may influence their interpretations, or may believe that they are protecting the patient from shame and embarrassment by selectively not interpreting descriptions of personality changes (e.g. a decline in socially appropriate behavior, judgment, self-control, and empathy), hallucinations, delusions, flashbacks, or suicidal ideation, and thus increase the risk that such symptoms are overlooked (Flores, 2005; Searight & Searight, 2009). Also, the importance of considering interpreters' ability to cope with the sensitive issues that they may be interpreting has been highlighted (Fujii et al., 2022; Miletic et al., 2006). The risk of secondary or vicarious traumatization is emphasized, particularly when working with trauma-affected refugees (Fujii et al., 2022; Miletic et al., 2006; Searight, 2017; Searight & Searight, 2009; Tribe & Thompson, 2017). This is particularly crucial, as some interpreters may be affected due to a shared history of events.

Recommendation

Despite the limitations discussed above, professional, preferably accredited, interpreters should be engaged whenever possible. Neuropsychologists should familiarize themselves with their services mechanisms for requesting and reimbursing interpreters, and service leaders should prioritize access to suitably accredited interpreters.

Choosing the mode of interpretation

Professional interpretation services can be delivered in-person or remotely *via* video or phone. Although phone interpreters may be helpful for scheduling appointments or similar types of communication (CISOC, 2013; Tribe & Thompson, 2017), phone interpreters have generally been discouraged for neuropsychological assessments (Franzen et al., 2020; Judd et al., 2009) and patients generally report lower satisfaction with phone interpreters compared with in-person and video interpreters (Joseph et al., 2017; Schulz et al., 2015). As previously described, communication during all aspects of a neuropsychological assessment (i.e. intake interview, neuropsychological testing, assessment feedback) is highly complex. Without visual access, interpreters cannot observe the interaction between the patient and neuropsychologist, missing crucial non-verbal cues in their interpretations (Tribe & Thompson, 2017), and may have additional difficulties interpreting test instructions and patient responses (Franzen et al., 2020; Judd et al., 2009). For instance, the context of use is vital for the correct interpretation of multiple-meaning words such as "figure" (i.e. a historical *figure*, a geometrical *figure*, the Figure 8, etc.). In cases of patients with added communication difficulties due to cognitive impairment, these challenges are exacerbated making phone interpreters even less appropriate (Tribe & Thompson, 2017).

During recent years, video interpretation has been implemented in many hospitals and related clinical settings. Studies evaluating video-interpreting have found it effective and accurate when used for clinical interactions and assessments and shown that

patients and clinicians have high satisfaction with video-interpreting (Joseph et al., 2017), and that video-interpreting may be a suitable alternative to in-person interpreting when it comes to assessments with the Rowland Universal Dementia Assessment Scale (RUDAS; Storey et al., 2004) and the Geriatric Depression Scale (GDS; Yesavage et al., 1983) (Hwang et al., 2022). Remote interpreters may address obstacles associated with the distance, travel time, and travel expenses of accessing interpreters (Hwang et al., 2022), and may ensure assistance when the number of interpreters for a particular language or dialect is limited (Searight & Searight, 2009). However, as remote interpreters often work from home it can be hard to ensure privacy/confidentiality as well as a well-functioning internet or phone connection, and other studies find that clinicians generally prefer in-person interpreters for patients with psychological and cognitive issues (Searight & Searight, 2009). Currently, there is a paucity of studies comparing the effectiveness of remote compared to in-patient interpreter services for neuropsychological assessments.

Recommendation

Due to the highly complex and relational nature of a neuropsychological assessment, it should generally be conducted with an in-person interpreter, and where this is not possible, we recommend the use of video interpretation.

Preparing for the neuropsychological assessment

When preparing for the assessment, it is important to consider that the time needed for interpreter-mediated assessments is typically longer and therefore, it is important to adjust the schedule accordingly (CISOC, 2013; Flores, 2005; Haralambous et al., 2018; Judd et al., 2009; Tribe & Thompson, 2017). If the patient is scheduled for several sessions, booking the same interpreter for all sessions may encourage rapport and build trust between the patient, interpreter, and neuropsychologist (Searight & Armock, 2013; Tribe & Thompson, 2017). The room layout and seating configuration should also be considered as this may have an impact on the interpersonal dynamics (CISOC, 2013; Miletic et al., 2006; Searight & Searight, 2009; Tribe & Thompson, 2017). Generally, a triangle configuration is recommended as the parties are equidistant and the interpreter can see and is accessible to both the neuropsychologist and patient (CISOC, 2013; Miletic et al., 2006; Tribe & Thompson, 2017) (see Figure 2).

However, this may lead to an interpreter-centered rather than patient-centered interaction with both the neuropsychologist and patient speaking directly to the interpreter (Miletic et al., 2006). Other seating configurations include having the interpreter seated behind either the patient or the neuropsychologist (Paone & Malott, 2008; Searight & Searight, 2009; Tribe & Thompson, 2017). Although these configurations facilitate a patient-centered interaction with the neuropsychologist, there is a risk that the interpreter may miss nonverbal cues (Searight & Searight, 2009) or does not have a good view of the test materials, affecting the effectiveness and accuracy of interpreted test instructions and patient responses (Miletic et al., 2006). The interpreter is an active part of the working relationship, and it
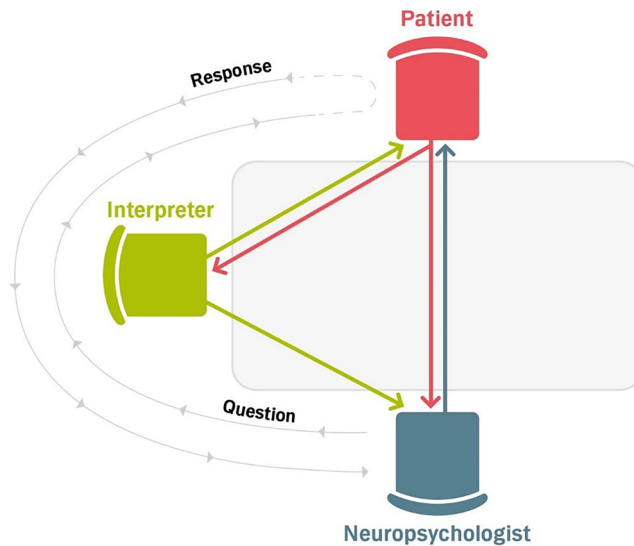
Figure 2. Triangular seating arrangement.
Note: The grey arrow lines indicate the direction of verbal communication. The colored arrows indicate the direction of nonverbal communication (i.e. eye contact, body language).

has been stressed that the successful conduct of any interpreter-mediated cognitive assessment depends on contributions from all parties (i.e. neuropsychologist, interpreter, and patient) in the interaction (Haralambous et al., 2018; Majlesi & Plejert, 2018).

Interpreting for neuropsychological assessments entails particular challenges compared to other types of medical assessments, and both clinicians and patients have highlighted the importance of a pre-assessment briefing (Haralambous et al., 2018; Judd et al., 2009), particularly when the clinician and interpreter or patient have not previously met (Searight, 2017; Searight & Searight, 2009). Thus, interpreters should be asked about prior training and/or experience working with neuropsychologists and be briefed about expected positions and roles, the purpose of the assessment, standardized test procedures and test materials, and any sensitive issues that may be raised (American Educational Research Association et al., 2014; CISOC, 2013; Farooq & Fear, 2003; Fujii et al., 2022; Miletic et al., 2006; Roger & Code, 2011). It may be relevant to clarify special terminology and complex concepts, to note that patients with cognitive impairment may have problems expressing themselves clearly and coherently, that making errors on neuropsychological tests is expected, and to emphasize the importance of verbatim interpretation (Fujii et al., 2022). If these issues are not resolved, this may lead to tension between the neuropsychologist and interpreter and affect the effectiveness and validity of the assessment (Haralambous et al., 2018).

Recommendation
Time should be allowed for a pre-assessment briefing for the interpreter to explain the purpose and content of the assessment and discuss roles and expectations.

Considering cross-cultural issues

It is important to keep in mind that neuropsychological assessment is based on Western behavioral norms and values and may be biased in patients with diverse cultural experiences and values (Ardila, 2005). Cognitive abilities usually measured in neuropsychological tests represent, at least in their content, learned abilities whose scores correlate with a given person's learning opportunities and contextual experience (Ardila, 1995). Cultural influences have been shown on neuropsychological tests across a variety of cognitive functions, including perceptual abilities, spatial abilities, memory, language, abstraction, and attention (Ardila & Moreno, 2001; Lim et al., 2009; Nell, 2000; Nisbett & Masuda, 2003; Nisbett & Miyamoto, 2005; Rosselli & Ardila, 2003). Thus, in addition to securing a professional interpreter, it is important to consider the patient's culture as this provides a needed context in understanding behaviors, which can be used to guide strategies for assessment, data interpretation and conceptualization, and recommendations (Fujii et al., 2022; Miletic et al., 2006; Veliu & Leathem, 2017). Currently, the ECLECTIC framework is the leading model for understanding the influence of culture on neuropsychological assessments of culturally diverse patients (Fujii, 2018). Facets of culture conceptualized by the framework include: Education and literacy; Culture and acculturation; Language; Economics; Communication; Testing situation: comfort and motivation; Intelligence conceptualization; and Context of immigration. Considering these cultural facets may be crucial for developing rapport, appreciating differences in communication style, understanding idioms of distress, and developing a culture-sensitive testing strategy (Fujii et al., 2022). For instance, when preparing a neuropsychological assessment, cultural knowledge, and a pre-assessment interview with the patient, preferably including an assessment of acculturation (Franzen et al., 2022; Judd et al., 2009; Nielsen, 2022), may help determine the cultural and language considerations that should be addressed when administering the neuropsychological assessments. The level of acculturation may be formally assessed by brief general acculturation scales, such as the Short Acculturation Scale (Marín et al., 1987) or the Vancouver Index of Acculturation (Ryder et al., 2000).

Recommendation

Efforts should always be made to acquire at least basic knowledge about a patient's culture prior to neuropsychological assessment.

Determining an appropriate test strategy and test battery

The selection of tests and normative data is a complex issue in interpreter-mediated neuropsychological assessment. Adaptation to individual characteristics and recognition of the heterogeneity within subgroups may be important to the fair and valid interpretation of test scores (American Educational Research Association et al., 2014). This includes not only assessing language proficiency but also considering educational background, including but not limited to years of education completed, literacy and numeracy skills, qualifications, and occupations. In clinical practice, neuropsychologists often choose to assess patients with host-language tests that are being interpreted

during the assessment (Roger & Code, 2011). However, caution is needed when adopting this approach as only few neuropsychological tests or standardized procedures have been developed or validated for interpreter-mediated assessment (American Educational Research Association et al., 2014; Judd et al., 2009). Especially in the case of verbally mediated tests, *in situ* interpretation may change the meaning and difficulty of items in ways that complicate standardized interpretations (Ardila, 2005; Kempler et al., 1998; Miletic et al., 2006; Tribe & Thompson, 2017). For instance, it may be highly challenging for interpreters to provide quick and accurate interpretation during digit span, Stroop, or verbal fluency tasks, or to interpret the content of syntactically complex sentences in repetition tasks in a meaningful way (Plejert et al., 2015; Torkpoor et al., 2022; Veliu & Leathem, 2017).

Another limitation of *in situ* interpretation is that neuropsychological tests and their norms have typically been developed with White, Educated, Industrialized, Rich, and Democratic (WEIRD) populations in mind (Henrich et al., 2010), and the stimuli and procedures used may not be applicable to the population from which the patient originates (Ardila, 2005; Miletic et al., 2006; Tribe & Thompson, 2017). Several cultural and educational biases within neuropsychological tests have been identified, especially when normative data are primarily available for the host-language-speaking population and/or patients have limited or no formal schooling (Ardila, 2005; Ardila et al., 2010; Franzen et al., 2020; Fujii, 2018). Also, it may be important to consider the quality of any education obtained (Manly et al., 2002; Shuttleworth-Edwards, 2016). The length and content of the school day and year vary considerably from country to country and in some countries even from school to school (Ardila et al., 2010; Nell, 2000). Importantly, such biases apply to both verbal and nonverbal tests. For instance, there are significant cultural differences on nonverbal WAIS-IV measures (e.g. Block Design, Matrix Reasoning, Coding), even between the U.SA. and European countries (Nielsen & Staios, 2023; Roivainen, 2019; Staios et al., 2023). Although nonverbal tests generally have lower verbal mediation, test procedures and items may be unfamiliar to people from other cultural backgrounds, particularly in the context of differences in education between countries, and interpreters may need to provide extra explanations, which further complicates standardized administration (Farooq & Fear, 2003; Majlesi & Plejert, 2018; Plejert et al., 2015; Rosselli & Ardila, 2003; Veliu & Leathem, 2017). For instance, Trail Making Test B may be meaningless if the patient has limited or no literacy skills or speaks a language that does not adopt the Latin alphabet (e.g. Arabic or Chinese).

In general, efforts should be made to use normative data that are representative of the population with whom they are being used (Judd et al., 2009). When available, it may be possible to use normative data from the patient's country of origin. However, such normative data may be based on adapted tests and administration procedures that differ from those of the host country. Also, basing interpretations of test results on normative data from the country of origin does not take acculturative influences into account, which seems especially pertinent for patients who are not recent immigrants. Level of acculturation has been shown to have both direct and indirect influences on performances across several neuropsychological tests (Al-Jawahiri & Nielsen, 2020; Razani et al., 2007a, 2007b). It may thus be preferable to select and use tests and norms that have been developed

specifically for such immigrant populations when such resources are available (Judd et al., 2009). However, it should be acknowledged that most often they are not.

Due to the limitations of what can be achieved using *in situ* interpretation of host-language tests, using tests that are already translated and adapted for use with the language in question may be a more appropriate option (Judd et al., 2009; Miletic et al., 2006; Roger & Code, 2011). Asking interpreters to informally translate neuropsychological tests beforehand should only be a last resort and only for tests with low conceptual complexity and simple instructions (e.g. wordlist recall) (Fujii et al., 2022). Informal translation should not be attempted for conceptual verbal tests as translation of a test created in one language into another may alter the meaning and level of difficulty of items and is likely to result in inaccurate scores (Casas et al., 2012; Fujii et al., 2022; Roger & Code, 2011). Translation of tests is a complex issue and should follow international guidelines for cross-cultural translation and adaptation procedures formulated in the neuropsychological application of the International Test Commission Guidelines (Judd et al., 2023). Disregarding adaptation procedures may compromise the validity of results from any translated test (American Educational Research Association et al., 2014; Franzen, Nuytemans, et al., 2023; Tribe & Thompson, 2017).

Internationally, several neuropsychological tests have been adapted, validated, and normed for specific languages and cultures. For instance, the Wechsler scales (Wechsler, 1997, 2008, 2014), California Verbal Learning Test (Delis et al., 2000), and Boston Naming Test (Kaplan et al., 2001) are available for a variety of languages and cultures. Moreover, the Bilingual Aphasia Test (BAT) (Paradis, 2004) was specifically designed to assess language impairment across languages in an equivalent way and is currently available in more than 70 languages. However, making use of these resources may be challenging if the neuropsychologist is not proficient in the patient's language. In these circumstances, using tests developed for the language in question will inevitably require that neuropsychologists ask interpreters to aid with administering the test, which may fall well outside their professional role and qualifications and potentially place them in breach of their ethical code of conduct (Miletic et al., 2006; Roger & Code, 2011). Importantly, interpreters are typically not trained in cognitive assessment and may not know how much encouragement to offer or understand the importance of adhering to standardized instructions, e.g. restrictions in paraphrasing and repetition (Roger & Code, 2011; Tribe & Thompson, 2017).

Strategies to overcome some of the challenges associated with *in situ* interpretation of host-language tests, or interpreter-administered translated tests in the patient's language, include the use of tests adopting a universal or more widely applicable cross-cultural design (American Educational Research Association et al., 2014; Franzen et al., 2019), i.e. tests that are as suitable as possible for all patients in the intended population, regardless of characteristics such as age, gender, language background, culture, socioeconomic status, or educational background. Such tests strive to minimize challenges in interpreter-mediated cross-cultural assessment by considering test characteristics that may bias the assessment, such as the choice of content, response procedures, and testing procedures (American Educational Research Association et al., 2014). For example, the test content may be made more widely applicable by avoiding

item content that would likely be unfamiliar to patients because of their cultural background, by avoiding response formats that require a specific writing direction (i.e. Arabic and Hebrew are written horizontally from right to left and traditionally, Japanese and other Asian languages are written vertically in columns going from top to bottom and ordered from right to left), by providing extended administration time when speed is not relevant to the construct being measured, and by minimizing the linguistic load of test items. The use of more widely applicable cross-cultural tests has been suggested to improve the working conditions for both the neuropsychologist and interpreter and reduce the risk of understanding difficulties related to linguistic and cultural bias (Plejert et al., 2015). Internationally, only a few instruments have been specifically designed to be more widely applicable. Nonetheless, during recent years considerable work has been carried out by members of ECCroN in the development and validation of more widely applicable cross-cultural neuropsychological tests and batteries for assessment of cognitive impairment in Alzheimer's disease and other dementia disorders, Parkinson's disease, and multiple sclerosis, across a variety of European minority and majority languages and ethnic groups (Delgado-Álvarez, Delgado-Alonso, et al., 2023; Delgado-Álvarez, Nielsen, et al., 2023; Delgado-Álvarez et al., Manuscript submitted for publication; Franzen, van den Berg, Ayhan, et al., 2023; Franzen, van den Berg, Bossenbroek, et al., 2023; Franzen et al., 2019; Goudsmit et al., 2016; Maillet et al., 2016, 2017; Narme et al., 2019; Nielsen et al., 2018, 2019a, 2019b, 2019c, 2023). Importantly, these tests were developed with interpreter-mediated assessment in mind, for instance by using pictorial rather than written stimuli, allowing the interpreter to rephrase instructions to secure understanding, and accepting responses in any reading direction and language spoken by the patient (and interpreter). In particular, the RUDAS (Storey et al., 2004) and the CNTB are well-validated and widely implemented (Franzen et al., 2020; Nielsen & Jørgensen, 2020). However, other notable resources for interpreter-mediated and cross-cultural assessment are available. Table 1 provides examples of more widely applicable cross-cultural neuropsychological tests from the CNTB (Nielsen et al., 2018), the TULIPA battery (Franzen, van den Berg, Bossenbroek et al., 2023), and the test protocol of the district of Seine-Saint-Denis. This table is meant to be exemplary rather than exhaustive. Other noteworthy examples of widely applicable instruments developed for assessment of multicultural populations include the Cross-Cultural Neuropsychological Test Battery from North America (Dick et al., 2002), the Visual Cognitive Assessment Test from Southeast Asia (Kandiah et al., 2016), and the Multicultural Neuropsychological Scale from South America (Fernández et al., 2018).

Despite these advances, there are still only few available tests designed and/or validated for interpreter-mediated cross-cultural assessment, which certainly does not meet the demands of clinical neuropsychology. This may especially be problematic in relation to forensic assessments, where more research is needed to establish the validity and reliability of *in situ* interpreted host-language tests to ensure their results will be admissible in forensic or legal settings. Further, there is a general lack of cross-culturally validated performance validity instruments (Nijdam-Jones & Rosenfield, 2017). Thus, further developments of more widely applicable cross-cultural neuropsychological test methods and resources should be a research priority. Using more widely applicable cross-cultural neuropsychological tests that are suitable for

Table 1. Examples of widely applicable cross-cultural neuropsychological tests.

Neuropsychological Test	Description	Administration Time	Primary Reference
General Cognitive Functioning			
Rowland Universal Dementia Assessment Scale*	Screening test measuring global cognition by assessing memory, body orientation, praxis, drawing, judgment, and language.	10–15 min.	Storey et al., 2004
Cross-Cultural Dementia Screening Test	Screening test measuring global cognition by assessing memory, mental speed, attention, and executive function.	30 min.	Goudsmit et al., 2016
Multicultural Cognitive Examination*	Screening test expanding the evaluation of cognitive functions covered by the Rowland Universal Dementia Assessment Scale with further assessment of memory, verbal fluency, and visuospatial function.	15–20 min.	Nielsen et al., 2019a
Executive Functions			
Switching Verbal Fluency Test of the district of Seine-Saint-Denis[a],*	Patients name as many animals, fruits, and switch between animals and fruits, as they can in 1 min.	1 min. each	Narme et al., 2019
Five Digit Test[b]	Patients name a series of printed digits, count a series of printed asterisks, count an incongruent number of digits, and count an incongruent number of digits but switch to reading instead of counting if an item is highlighted as fast as they can.	10 min.	Sedó, 2007
Attention			
Serial Threes*	Serial subtraction of 20-3.	1–2 min.	Ostrosky-Solis et al., 1999
Color Trails Test	In part 1, patients connect circles in an ascending numbered sequence. In part 2, patients connect numbers in an ascending sequence while alternating between pink and yellow colors.	3–8 min.	D'Elia et al., 1996
Corsi Block Tapping Test	Reproduce block-tapping sequences of increasing length; includes a forward and backward condition.	5–10 min.	Kessels et al., 2000
Memory			
Recall of Pictures Test*	Incidental, immediate, and delayed recall, and recognition, of 10 colored line drawings.	15 min. (incl. delay)	Nielsen et al., 2012
Modified Enhanced Cued Recall*	Free and cued recall of 16 colored drawings.	5 min. (incl. delay)	Nielsen et al., 2018
Nine Images Test of the district of Seine-Saint-Denis*	Free and cued recall of 9 black and white drawings.	3 min. (incl. delay)	Maillet et al., 2016
Memory Associative Test of the district of Seine-Saint-Denis*	Immediate recall of black and white drawings based on 10 paired associates.	10 min	Maillet et al., 2017
Modified Visual Association Test	Recall of colored photographs based on 6 pairs of interacting objects or animals.	5–10 min.	Franzen et al., 2019
Recall of Semi-Complex Figure*	Copying and delayed recall of an abstract Figure (11 elements).	5–10 min. (incl. delay)	Nielsen et al., 2018
Language			
Copenhagen Cross-Linguistic Naming Test*	Naming of 30 colored drawings.	5 min.	Nielsen et al., 2023
Naming Assessment in Multicultural Europe*	Naming of 60 colored photographs.	5–20 min.	Franzen, van den Berg, et al., 2023
Category Fluency[a],*	Patients name as many animals, and "things you can buy in a supermarket" as they can in 1 min.	1 min. each	Strauss et al., 2006

(Continued)

Table 1. Continued.

Neuropsychological Test	Description	Administration Time	Primary Reference
Visual Perception			
Copying of Simple Figures*	Copying of a Greek cross and four-armed star.	2 min.	Strub & Black, 1988
Copying of Semi-Complex Figure*	Copying of a semi-complex Figure (11 elements).	3 min.	Nielsen et al., 2018
Stick Design Test*	Copying of a matchstick configuration with four matches.	5 min.	Baiyewu et al., 2005
Clock Reading Test*	Reading the time on 12 clock faces without numbers.	5 min.	Schmidtke & Olbrich, 2007
Clock Drawing Test*	Patients draw the face of a clock and make the hands of the clock indicate a particular time (typically 10 min past 11).	2 min.	Shulman, 2000
Performance Validity			
Coin in the Hand Test*	10-item performance validity test in which the patient must remember in which hand a coin is placed while performing a mock distraction task.	5 min.	Kapur, 1994

Note: All recommended tests can be administered without the need for any language or cultural adaptation and have short administration times to accommodate the extra time required for interpreter-mediated assessment.
*Test is freely available.
[a]As it may be challenging to perform fast-paced simultaneous interpretation in a verbal fluency task, it may be necessary to make accommodations to the response procedures by instructing the interpreter to say "yes" for every new animal name or supermarket item. The neuropsychologist can then put a checkmark for each "yes" on the record form and check with the interpreter for any repetitions immediately following the test. Other accommodations include having the interpreter write down the responses in the language of their choice or recording and transcribing the responses.
[b]The Five Digit Test only requires reading digits and counting asterisks from one to five why it is often feasible to administer it in a language spoken by the neuropsychologist. Otherwise, to ease administration the neuropsychologist can preferably ask the interpreter to write down the digit names before the assessment. This will help the neuropsychologist recognize and score patient responses without the need for interpretation.

interpreter-mediated assessment, many linguistic and cultural effects could potentially be minimized (Franzen et al., 2022).

Recommendation

Neuropsychological tests specifically designed and/or validated for interpreter-mediated cross-cultural assessment should be used whenever such tests are available. If such tests are not available for the intended purpose, using tests with lower verbal mediation is generally be preferable, while keeping in mind that nonverbal tests are not culture-free.

Considerations during the neuropsychological assessment

Controlling the proceedings

Neuropsychologists may feel insecure when working with interpreters because they feel they lose control over the assessment (Haralambous et al., 2018). Even if instructed to interpret verbatim, interpreters and patients may drift into crosstalk or side conversations leaving out the neuropsychologist (Searight, 2017; Searight & Searight, 2009), and adhering to strict standardized administration procedures is often not feasible as interpreters need to provide additional explanations to secure understanding of the tasks (Haralambous et al., 2018; Majlesi & Plejert, 2018; Plejert et al., 2015). Although it may be justified to deviate from standardized procedures to gain a more accurate measurement of the intended construct (American Educational Research Association et al., 2014; Veliu & Leathem, 2017), it is important to keep in mind that it is the neuropsychologist's responsibility to control the proceedings, clarify meanings, verify understanding, and respond to questions, not the interpreter's (CISOC, 2013; Miletic et al., 2006). Thus, interpreters should be requested to share the content of any crosstalk or side conversations and, if necessary, be reminded to interpret verbatim (Searight, 2017; Searight & Searight, 2009). Nevertheless, it is important to be realistic about the limits of what an interpreter can provide. Literal word-for-word interpretation is not always possible or meaningful as some words and concepts may not have precise equivalents across different languages, and a short sentence in one language may take several sentences to explain in another language (Miletic et al., 2006; Tribe & Thompson, 2017). For instance, anxiety and depression do not have direct equivalents in Urdu (Searight & Searight, 2009), and in languages, such as Turkish and Arabic, the most common word used to describe dementia has negative connotations of mental illness and stupidity (Antelius & Plejert, 2023;; Daher-Nashif et al., 2021), which may complicate effective communication about these conditions. Languages also vary greatly in terms of phonology, lexicon, grammar, pragmatic, and reading systems (Ardila, 2005). Consequently, aphasic phenomena including agrammatism, phonological paraphasias, and neologisms are often not interpretable from one language to another, and thus interpreters may feel they have to repair the deficiencies in the process of interpreting (Roger & Code, 2011). Thus, there are significant constraints that limit what can be achieved through a reliance on verbatim interpretation.

Despite these limitations, there are several steps neuropsychologists can employ to maintain control of the proceedings. The key step is to ensure that the interpreter is briefed on the nature of the assessment process before meeting the patient and, critically, is aware of the importance of not taking on the role of advocate on behalf of the patient (Judd et al., 2009; Miletic et al., 2006; Tribe & Thompson, 2017). Other steps include beginning the neuropsychological assessment by briefly introducing everyone and explaining the role of the neuropsychologist and the interpreter (e.g. the role of the interpreter is not to add to the communication, but only to interpret what is being said), the purpose of the assessment, and how it will proceed (e.g. the interpreter will interpret everything being said, remember to pause for interpretation, etc.) (Fujii et al., 2022; Miletic et al., 2006; Tribe & Thompson, 2017). As some patients may initially feel uncomfortable with an interpreter being present, it may also be helpful to stress that both the neuropsychologist and interpreter are professionals who are bound by codes of ethics to maintain confidentiality (CISOC, 2013; Miletic et al., 2006; Tribe & Thompson, 2017). This may be particularly important in case the patient and interpreter come from a small community in which their lives may intersect (CISOC, 2013). As language information may sometimes be lost in the process of booking the interpreter, it may also be worthwhile to double-check that the interpreter speaks the relevant dialect or language at the very beginning of the assessment (Torkpoor et al., 2022). If this is not the case, it may be necessary to reschedule the assessment.

Recommendation

The assessment should begin by briefly introducing everyone and explaining their roles, the purpose of the assessment, and how it will proceed, and insisting that everything being said is interpreted throughout the assessment.

Considering communication style

During the neuropsychological assessment, it is important to consider the communication style and how this may affect interpreter-mediated communication. A basic principle is to look and speak directly to the patient consistently, rather than the interpreter, unless speaking specifically to the interpreter (CISOC, 2013; Fujii et al., 2022; Miletic et al., 2006; Searight, 2017; Tribe & Thompson, 2017). Generally, staying focused on the patient and maintaining eye contact even when the interpreter is interpreting, may help to build rapport and result in a more natural flow of information (CISOC, 2013). Exceptions may occur if cultural issues, such as minimizing eye contact with a patient of the opposite sex, are important in relation to a given patient (Tribe & Thompson, 2017). However, if focus is maintained on the patient and first-person language is consistently used, a natural conversational rhythm usually develops in which the neuropsychologist speaks, the utterance is interpreted, the patient responds, the response is interpreted, and the cycle continues (Searight, 2017; Searight & Searight, 2009; Tribe & Thompson, 2017). In case this rhythm does not develop naturally, e.g. if the patient struggles to wait to take turns, this may be a clinical indication of impaired executive- or social cognitive functioning, or other cognitive impairment.

To avoid things getting "lost in translation", straightforward and simple language should be used avoiding the use of specialist terminology unless it is essential (Raval & Tribe, 2014). This may be quite difficult even when the neuropsychologist and patient speak the same language, but when communicating through an interpreter the problem increases. For example, some neuropsychological concepts may be interpreted in many ways (e.g. concepts such as 'flexibility' or 'attention') and terms like 'TBI', 'MCI', or 'PTSD' may have no meaning to the patient, or interpreter for that matter, who may feel unable to ask for clarification. Thus, neuropsychologists should try to be as specific as possible and provide examples to ensure correct interpretation of complex concepts or terms. Also, the use of slang, jargon, acronyms, colloquialisms, metaphors, and humor should be avoided as this generally does not translate well (CISOC, 2013; Fujii et al., 2022; Miletic et al., 2006; Searight, 2017). It may also be necessary to adjust the pace of speech and break sentences or questions into shorter segments as long speech segments place an unnecessary burden on the interpreter's working memory (CISOC, 2013; Fujii et al., 2022; Miletic et al., 2006; Searight, 2017; Searight & Searight, 2009). Furthermore, the discussion should occasionally be summarized to ensure the patient understands the information (CISOC, 2013; Fujii et al., 2022; Miletic et al., 2006).

Discussion of any issues with the interpreter that do not require interpretation should generally be avoided as this may make the patient feel uncomfortable and excluded (Tribe & Thompson, 2017). Importantly, interpreters should never be asked to comment on or provide advice on medical or psychological issues, and any issues concerning the patient's cultural background should be clarified directly with the patient and not the interpreter (Miletic et al., 2006). Interpreters are not healthcare professionals and should never speak on behalf of the patient. However, occasionally the neuropsychologist and interpreter may need to speak directly to each other, e.g. if the interpreter needs to clarify a word's meaning or provide relevant background information. If such an exchange is about to occur, it is important that this is indicated, and the topic is briefly described to the patient (Miletic et al., 2006; Searight & Searight, 2009). In the same way, interpreters may sometimes need to clarify a statement or answer directly with the patient.

At the end of the assessment, it may be helpful to summarize the main points and conclusions of the assessment and inquire about any final questions to ensure the patient has understood everything (CISOC, 2013; Fujii et al., 2022; Miletic et al., 2006; Tribe & Thompson, 2017). Asking patients to repeat the main points and conclusions in their own words is a particularly useful approach to check whether they have understood the neuropsychologist's explanations (Talevski et al., 2020). If neuropsychological assessment feedback is planned for a later session, it is highly recommended to try to book the same interpreter for this appointment.

Recommendation

The neuropsychologist should speak directly to the patient using straightforward and simple language, adjusting the pace of speech and length of sentences to facilitate effective interpreting, and taking reasonable steps to ensure that everything is understood by everyone.

Considerations after the neuropsychological assessment

Considering the need for a post-assessment meeting

It is often helpful to allow time for a brief post-assessment meeting with the interpreter after the patient has left. This provides an opportunity to share perceptions and observations and clarify any interpreted content or cultural issues that were not clear during the assessment (Fujii et al., 2022; Haralambous et al., 2018; Miletic et al., 2006; Searight, 2017; Searight & Searight, 2009; Tribe & Thompson, 2017). It may also be valuable to discuss whether there were any difficulties with the interpretation of test items, make note of these, and consider the implications for the validity of the results from those items (Fujii et al., 2022). However, it is important to remember that interpreters should never be asked to express their own opinions or comment on the patient beyond their professional capacity (Miletic et al., 2006). Thus, they should only be asked to clarify issues related to their interpreting work, language features, or the significance of cultural or historical content (Searight & Searight, 2009). This may include typical features of the patient's culture, such as facial expressions or body language, unusual use of language (e.g. agrammatism, phonological paraphasias, or neologisms), or general information about the patient's country of origin (Fujii et al., 2022; Tribe & Thompson, 2017).

Although rarely a fixed practice, the post-assessment meeting may also be an opportunity for the neuropsychologist and interpreter to reflect upon and improve their skills in interpreter-mediated assessment. This may include clarification of processes, constructive feedback, and suggestions for future work (Fujii et al., 2022; Miletic et al., 2006; Searight, 2017; Searight & Searight, 2009; Tribe & Thompson, 2017).

It is also important to consider if there is a need to provide a short informal debriefing for the interpreter. Content disclosed during the assessment may affect the interpreter, who may feel shocked or have too much empathy with the patient's experience (Fujii et al., 2022; Miletic et al., 2006). It is important to keep in mind that while neuropsychologists are trained to handle difficult content, interpreters are not. Especially when assessing patients who are refugees, neuropsychologists should be sensitive to the possibility of potential distress or vicarious traumatization as interpreters may be interpreting issues, they have themselves also experienced, e.g. seeking asylum or escaping from conflict or persecution (Fujii et al., 2022; Miletic et al., 2006; Searight, 2017; Searight & Searight, 2009; Tribe & Thompson, 2017). Although it has been suggested that interpreters may benefit from supervision and other forms of support, including peer groups, this is often not available to interpreters working for agencies (Tribe & Thompson, 2017). Thus, the post-assessment meeting with the neuropsychologist may be the only opportunity for the interpreter to debrief.

Receommendation

When appropriate, time should be allowed for a short post-assessment meeting with the interpreter to clarify content or issues that were unclear during the assessment, provide mutual feedback, and/or debrief the interpreter.

Considering limitations of interpreter-mediated assessment when writing the report

It is important to be mindful of the limitations of interpreter-mediated assessment when writing the neuropsychological report (Fujii et al., 2022). Thus, besides clearly stating that the assessment was conducted with an interpreter, and in which language or dialect, it is important to describe any uncertainties regarding the validity of interpreted test results and the conclusions drawn from those (American Educational Research Association et al., 2014; Judd et al., 2009). When interpreting test scores and clinical observations, it is important to consider potential limitations related to the qualifications of the interpreter, psychometric limitations (e.g. lack of culturally adapted tests with representative normative data in relation to a given patient), and relevant cultural factors (i.e. those outlined by the ECLECTIC framework) (Fujii, 2018). Considering these limitations may be crucial when determining formulations and diagnoses.

Recommendation

Neuropsychologists should consider and make direct reference to the limitations of interpreter-mediated assessment when writing the neuropsychological report.

Conclusion

In this paper, we discussed several clinical, ethical, and diagnostic dilemmas when conducting interpreter-mediated neuropsychological assessments of linguistically diverse patients. Furthermore, we provided recommendations for good practice and working principles to inform the preparation and administration of the assessments. Briefly, ECCroN recommends carefully preparing for the assessment by engaging an appropriate interpreter, which in most circumstances will be a professional in-person interpreter speaking the same language(s) or dialect(s) as the patient, and considering practical, language, and cross-cultural issues. During the assessment, reasonable steps should be taken to proactively manage the proceedings and adopt a communication style that facilitates effective patient-directed communication, and when interpreting test data and determining formulations and diagnoses, the limitations of interpreter-mediated assessment should be carefully considered. Adhering to these recommendations and working principles ultimately enables neuropsychologists to provide competent interpreter-mediated neuropsychological assessments to linguistically diverse patients that are in line with national professional and ethical codes of conduct (e.g. American Psychological Association, 2017; Australian Psychological Society, 2007; Canadian Psychological Association, 2017; The British Psychological Society, 2017). However, future collaborations, including international neuropsychological societies, should aim at developing more formal standards for interpreter-mediated neuropsychological assessment in consultation with relevant societies with expertise in cross-cultural neuropsychology and other stakeholders. As the currently available evidence is primarily based on qualitative and descriptive studies, ECCroN recommends that detailed studies on interpreter-mediated neuropsychological assessment should become a research priority, including studies on the influence of test administration

approaches, test development and/or validation, and the effect of training programs for interpreters and neuropsychologists.

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