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The Adaptation Of The Bilingual Aphasia Test In Urdu: Linguistic And Socio-Cultural Aspects

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Abstract

Aphasia is an acquired neural disorder of communication, which is characterised by the symptoms on all levels of language dysfunction. The efficacy of treatment for these language impairments depends upon administering a reliable language assessment test to diagnose aphasia. Most of the aphasia batteries that researchers have developed and validated are in the English language (e.g., Boston Diagnostic Aphasia Examination (BDAE), and Western Aphasia Battery (WAB). The only option left for clinicians to assess bilingual aphasia in Urdu speaking patients is to use the adapted version of the Bilingual Aphasia Test (BAT). However, the test has not been standardised and normed on Urdu speaking adult individuals with aphasia. Therefore, there is a need for a standardised assessment test for diagnosing Urdu speaking patients. This study aims at adapting a test based on the BAT which is a structural and cultural adaptation to the idiosyncrasies of the Urdu language. A discussion, with Speech Language Pathologists (SLPs), lin[1]guists and clinicians from two clinical settings of Lahore, was conducted to identify the linguistic and socio-cultural issues on adapting the test. The test was adapted in Urdu utilising the exhaustive equivalence criteria mentioned in the BAT principles, after which it was administered to a sample of 60 participants to identify disparities because of transcription errors or ambiguity in pictorial or linguistic structures and unexpected socio-cultural adversity. The participants' responses to test items failing to meet a predetermined threshold criterion were investigated and reviewed and the transcription errors found were only human errors that were resolved easily, but more complex or ambiguous items were retranslated and readapted. The standardisation process of the BAT-Urdu involved administering Part-B of the final draft of the test to the control group comprising 60 native, bilingual speakers of the Urdu language, non-brain damaged and non-psychotic, in a clinical setting. This sample was stratified by age and sex, (30 males and 30 females of which 20 participants were between age 50 and 59, another 20 participants were between age 60 and 69 and the final 20 were over 70 years of age). Thus, the first step of the BAT-Urdu standardisation involved an acceptability study, wherein all items of the test must achieve unanimous acceptance by the control group, setting the threshold criterion at 100%. The stimuli of the BAT-Urdu are in black and white and all items reached the threshold criterion, i.e., according to the participants of the control group, all items of the test are easy to understand and unambiguous.

Introduction:

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A language is fundamental to express thoughts, feelings and identity. Aphasia is a disorder of communication caused by damage to the language areas of the brain, constituting a substantial impairment of linguistic performance at all levels of language skills which hinders the patient's functionality, negatively affecting the rehabilitation of linguistic deficit and ultimately interfering in the overall stroke consequences (Ali et al., 2018; Berg et al., 2022; Grönberg et al., 2022). The main cause of aphasia is cardiovascular accidents, i.e., stroke (Ali, Rafi, Ghayas, & Mahfooz, 2018), with a conventionally estimated occurrence rate of 85%. After spontaneous recovery in stroke survivors, above 40% of such aphasic patients struggle with chronic phase challenges (Stefaniak et al., 2022). The Pakistan Stroke Society reported that approximately 250 in every 100,000 Pakistanis suffer from stroke-induced aphasia, which means 350,000 persons suffer from stroke every year (Khan et al., 2015; Khealani & Wasay, 2008; Mahmood & Bashir, 2018; Qamar, 2012). In the developed world, the estimations of prevalence (0.1–0.4%) and incidence (0.02–0.06%) of aphasia are based on stroke epidemiology (Code & Petheram, 2011). However, Jafar (2006) conducted a study on an adult Pukhtoon community residing in Karachi, Pakistan and he reported a stroke prevalence of 4.8%, which is the highest ever reported in the world. In addition, Rehman (2023) reported around 1,000 stroke cases every day in Pakistan, which constitutes the highest stroke prevalence globally (Rehman, 2023).

Pakistan has a diverse linguistic pattern. Geographically, Pakistan has five provinces with their regional languages, while Urdu holds the status of the national language and English serves as the official language of Pakistan. In this way, almost the whole population of Pakistan is bilingual in nature. The prevalence of bilingualism or/and multilingualism is 50% to 80% of the world's population (Azarpazhooh, Jahangiri, and Ghaleh, 2010). Despite the high prevalence of bilingualism, bilinguals are supposed to be a very limited population due to ideological and political biases (Grosjean, 2001). Paradis (2001) asserts that if more than 50% of the world population is bilingual, then there are proportionally as many bilingual individuals with aphasia (Paradis, 2001), necessitating comprehensive aphasia assessment in their respective languages (Miller Amberber, 2011). This could also be stated for Pakistan where the overwhelming majority are linguistically diverse (Ashraf, 2023).

The literature on aphasia assessment reflects that standardised evaluation of linguistic deficits serves to determine significant aspects of patient's language functioning, type and severity of language impairment, prognosis for language rejuvenation, communicative abilities, target areas for managing treatment intervention, and degree of recovery or relapse of symptoms over time. In the clinical context of aphasiology, standardised assessment is necessary for providing valid and reliable linguistic quantification and enabling differential diagnosis to rule out other aetiologies (Ivanova & Hallowell, 2013). The clinical guidelines suggested by the National Stroke Foundation for the management of stroke recommend proper assessment to diagnose or rule out aphasia disorder in case it is suspected (Yourganov et al., 2015). To accomplish language assessment, the development of a standard aphasia test is required. A range of assessment instruments have been developed in English, many of which have been validated and standardised (Al-Thalaya et al., 2018; Ivanova & Hallowell, 2013), e.g., Boston Diagnostic Aphasia Examination (BDAE), Western Aphasia Battery (WAB) and Bilingual Aphasia Test (BAT), etc.

The Bilingual Aphasia Test (Paradis & Libben, 1987), which is reported to be an equivalent test, was designed to effectively and systematically examine the differential language impairment in bilingual patients with aphasia in each of their languages (Paradis and Libben,

1987). The Bilingual Aphasia Test (henceforth, the BAT) is the most commonly-used research instrument and clinical test for assessing aphasics' residual linguistic abilities. It comprises three parts. Part-A of the BAT, which is common to all languages, evaluates the bilingual history of the patients and their families. Part-B of the test assesses performance across language modalities through various receptive, expressive and metalinguistic tasks. Part-C examines the ability of bilingual patients to translate between their languages. Part B of the complete version of the BAT includes 472 items, and there are shorter versions with 250 and 117 items (Guilhem, Gomes, Prod'homme & Köpke, 2013). The original version of the BAT was developed for testing aphasia in people who speak English-French, but from the very beginning, the tests were adapted to be applicable for other languages (Fabbro, 1999). Currently, Part B is available in over 65 language variants, and Part C in more than 160 language pairs ((Marini et al., 2012). Adaptation of the BAT to Palestinian Arabic and Modern Standard Arabic (Dakwar et al., 2018), Sardinian (Zanetti et al., 2012), Rarotongan (Amberber, 2011), Russian (Ivanova and Hallowell, 2009), Spanish (Muñoz and Marquardt, 2008) and Catalan (Gómez Ruiz, 2008) have been reported and findings for adaptation made.

The different versions of the BAT are linguistically and culturally equivalent, that is, they examine the same cognitive abilities as the original one (Paradis, 2011). All tasks of the BAT are rigorously adapted, not merely translated, in order to assess lexical, grammatical and syntactic structures of comparable complexity in both languages. This is the only way to compare the performance of bilingual patients in the two or more languages they spoke in premorbid circumstances (Paradis, 2004, 2011). Furthermore, all test items and iconic resources used in different BAT versions are linguistically and culturally appropriate (Paradis, 2004, 2011). It is essential, while adapting, to contemplate the linguistic and cultural features of a particular language to construct a test that can provide reliable data about the impaired and residual linguistic abilities of aphasic patients (Hambleton, 2001; Paradis, 2004). It is important to recognize that every person has the right to receive comprehensive and trustworthy language assessment in all of their languages, even if their languages are not common (Miller & Amberber, 2011). In patients with bilingual aphasia, symptoms can be wide-ranging and may encompass all the languages they speak. Individuals use different languages in varying communicative contexts. The language practised at the workplace may be different from that used in social interactions or at home. A bilingual context demands different languages that a bilingual speaks to contribute collectively in everyday life. Hence, obtaining data through using a translated version of a standard test for aphasia assessment could be inadequate, misleading or even inaccurate, subsequently leading to misdiagnosis with significant clinical consequences for the patient (Miller & Amberber, 2011). Consequently, assessing and rehabilitating bilingual aphasia may become more problematic as compared to patients with monolingual aphasia (Kohnert et al., 2020) as it must encompass, with the help of a cross-linguistically equivalent test and not by a mere translation of any standardised test, all languages of a bilingual patient with aphasia (Paradis, 2001, 2004). Therefore, in a progressively bilingual country like Pakistan, the impact of brain stroke on communication abilities of such patients is significant and its assessment may present unique challenges.

Indeed, translation across typologically comparable languages or dialects may be relatively less challenging due to their common linguistic features (Hambleton, 2001). However, for typologically different languages, such as Urdu and English, there are multiple differences. For example, Urdu has a rich pronominal system that encompasses personal and indefinite pronouns, relative pronouns, reflexive and reciprocal pronouns. Despite that, gender is not marked for a third person singular personal pronoun, so both 'her' and 'him' are translated as

'usay'. Hence the sentences such as 'She holds him' and 'She holds her' would be translated as woh usay pakarti hai. A language assessment test that merely translates items will not be able to mark the gender distinction for third person singular pronouns in Urdu, since it does not exist. If such sentences are translated literally, they are anomalous in Urdu and will point to more than one stimulus picture, counting as an error, and consequently, the patient will be misjudged. Test items of this nature occurring frequently could affect the overall score, which may lead to misdiagnosis. In contrast, the BAT offers a rigorous process for adaptation of the items to assess lexical, morphological and syntactic structures of equivalent complexity in each language. In the case of the Urdu pronominal system, adaptation will be required to select a new set of grammatically marked contrast of equivalent structural complexity.

Considering the data obtained through the linguistic assessment of two or more languages of bilingual patients with aphasia, clinicians, together with the families of their patients, can collaboratively decide which of the patients' languages should be prioritised during rehabilitation in order to best reintegrate the patient into society (Paradis, 2001, 2004). However, it is yet unclear whether rehabilitating one language reinforces the untreated language (Paradis, 2004). Therefore, effective assessment of language recovery is imperative not only to monitor rehabilitation but also for guiding future research (Paradis, 2001). The data obtained by administering a cross-linguistically equivalent test like the BAT allows for the establishment of correlations between patients' recovery patterns and factors such as language acquisition, language utilisation and language organisation in the brain (Paradis, 2001, 2004).

In Pakistan, the only option for speech therapists and clinicians for language assessment in bilingual patients with aphasia is to use institutionally-organised, non-standard translations of tests that were developed for English speakers in their particular socio-cultural and socio-linguistic context. A study reported that in Pakistan, mostly speech pathologists and clinicians rely upon informal techniques to assess linguistic deficit and the use of non-standardised, socio-linguistically and culturally inappropriate instruments for assessment of damaged linguistic ability for Urdu speakers emerged as a substantial barrier to the implementation of formal assessment of patients with aphasia (Badar et al., 2021). An adaptation of the BAT in Urdu is available, and while it is considered to be structurally and culturally adapted to the idiosyncrasies of the Urdu language, it is not a standardised test and lacks norming on patients with aphasia, making it unreliable (Ivanova & Hallowell, 2013). Moreover, this adaptation has been noted to have grammatical mistakes and has not been standardised through obtaining data (either not collected or published), which limits speech pathologists and clinicians in assessing the linguistic deficits of bilingual patients with aphasia. Consequently, this prevents the larger audience of researchers in the field of linguistic aphasiology from appraising the reliability of the test (Ali et al., 2021). The effectiveness of rehabilitation intervention ultimately depends upon fair diagnosis reached through a reliable bilingual aphasia test (Ansaldo et al., 2008). Hence, considering the high prevalence of aphasic disorder in the local bilingual population in Pakistan (Riaz et al., 2020), the inaccessibility of language assessment tools for Urdu speaking patients with aphasia, and the linguistic and cultural adaptation of the BAT to Urdu is a pressing issue. Therefore, considering the prevalent perspective of diagnosing aphasia of the bilingual population of Pakistan, there is a dire need for adaptation of the BAT to the linguistic and cultural nuances for accurate assessment and reliable diagnosis of linguistic deficit in Urdu speaking bilingual patients with aphasia. This will help speech-language pathologists, practitioners and clinicians in their clinical examination and diagnostic assessment of patients' linguistic deficit to rejuvenate lost communication ability and researchers to adapt this test in other local languages in the multilingual landscape of Pakistan.

This article describes the process of adaptation of the BAT to Urdu, the national language of Pakistan. To the knowledge of the researcher, there is no published test for aphasia in the Urdu language that is standardised and normed. Hence this Urdu adaptation of the BAT (BAT-Urdu) provides the first standardised test for language assessment in Urdu. Given that the people of Pakistan face the highest ever reported stroke incidence in the world (Jafar, 2006), it turns out to be critical to address the issue. However, it is worth noting that the situation might be confounded by the absence of a standardised Urdu language assessment test. While this article is particular to the Urdu language, it is hoped that this effort will assist researchers in adapting the BAT to other local languages of Pakistan, such as Punjabi, Pushtu, Sindhi and Balochi languages.

The article plans to describe the linguistic development and a brief linguistic sketch of the Urdu language, as much as is relevant to the BAT adaptation. Then the process of adaptation of items in the subtests of BAT-Urdu and the issues faced by the researcher are discussed. Finally, the sociocultural and clinical implications of this BAT adaptation to Urdu are discussed.

Linguistic History and Structure of Urdu:

Urdu, the national language of Pakistan, is an Indo-Aryan language belonging to an Indo-Iranian branch of the Indo-European family (Humayoun et al. 2022). Abbas (2002) finds its origin in the militaries of Mehmood Gaznavi, an Afghan emperor, in the 12th Century. However, in the 17th century, the word 'Ordu' was first used in the military camps of Mughal emperor Shah Jahan when he constructed the Red Fort in Delhi. The town surrounding this fort was called Ordu-e-Mu'alla. Owing to these origins, Urdu is often referred to as ləʃkəri zəban ("the language of the military"). Daccani, Pinjari, Rekhta and Modern Vernacular Urdu are the four major dialects of Urdu (Islam, 2012). The Urdu language is closely associated with Punjabi, Sindhi, Marathi, Hindi, Gujarati, Romany, Assamese and Singhalese. The development of the Urdu language is deeply entwined with South Asian history and culture. It is amongst the most commonly-spoken languages in the Indian subcontinent, with around 11 million speakers in Pakistan and more than 300 million in the world (Riaz 2008). Furthermore, it holds the status of an official language in Pakistan and some Indian states like Uttar Pradesh, Kashmir and Delhi (Muzaffar & Behera, 2014). Urdu is also the most commonly-spoken language in Bangladesh, Nepal and Afghanistan, and in many Indian states like Bihar, Andhra Pradesh, Maharashtra, and Karnataka. Furthermore, it is also used as a tool of communication by Urdu-speaking communities in the Gulf countries, USA, UK and other European countries, Australia, Thailand, Turkey, Fiji, Zambia, South Africa, Malawi and Mauritius (Mangrio, 2016). Then, proliferating through globalisation and immigration, it spread in the world, so much so that the Summer Institute of Linguistics Ethnologies considers Urdu-Hindi as the second most spoken language of the world, as cited by Amanulla (2016).

Urdu Phonology:

The phonological system of the Urdu language is not independent, i.e., during the course of its development it borrowed several phonemes from Indo-Aryan and Perso-Arabic languages. By the 18th century, Urdu had completely adapted its present phonological structure (Beg, 1988:13). The Urdu language is rich in consonantal inventory. It includes stops (aspirated and unaspirated), fricatives, affricates, nasals, approximants and laterals. Furthermore, a retroflex place of articulation is typical of the languages of South Asia. There is a difference of opinion between scholars of the Urdu language regarding the numbers of phonemes. Generally, it is

considered that there are 48 segmental phonemes; 36 of them are consonants, 2 are semi-vowels, 8 are vowel sounds and 2 are diphthongs. Urdu has one phoneme of juncture and one of nasalization. Considering the manner and place of articulation, presence or absence of voicing and aspiration, Urdu consonants are categorised as:

Table 1 Consonants in Urdu

MA	PA	VP	UvP	AP	UaP
Stop	Bilabial	/p/	/b/	/ph,bh/	/p,b/
	Dental	/t/	/d/	/th,dh/	/t,d/
	Retroflex			/Th,DH/	/T,D/
	Palatal	/j/	/c/	/ch,jh/	/c,j/
	Velar	/g/	/k/	/kh,gh/	/k,g/
	Uvular		/q/		/q/
Nasals	Bilabial	/m/			
	Dental	/n/			
	Velar	/ŋ/			
Lateral		/l/			
Trill		/r/			
Flapped		/R,Rh/			
Fricatives	Labio-dental		/f/		
Alveolar		/z/	/s/		
Palato-alveolar	/zh/	/sh/			
Velar	/Gh/	/X/			
Glottal		/h/			
Semivowels	Labio-dental	/v/			
	Palatal	/y/			

MA= Manner of Articulation; PA= Place of Articulation; VP= Voiced Phoneme; UvP= Unvoiced Phoneme; AP= Aspirated Phoneme; UaP= Unaspirated Phoneme

In the syllable structure of Urdu, consonant clusters appear more often at the final position of Urdu words, only rarely showing up at the initial position. (Ranjha, 2012). Consonant clusters in Urdu are two-consonant structures. Mostly the initial stop consonant cluster is formed by a combination of a stop consonant and a semi vowel, i.e., /py-/, /ky-/ and /by-/, for example, /pyār/ (means love), /kyā/ (means what) and /byāh/ (means marriage). Notably, in Urdu phonotactics, Cj clusters such as in /pyār/, align with English Cj clusters such as in ‘cute’ /kyut/ (Farooq & Mahmood, 2021). Another form of initial consonant cluster is a combination of a fricative and a semi vowel, i.e., /xv-/ and /sy-/, for example, /xvāb/ (means dream) and /syani/ (means wise). Final-position consonant clusters are formed by a combination of two consonants in different combinations, for example, a combination of two stops, i.e., /-qt/ in /vaqt/ (means time), a cluster of a stop and a nasal, i.e., /-tm/ in /xatm/ (means end), and a stop plus a lateral, i.e., /-tl/, /-ql/ and /-kl/ in words /qatl/ (means murder), /aql/ (means intelligence) and /shakl/ (means shape), etc.

The vowel system of Urdu comprises short and long vowels, and also includes nasalised vowels. The short vowel sounds in Urdu are /a, i, u/ and their long vowel counterparts are /aː, iː, uː/. In Urdu, there are a total 10 vowel sounds, including 2 diphthongs. Urdu presents a pitch accent and not a tonal language, where the pitch may affect the meaning in specific context. In Urdu, the length of the vowel sound is phonemic because the meaning of the word changes with the change in length of the vowel. For example, a word with the short vowel /pəl/ means

‘moment’ and with the long vowel /pāl/ means ‘to bring up.’ An important linguistic feature in Urdu is the nasalisation of vowel sounds, which is marked by nun-e-ghunna. The letter ‘nūn’ is linguistically nasalised, and when it occurs at the end of a word, it makes the preceding long vowel come through the nasal cavity, for example, /zabāN/ (means language). But if a nasalised consonant precedes the bilabial voiced stop /b/, the consonant gets assimilated and an /m/ sound is pronounced for the written phoneme /n/. For example, the written word is / tānbā/ but it is pronounced as /tāmbā/ (means brass).

Urdu Morphology:

The literature on the linguistic background of the Urdu language (Muaz et al., 2009) shows that it has eleven parts of speech, namely nouns, pronouns, adjectives, verbs, adverbs, postpositions, numerals, auxiliaries, conjunctions and case markers. The first nine are semantically similar to the English language, but case markers do not have independent meanings unless attached to other words.

The orthographic conventions of a language establish a defined framework for utilising a particular script or writing system, encompassing a collection of symbols (such as alphabets), graphemes, and diacritics, together with the regulations governing their usage and representation. The Perso-Arabic script writing in Urdu follows a right-to-left style. The spelling of the Urdu language also exhibits a notable inclination towards the influences of Arabic and Persian. The typical word order observed in Urdu clauses is commonly described as subject-object-verb (SOV). The phenomenon of word order variation is frequently observed, focusing on the rearrangement of nominal elements, often for thematic reasons. Butt (1995), cited by Sharif (2020), stated that Urdu can be classified as a free order or non-configurational language. In Urdu, postpositions come after the object. Frequently, adjectives in Urdu sentences can both precede or succeed nouns. Similarly, adverbs can come before or after modifying verbs. Urdu speakers do not use definite or indefinite articles, so they might overlook articles such as ‘a,’ ‘an’, or ‘the’ while speaking the English language. For instance, they can say, ‘I am on phone’ instead of ‘I am on the phone.’ This kind of trans-linguistic influence is expected among a bilingual population and should not be taken as evidence of language impairment (Guiberson, 2013).

The Urdu lexicon is a combination of native Urdu, Arabic and Persian words. The morphological sketch of Urdu requires all three sources for scrutinising morphemes, affixation and compounding, etc., before a word can be understood. A single word in Urdu, e.g., laʈɑluqi (means disconnection) may be separated into three morphemes, that is, la (means un-) is an Arabic prefix, ʈɑluq (means connection) is an Arabic stem and -i is a native Urdu suffix. This morphological process changes the noun ʈɑluq by the addition of a prefix la into an adjective laʈɑluq. This adjective is again transformed into a noun laʈɑluqi by adding a suffix -i (noun to adjective to noun). In Urdu, inflections do not change the word category, e.g., the word plæt (means plate) becomes plætõ by addition of a suffix -õ (a marker for plural oblique) and plæto by addition of a suffix -o (a marker for plural vocative), which are variants of the same word. Meanwhile, derivation may form new words, i.e., may change the word category. The above-mentioned example of the Urdu word laʈɑluqi (means disconnection) is a derivation.

Nouns in native Urdu are categorised by gender (either masculine or feminine), number (either singular or plural), and its case (either nominative, oblique or vocative cases). Thus gender distinction, plural morphology and case-relevant morphology are our points of focus.

Moizuddin (1989: 20), as cited by Islam (2012), describes criteria regarding morphological alterations in the Urdu noun; most structural changes are associated with gender and number agreement, and many other morphological changes are related to the noun and its case marker. For example, bəttʃ͡a (means child), a singular masculine noun, is pluralised as bəttʃ͡e (means children). This pluralised form is also considered a form of singular oblique. Its plural oblique form is bəttʃ͡õ. Both the singular oblique or the plural oblique forms are always followed by a case marker, e.g., the ergative case marker 'ny' is used as in bəttʃ͡e ny (singular) or bəttʃ͡õ ny (plural). However, there are many masculine nouns which remain unchanged after pluralization, e.g., ɖʱobi (means washer man) and ʊːnʈ (means camel), because ɖʱobi does not end in -a and ʊːnʈ does not end with a vowel. These inflections form numerous morphological constructions in Urdu nouns. Hardie (2003: 35) asserts that, "Urdu inflection is based on suffixation; the suffixes are fusional, consisting overwhelmingly of a single syllable, or even a single vowel, that may mark multiple features e.g. gender, number and case are marked on nouns". The basic gender for masculine nouns is marked by the final vowel -a, and feminine nouns are marked with an -i substituted in its place. For example, the singular masculine noun ləʈka (means boy) and singular feminine noun ləʈki (means girl). Some variations still persist, e.g., the singular masculine noun ɖʱobi (means washer man) and it's feminine counterpart ɖʱobən (means washer woman), or the masculine ʊːnʈ (means camel), as opposed to the feminine ʊːnʈni (means female camel).

The most general pattern for pluralisation for the feminine noun that ends in -i, is the addition of pluralisation marker -ɪjã as suffix. For example, the singular noun bəttʃ͡i (means female child) is pluralised as bəttʃ͡ɪjã (means female children). However, other feminine noun pluralization patterns are also correlated with gender, e.g., ɖʱobən is pluralized as ɖʱobənẽ. Similarly, ʊːnʈni is pluralized as ʊːnʈnijã. The rest of the feminine nouns have a general pluralisation pattern by the addition of the marker -ẽ, e.g., behn (means sister) and behnẽ (means sisters). Meanwhile, the general masculine noun pluralization pattern is a change from -a (singular noun ending) to -e (plural noun ending), but all other masculine noun endings remain unchanged.

In Urdu, both animate and inanimate nouns are marked with gender markers. Gender marking for inanimate objects is usually used to represent worth, e.g., masculine for sona (means gold) and feminine for tʃanɖi (means silver), size, e.g., ʈʃʰura (means large knife) is masculine and ʈʃʰuri (means small knife) is feminine. Rizvi (2007: 73) asserts, "There is no general rule for gender classification for inanimate nouns. Usually huge, heavy, powerful, dominant and big objects are masculine, while small, weak and light are feminine". Kashif (2004: 91) observes regarding the inanimate gender markers for pluralisation, all metals like sona (means gold) and various food items like doodh (means milk) are always marked as singular.

Affixation is a word formation process in Urdu. The Urdu derivational affixation for most of the words is rule-governed with some deviations of varying degrees. Derivation constructs major categories of word formation like nouns, adjectives and adverbs, etc., through suffixes and prefixes. Most Urdu derivational words are formed through suffixation. Kashif (2004: 91) asserts that Urdu affixes are not mean-bearing morphemes in isolation. However, affixes that were borrowed from Arabic and Persian can be understood alone, e.g. na (means no) and ehl (meaning capable) make an adjective naehl (means incapable).

The native Urdu suffixes -a and -i are vowel-based homonyms of the aforementioned gender markers, and the prefixes ə and ən are negative derivational markers. Derivational patterns by suffixes -a and -i (which are the most productive affixes to make new words) are rule based

and systematic. If the base word is native, this derivation represents gender, but if the base word is a loan word, the suffix -i is attached and the derivation bears no gender. For example, sətʃ (means truth, a native noun), with the addition of -a, makes sətʃa (means a male truthful person, an adjective) and, with addition of -i, forms sətʃi (means a female truthful person, also an adjective). These derivational adjectives can also be used as nouns. The loan noun mehnət̪ (means hard work) forms mehnt̪i (means diligent) with the addition of -i. This derivational adjective is both masculine and feminine, although the base noun mehnət̪ is feminine. Quite contrastively, the suffix -i transforms adjectives to nouns. For example, the adjective xamoʃ (means quiet) attaches with the suffix -i to form the noun xamoʃi (means quietness) and similarly bʊra (means bad) forms bʊrai (means evil, a noun). Thus, -i is a productive suffix and produces nouns and adjectives. Bauer (2003: 70) states, "a morphological process can be said to be more or less productive according to the number of new words which it is used to form." The prefixes in Urdu express the negative markers as ə and ən. These derivational markers are not very productive. They mostly form adjectives from verbs. This derivation is of the antonym category. For example, an Urdu verb mər (means die) attaches with the prefix ə to form an adjective əmər (means immortal) and another verb pəɽh (means read/study) attaches with ən to form an adjective/noun ənpəɽh (means illiterate/uneducated).

Adaptation of the BAT to Urdu (BAT-Urdu):

The BAT is designed to assess language impairment in bilingual patients with aphasia and is currently available in over 65 language variants, and Part C in more than 160 language pairs, such as French-to-English and English-to-French (Part C) ((Marini et al., 2012). For Urdu speaking bilingual aphasia patients, the only option left for clinicians to assess bilingual aphasia is to use institutionally-developed, non-standardized tests or the adapted version of the Bilingual Aphasia Test (BAT) in Urdu. This adaptation has not been standardised and normed on Urdu-speaking adults with aphasia, and it contains many structural and grammatical errors**.** For example, in the stimulus book on page 79, the sentence, 'the dog is bitten by the cat' is literally translated 'kuta billi sy kata ja raha hy'. Another issue is that, to the knowledge of the researcher, there is no literature available which describes the adaptation procedure of the test and authenticity of this adaptation. Thus the researcher decided to adapt and validate the BAT in Urdu to determine the type and severity of bilingual aphasia disorder for the screening of Urdu bilingual aphasic individuals in Pakistan. This article is limited to the adaptation and standardisation of the BAT in Urdu.

Various clinicians and neuro-linguists are of the view that it is imperative to evaluate patients with aphasia in all the languages they spoke before the onset of the disorder, using an equivalent instrument specifically designed for each language. This is preferable over utilising a translated version of a standardised test from another language. The development of a test designed for assessing bilingual aphasia is essential to advance research in the field, addressing clinical concerns such as identifying the most affected language, determining which language should undergo rehabilitation, and understanding its cognitive and scientific aspects, such as the brain's processing of languages in bilingual individuals.

The researcher adapted the Bilingual Aphasia Test to the Urdu language, which was then read and evaluated by two linguists, and eventually commented on by two other linguists. All involved personnel are native speakers of the Urdu language. The researcher adapted the BAT to Urdu strictly following the guidelines provided in "The Assessment of Bilingual Aphasia".

Adaptation of BAT-Urdu and Discussion:

In the subsequent section of this article, the particular adaptations that were implemented for each subtest along with the rationale behind are discussed. The researcher adapted Part A and Part B of the BAT. A limitation of the study is that the researcher did not adapt Part C of the BAT.

Part A:

History of bilingualism:

This section, which is not part of the test itself, consists of 50 questions and is aimed to establish the patient's premorbid linguistic history, contexts of bilingualism, and language acquisition. As this part of the BAT is very comprehensive and all-inclusive, almost all BAT adaptations contain a straightforward translation of this section. The simplicity allows the examiner or test administrator or healthcare professional to better comprehend the patient's premorbid linguistic abilities in a bilingual context (Amberber, 2011). Therefore, this section was merely translated into Urdu using simple words and syntax. Thus, if aphasic patients feel any difficulty in providing the required information in this questionnaire, the examiner may complete it with the help of family members or friends.

Part B:

Urdu Background (Items 1–17):

This section provides details regarding language acquisition and the patient's experience with the Urdu language. The aim of the questionnaire is to offer insight into the patient's language utilisation and acquisition patterns. The instructions at the beginning of each section for the subtests (Items 1–17) were translated verbatim. The total length of the translated instructions in the adaption was equivalent. All questions (Items 1–17) pertaining to the Urdu background were merely translated without any change. The translated content maintained the same level of complexity in terms of semantics and grammatical construction.

Code switching, which appears seamlessly and dynamically in bilingual contexts, is evident between local and global languages. Speakers in bilingual environments are exposed to both languages in routine matters, leading to their assimilation into everyday communication and interactive behaviours and shaping their bilingual hybrid identities (Shah et al., 2020). Consequently, the researcher chose to incorporate some commonplace code-switched English words during the translation process, as their Urdu counterparts are either overly formal or unfamiliar to the general populace. For instance, the researcher retained the English word "test" without translating it into Urdu, as it conveys a more comprehensive meaning to Urdu listeners than its exact Urdu equivalent, "imtihan".

Across all levels of education and even in traditional informal local training setups, English numerals are commonly used for arithmetic tasks. The majority of the bilingual population is not well-acquainted with Urdu numerals, which are derived from Persian orthography (Billah, 2018). Hence, the researcher opted for familiar English numerals for numbering and scoring items in the adapted version.

Spontaneous Speech (Items 18–22):

The instructions and items in this section were translated and required no alteration. For obtaining the sample of spontaneous speech, the examiner provided prompts to initiate the activity. In the English version of the BAT, the first prompting question is a description of "his/her illness." However, during the data collection process, it was observed that discussing the disease could be traumatic for the patients. Therefore, the researcher recommends avoiding negative prompts and alternatively suggests inquiring about their health. This was the only modification made in this section.

Pointing (Items 23–32):

All test items of this section were translated without alteration. However, the researcher observed that the translated stimulus items in Urdu were longer compared to their English counterparts and may involve a potentially greater cognitive memory component for auditory comprehension. However, since Urdu syntactic constructions carry equivalent cognitive content to those in English, this was not regarded as lengthier content with more complex structure. For example, 23- "baraye meharbani angothi ko haath lagayen" (23- Please touch the ring). The variable syntax of different languages requires translators to accommodate these variations while ensuring they do not violate the principle of equivalence of structural complexity, as proposed by Paradis (1983). Maintaining a comparable difficulty level of the translated content ensures that the translated task accurately assesses the same capacity as the original. Therefore, the translated text is valued for its comparable intricacy rather than its fidelity to the original. Thus, the translation of this section meticulously fulfils the equivalence criteria for each verbal comprehension task, as set by Paradis (1983); that the selected tests should demonstrate functional equivalence and permit direct comparison, task by task, regarding difficulty level and the content being assessed (Paradis, 1983). Researchers in the field encounter similar challenges (Amberber, 2011), and at times, they must address syntactic issues in a way that involves compromising the content equivalence to some extent while ensuring functional equivalence.

Simple (Items 33–37) and Semi-Complex Commands (Items 38–42):

These commands maintain a consistent conceptual significance across different linguistic contexts and are widely recognised. Thus, the instructions and stimuli were translated into common Urdu expressions, ensuring their meaning was preserved without alteration. For example, Item 33 was translated as, "Baraye meharbani apni ankhen band karen" (Please close your eyes).

Complex Commands (Items 43–47):

The stimuli employed in these items included a selection of 3 objects, commonly found in Urdu linguistic contexts, with obvious differences amongst themselves: three pieces of paper of varying sizes, three differently-coloured pencils, three coins of different radii, three sticks of variable lengths and three unique books. The content and instructions for this section were translated carefully without change. Contrary to the BAT adaptation to Rarotongan, where the significant variability in grammatical and lexical-phonological structures between English and Rarotongan demanded the adaptation of subtest items using short lexical items (Amberber, 2011), the direct translation of this subtest into Urdu was considered likely to impose similar

demands on working memory in both source and target languages. In both languages, nearly phrasal prepositions (e.g., 'in the glass' translated as 'glass mein') and word structures (such as 'chota' for 'the short', 'darmiyana' for 'the medium', and 'bada' for 'the large') are comparable in syllable length. Consequently, the individual components and the overall command for each item in this subtest were nearly equivalent in length in Urdu compared to their counterparts in English (e.g., consider English 'the large coin' with 3 syllables versus the Urdu equivalent 'bada sikka' with 4 syllables in item 45). For instance, item 43 is translated as follows: Item 43: "Ye teen sikky hein. Bady sikky ko mere taraf ker dein, darmiyany size waly ko ulta dein, aur choty waly ko apny haath sy danpein" (33 syllables); English: 'Here are three pieces of paper. Give me the small one, put the middle-sized one on your lap, and throw away the large one.' (29 syllables). Thus, the subtest items were translated to ensure that the commands were approximately equivalent in length to those in the English version of the subtest.

In contrast to the recommendations outlined in the report prepared for the Cree Health Board regarding the adaptation of the Bilingual Aphasia Test for East Cree speakers, the researcher opted to translate these test items while maintaining fidelity to the original content. Barbu et al., (2016) suggested that this section requires adaptation beyond mere translation. The researchers highlighted concerns regarding items 43 and 47, particularly in relation to potential challenges for patients with aphasia (e.g., confusion regarding the description of small, middle-sized, and large items in item 43). For item 43, they proposed the use of classifiers that would be linguistically appropriate. Regarding item 47, they recommended eliminating the ranking to enhance task clarity without compromising its intended measurement objectives (Barbu et al., 2016).

Verbal Auditory Discrimination (Items 48–65):

The instructions for this section which is designed to assess the patient's proficiency in phonemic discrimination and auditory word comprehension were translated literally into Urdu. The purpose of the task is to evaluate the patient's capacity to differentiate between minimal pairs. A set of four pictures is displayed, and a single word is spoken aloud. The patient is then requested to touch the picture that corresponds to the word uttered. Obviously, the stimulus words cannot always be directly translated between languages, as they would no longer constitute minimal pairs.

The equivalent items in the Urdu language have been carefully chosen to capture the same underlying linguistic phenomena as the original items, aligning with the rationale that directed the initial construction of the items (Paradis, 2011). Obtaining sets of four words that vary in just one phoneme and can be easily depicted proved to be challenging, similarly to what Amberber (2011) reported. Hence, 18 sets of four easily picturable minimal pairs were constructed following consistent principles, focusing on Urdu words that primarily differentiate only in their initial consonant or with minimal variation in phonetic features. For instance, Item 49 presents: "Kawa (Hawa, Tawa, Dawa)" (Crow (Air, Griddle, Medicine)). In this item, 'kawa' (crow) serves as the stimulus word.

Picturability was another crucial consideration in this adaptation process. Throughout the standardisation phase, researchers addressed disparities in picture comprehension among participants, ensuring that the chosen images were easily understandable and representative of the intended concepts across the target population. Sanjeevan (2012) noted that in the stimulus book of the English BAT, Item 54, "Van," provided visual options for the word "Van."

According to the answer key, the correct picture was designated as number four, the last option. However, participants in the study demonstrated a clear understanding of the distinction between a van and a truck; they objectively selected the "X," which may have been the correct answer in terms of their comprehension, but incorrect according to the answer key (Sanjeevan, 2012).

The report authored by researchers from Carleton University in March 2016 proposed that verbal auditory discrimination (VAD) should be treated as a project separate from the adaptation of the BAT. The authors emphasised the complexity of VAD and its implications for both auditory perception and production assessment. They recommended that this activity necessitates thorough phonetic research spanning across Cree dialects prior to the development of minimal pair content (Barbu et al., 2016).

To ensure formatting equivalence, it was essential to minimise disparities, and thus, the test and stimulus book were formatted identical to the English version of BAT (Paradis, 2011). For the VAD section, for instance, the stimulus book was structured so that pages containing the set of four pictures (one corresponding to the stimulus and three distractor pictures) alternated between appearing on the right and left sides of the page containing an 'X' (which the patient is instructed to touch when the picture corresponding to the stimulus word is not there), maintaining this pattern consistently across all versions (e.g., appearing on the left for stimulus 57 and on the right for number 58). Additionally, the position of the target picture on each page for each stimulus was pseudo-randomly assigned but remained consistent across all versions (for example, stimulus 48 consistently appeared in position 2, stimulus 49 in position 1, stimulus 52 in position 2, and stimulus 53 in position 4). The 'X' response corresponded across all versions to stimuli 50, 57, and 61.

Syntactic Comprehension (Items 66–152):

The instructions of this section have been simply translated into Urdu. Syntactic constructions vary across languages in terms of both their form (e.g., English passive construction differs significantly from that in Japanese) and their frequency of usage (e.g., the passive voice is much more common in English than in French, and is rarely used in Russian). Furthermore, depending on the context, an English passive structure may need to be translated into a reflexive or an active form in another language (e.g., in French, "apples are sold two dollars a pound" is rendered with a reflexive verb: "les pommes se vendent deux dollars la livre"; "she was given a watch" is translated using a transitive verb: "on lui a donné une montre") (Paradis, 2011).

The challenge of achieving cross-linguistic equivalence across various versions of the test arises not only from cultural disparities among language communities but also, notably in tasks involving syntax and morphology, from the structural diversity inherent in languages. For instance, achieving equivalence in third-person pronominal reference can vary based on factors such as the presence of arbitrary gender or gender-specific pronouns only for sexed entities, whether the pronoun is differentiated for animate/inanimate distinction exclusively, or if it exists as a single, invariant form. Similarly, reversible possessive noun phrases may manifest in analytic, synthetic, or hybrid forms, and the presence of determiners (if applicable) may or may not entail gender marking. Therefore, meticulous selection of equivalents is imperative, taking into account considerations such as grammatical complexity (Paradis, 2011).

In this section, syntactic comprehension is assessed through sentences categorised as follows:

1- Standard sentences (S): These sentences consist of a subject, verb, and object. There are 13 such items (66, 67, 71, 72, 77, 81, 82, 89, 90, 97, 100, 105, and 106).

2- Sentences with pronominal reference to animated items (P): These sentences use pronouns instead of animated nouns. There are 6 such items (68, 69, 70, 78, 79, and 80).

3- Sentences with pronominal reference to non-animated items (A): These sentences involve pronouns referring to non-animated items. There are 8 such items (73, 74, 75, 76, 107, 108, 109, and 110).

4- Passive constructions (use of nouns instead of subjects and objects); type 1 non-standard sentences (NS1): These include 8 items (83, 84, 91, 92, 98, 99, 117, and 120).

5- Type 2 non-standard sentences (NS2) come in two forms:

i- Topicalization of subjects, with 6 items (85, 86, 93, 94, 101, and 103).

ii- Topicalization of objects, with 6 items (87, 88, 95, 96, 102, and 104).

6- Negative sentences:

i- Standard negative sentences (SN) with 12 items (111, 112, 115, 116, 121, 123, 125, 126, 131, 132, 133, and 135).

ii- Type 1 non-standard negative sentences (NS1n) with 12 items (113, 114, 118, 119, 122, 124, 127, 128, 129, 130, 134, and 136).

7- Constructions of reversible nominal syntagm: These include eight pairs of reversible possessive constructions, totaling 16 such items (137-152).

For this section, two main aspects required adaptation: items containing pronouns and items with object-relative constructions. The lexical forms in this subtest required some adaptation only due to the cultural constraints. In contrast to English, Urdu does not mark third person gender distinction (e.g. she, he) or possessive pronoun (e.g. him, her). Hence, there is no distinction in Urdu between sentences of items 68 and 69; between sentences of items 78 and 79, as presented in the English version of the BAT. Furthermore, items 73 and 76 were ambiguous as Urdu third person possessive pronouns do not mark gender. Consequently, a new set of contrasts needed to be developed for these items. As Urdu has an entirely different pronominal system as that of English, so adaptation was needed to select items with equivalent structural complexity and ability to be depicted.

For sentences with pronominal references to animate items (68-70), it is imperative to bear in mind that Urdu has no gender for pronominal references and derivational morphemes are the indication for gender description of the pronoun. For example, in wəʊ ʊseɪ pəkərti: heI (she holds him/her) the pronominal reference ‘wəʊ’ (he/she) does not describe the subject’s gender. Instead, the inflectional suffix ‘i:’ at the end of the verb, pəkərti:, describes the gender of ‘wəʊ’, i.e., she (If it was ‘he’, then the morphological derivative would be pəkərta:). In Urdu ‘ʊseɪ’ (pronominal reference for objects, him/her, as well as for distant inanimate objects as demonstrative pronoun) neither describes gender itself nor uses any morpheme to. Sentences

where two pronouns are involved for both the subject and the object, the derivational morpheme attached to the verb describes the gender of the subjective pronoun only. In languages where there is no masculine/feminine distinction in pronouns, singular/plural is used instead, e.g., in the Finnish adaptation of the BAT (Paradis & Kukkonen, Bilingual Aphasia Test (Finnish Version)). To cope with this situation, the subjective pronoun for item 69 was changed from feminine to masculine in order to distinguish it from item 68, and a plural pronominal reference (them, which describes no gender) was used for the object; he holds them. In item 69 the plural pronominal reference for the subject was deliberately not used, because in Urdu both 'they' and 'them' do not describe gender. No change was made to the sentence of item 70, she holds them.

For the sentences of the items (71-76), due to the culturally odd pictorial depiction of the verb 'wash' used in the original BAT, the verb was changed to 'hit'. Paradis (2011) mentioned that, to ensure cross linguistic equivalence, one can replace a noun by another noun or a verb by another verb to satisfy cultural demands (both nouns and verbs can be changed in the same sentence), but to replace nouns by pronouns or the reverse will change the level of difficulty (Paradis, 2011). The sentences for items 71 and 72 were translated using the verb 'hit'. The possessive pronoun in Urdu is a gendered expression; əpna:/ əpni: (his/her). For the sentences (items 74-75), the verb was replaced and self-references were employed. Although self-reference does not represent any gender in itself ('xʊd koʊ' for both himself/herself), the gendered inflectional morpheme subsequently used as the suffix of the verb gives a gendered meaning to the self-reference. The sentence of item 77 was adapted keeping the cultural context in mind again (male/female child instead of adult boy/girl), along the same lines as the sentences of items 66 and 67. Sentences 78, 79 and 80 had been changed as per the pronominal reference issue as described for items 68, 69 and 70.

Urdu has a passive construction, marked by the verbal suffix -'a', the preposition 'neI' (by) that follows the subject and 'ko' for object and follows the recipient noun phrase. For example, compare the sentence of item 81; larki larky ko peet'ti hy (the girl beats the boy) with the sentence of item 83; larky ko larki ny peet'ta hy (the boy is beaten by the girl). The verb push was changed with beat considering the cultural relevance. Hence passive constructions for items 83, 84, 91, 92, 98, 99, 117 and 120 were readily determined. The subject-relative sentences (items 85, 86, 93, 94, 101 and 103) and object-relative sentences (items 87, 88, 95, 96, 102 and 104) had somewhat different sentence structures. Subject-relative sentences had the form as for item 85: Ye wo larka hy jo larki ko peet'ta hy (It's the boy who beats the girl). Object-relative sentences had the form as for item 87: Ye wo larka hy jisy larki peet'ti hy (It's the boy that the girl beats).

The sentences of items 81 and 82 have been translated literally, with the change of verb due to the cultural context. All non-standard syntactic constructions (NS-1, NS2-S, NS2-O) are available in Urdu, so the sentences of items 83 through items 88 had also been translated without change (except the change of verb). All the translations for the sentences of items 89 through the items 104 are unchanged. For sentences of items 105 -110, the verb had been changed, as the pictorial representation of the sentences would be culturally incompatible. Hence, the Urdu verb for 'feed' had been brought into use. For the sentences of items 107 to 110, the subjective and objective pronominal references have been previously discussed.

Similarly, the negative sentences have a clear, though distinct, structure and were readily constructed for sentences of items 111, 112, 115, 116, 121, 123, 125, 126, 131, 132, 133 and

135. For example, the item 111: Larki larky ko nhi peet'ti hy (the girl does not beat the boy). The negative passive sentences (items 113, 114, 118, 119, 122, 124, 127, 128, 129, 130, 134 and 136) were also readily adapted but entailed an additional grammatical marker 'ny' marking the agent (e.g. item 114: Larky ko larki ny nhi peet'ta hy (the girl is not beaten by the boy).

The sentences of items 111-114, all (Sn and NS1 n) constructions are available in Urdu, so the translations were literal with the change of verb; the verb 'beat' instead of 'push'. Similarly, all the translations for the sentences of items 115-120, the sentences of items 121-124, the sentences of items 125-128 and the sentences of items 129-132 were unchanged. For the sentences of items 133-136 the verb 'kiss' had been changed with 'hit' to make the sentence culturally compatible.

All reversible noun phrase constructions for items 137-152 were adapted with some changes considering cultural and linguistic constraints. The reversible grammatical process of possessives for the sentences, e.g., 'show me the mother's baby', was constructed in Urdu (mudzeI ma:ɲ ka: bəʧa: dəxeIɲ). In this possessive construction gendered preposition for masculine i.e., 'ka:' is used to describe the mother's possession of the baby, which is considered masculine in Urdu context. Here the word order is the mother, then a gendered preposition (masculine) and then baby. When we use mother as possessive or possession, in both cases there is no change in word 'mother' (ma:ɲ in Urdu), whereas, when we use word baby as possession it will be used as singular (bəʧa: in Urdu), but when it is used as a possessive subject then it will be in plural form (bəʧaI in Urdu). In its reversible construction, 'show me the baby's mother', which was constructed as 'mudzeI bəʧaI ki: ma:ɲ dəxeIɲ). In this construction feminine gender for the preposition, 'ki:', was used for the baby's possession of mother. The word order for this possessive noun phrase was the baby then gendered preposition (feminine) and then the mother.

Semantic Categories (Items 153-157):

This section includes a complex test comprising a set of 5 items precisely designed to assess the patient's short term memory and discrete word comprehension along with understanding the semantic category of words in a sequence (e.g., item 156: 1- chair, 2- table, 3- bed, 4- car), wherein one semantic category differs the other three stimuli of the sequence. The stimuli allocated for this section need to be the closest equivalent in the language of adaptation and culturally appropriate. In essence, translating is not merely about conveying the exact words from one language to another. Instead, it involves reproducing the same communicative intention or speech act in the target language. This means expressing what one would typically say in that language, given the same context, situation, and purpose. Considering the basic principle of BAT adaptation, it is not a translation but an adaptation, according to which the corresponding items should be selected so as to tap the same information as the original, in accordance with the rationale that motivated the construction of the items in the first place. If the stimulus is a familiar fruit in the source language, it must be a familiar fruit in the target language (Urdu). The same goes for birds, flowers, clothing, adjectives, adverbs, etc. as long as the stimulus is of the same type (Paradia, 2011).

It is crucial to confirm that the words or lexical items are grouped into natural semantic categories that are easily recognizable within the target language. In this specific context, the semantic categories and lexical items were translated into Urdu. Similar to previous adaptations of the BAT (Amberber, 2011; Zanetti, 2009), four adaptations were necessary for stimuli that were either less common or lacked a direct Urdu equivalent. For instance, in adapting item 153 from the English BAT to BAT-Urdu, adjustments were made to ensure linguistic equivalence and cultural relevance. Specifically, the original options "tulip," "rose," "frog," and "daisy" were adapted into "chambeili," "gullab," "mendak," and "genda," (jasmine, rose, frog,

marigold) respectively, within the BAT-Urdu framework. Notably, the choice of "chambeili" over "tulip" (gul-i-lala, a compound noun with four syllables) was informed by considerations of linguistic complexity and cultural familiarity. While "tulip" presented challenges due to its length and relative obscurity in the Pakistani context, alternatives such as "kanwal" (lotus) were deemed linguistically suitable but lacked cultural resonance. Consequently, "chambeili" was deemed a more appropriate substitution despite its longer lexical composition. Similarly, "genda" (marigold) was chosen over "daisy" despite the latter's commonality, as its Urdu equivalent "gul-i-daoodi" encompassed four syllables, thus aligning more closely with linguistic equivalency.

In adapting item 154 from the English BAT to the BAT-Urdu, the stimulus "cherry" was replaced with "mango." This decision was made because there is no direct Urdu translation for "cherry," and although people use the word "cherry" as it is, the fruit is primarily found in the Northern areas of Pakistan, making it less familiar to many. Items 155 and 156 were translated without alteration. In item 157, "blackbird" was adapted as "kawa" (crow) because in the Urdu-speaking community, a blackbird is perceived as a female crow, which is considered rare and not easily sighted in the environment. Similarly, the stimulus "sardine" was substituted with "machli" (fish) due to its unfamiliar name and shape, in the context. This adaptation aligns with the overall goal of the BAT, which is to utilise culturally appropriate items in each adapted test version. The semantic categories from the English BAT that were translated into Urdu maintained equivalent familiarity. The substitution of culturally and linguistically appropriate lexical items from Urdu did not diminish the set of semantic contrasts or lexical items.

Synonyms (Items 158-162):

This section includes a set of 5 items precisely designed to assess the patient's discrete word comprehension along with understanding the semantic category, wherein a semantic category matches one and differs the other three of the sequence (e.g., item 158: ‘Seat’ 1- vase, 2- pencil, 3- armchair, 4- watch). All lexical items in item 158 were translated into linguistically and culturally familiar Urdu words without any alteration. However, for item 159, both "clock" and "watch" are usually translated in Urdu as "/gæri:/." Although there is another word for "clock" (/gæri:ʒa:l/), it is not commonly used. Therefore, item 159 was adapted, replacing "clock" with "stick," with the choices being 1- shoe, 2- drawer, 3- banana, and 4- cane (with "cane" used instead of "watch"). In item 160, the third option is "ashtray," which is a loanword and primarily used unchanged in Urdu, particularly among the elite and educated class. However, since its usage is limited, "cigarette" was chosen instead of "ashtray." Although there is not any specific translation for "cigarette" in Urdu, it is a commonly understood term in the Pakistani context. Therefore, item 160 was adapted with the choices being: Pencil: 1- pen, 2- hat, 3- cigarette, 4- apple. Items 161 (for Sandal) and 162 (for Canoe) were translated as they are, without any alteration.

Antonyms (Items 163-172):

This section consists of two sets of five items each, specifically designed to assess the patient's proficiency in recognizing the antonyms of common adjectives. Additionally, it aims to differentiate between adjectival forms and other linguistic forms such as adverbs, nouns, or verbs. Overall, it assesses the patient's metalinguistic knowledge in this domain. For the lexical antonyms (items 163-167), no alteration was required. Unlike BAT adaptation in Rarotongan where complete adaptation was required as there is no morphological distinction between parts of speech (Amberber, 2011), in BAT-Urdu, morphological derivatives are distinguished by changing the suffix. For example, "khubsoorat" means "beautiful" and functions as an adjective. "Khubsoorti" means "beauty" and serves as a noun. "Khubsoorati’sy" means "beautifully" and functions as an adverb. For the morphological antonyms (items 168-172), only one modification was required. In item 172 of the English BAT, three options for the

stimulus "bold" are morphological derivatives of "care," and their translations did not accurately depict the exact antonym in Urdu. Therefore, this stimulus was replaced with "bahadur" means brave, with the options for antonyms as follows: 1- buzdil means coward, 2- buzdilana means cowardly, and 3- buzdili means cowardice.

Grammaticality Judgment (Items 173–182):

This section consists of a set of 10 items, specifically designed to assess the patient's ability of recognizing grammatically correct sentences. In this section, there are some items that have to change due to the different pronominal system across languages and others due to the cultural inappropriateness of the items. The sentences adapted in this section were originally utilised in the syntactic comprehension task. They were made ungrammatical through the deletion or insertion of a grammatical morpheme, inclusion of an inappropriate morpheme, altering the word order, or changing the verb. For example, in item 173 ("She pushes him"), the adaptation resulted in "wo unhein dakelti hy" means she pushes them. The change from "him" to "them" occurred because, as previously explained in the syntactic comprehension section, the pronoun "them" was used to represent both genders. In Urdu, the pronoun (usy) used for both "him" and "her" lacks gender specificity, demanding the shift from a masculine pronoun ("him") to a plural pronoun ("them"). The item 174 (He dresses herself), was adapted as "mein khud pehanty hein" means 'I dress ourselves.' In Urdu, subjective pronouns like he, she and they have only one word 'wo' as 3rd person pronoun which provides no indication whatsoever as to the gender of the subject. And the gender of the subject is determined from the morphological inflection of the verb. Insofar as objective pronouns are concerned, the case is the same, extending to include the fact that the object's gender is never clarified, unless explicitly told by one speaker to another. In light of this, the usage of any pronoun would in effect render it impossible to construct a grammatically incorrect sentence in Urdu if the goal is to cause conflict between the pronouns' grammaticality. The only available option left to replace gender marking was to use the 1st person singular pronoun ("mein") as the subject and the 1st person plural reflexive pronoun marking. This was constructed by adding a morpheme ("khud" /xʊd/) before the verb and an inflectional morpheme ("aiy-" /eI/). Item 176, originally an ungrammatical sentence ("It's the boy kiss the girl"), had to be adapted due to cultural constraints. The adaptation "ye wo larka hy larki ko martty hein" in Urdu, represents an ungrammatical sentence, meaning "It's the boy beat the girl." This adaptation reflects two grammatical mistakes adapted for the target language, Urdu. For item 178, the ungrammatical sentence was adapted by deleting the masculine inflectional morpheme for the gendered inanimate object, which in this case is "truck." In the source text, the article 'the' is missing to make the sentence ungrammatical. However, in Urdu, there is no obligatory article placement before nouns, so deleting the article for ungrammaticality was not possible.

For item 180, adaptation was necessary. In the sentence of English version, "the boy not wake up his mother," two mistakes were identified: the absence of the auxiliary verb and the lack of the "-ing" form of the verb "wake," which indicates the continuous aspect of the present participle. In connected speech in Urdu, people often omit auxiliaries, yet the sentences remain grammatical. To render the sentence ungrammatical in Urdu, the masculine inflection was deleted at the end the verb "j'gana", meaning "wake up." The resulting ungrammatical sentence is "larka apni maan ko nhi j'gana hein", and the correct Urdu sentence is "larka apni maan ko nhi j'gata hy". Similarly, by deleting the auxiliary "hy" at the end of the sentence, the sentence remains grammatical: "larka apni maan ko nhi j'gata". Therefore, to create an equivalently ungrammatical sentence, the singular auxiliary "hy" was changed to the plural auxiliary "hein". For item 182, the same error was translated into Urdu by substituting the auxiliary 'hy' and the negation 'nhi' with each other. The items 175, 177,179 and 181 were translated with their errors without any alteration.

Semantic Acceptability (Items 183–192):
This section comprises a set of 10 items, each carefully crafted to evaluate the patient's proficiency in general sentence comprehension. The task requires the patient to determine whether each sentence makes sense or not. Serving as a judgement task, this subtest provides insight into the interaction between the patient's real-world knowledge and their linguistic abilities. In the semantic acceptability section, adaptations were required for half of the items to create both semantically anomalous and semantically non-anomalous sentences using familiar and culturally marked words. For instance, in item 183, 'shines' was replaced with 'taloe', which means 'rises'. This change was made because, in the linguistic and cultural context of Urdu, the word for 'rise' is more commonly associated with the sun compared to the word for 'shine', which is more frequently used in reference to the moon.
For item 185, the word "gravy" was replaced with "salan", which means curry, because it is more commonly used in the context than the Urdu equivalent translation for gravy. In item 186, "The season comes out of the chimney" was adapted into "mausam chulhay mein se nikalta hai", which means "the season comes out of the stove." This adaptation was necessary because the exact Urdu word for "chimney" (doodhwana) is a compound noun and is relatively uncommon, making it unsuitable for use in this context.
For item 188, since there is no exact word for "dribble" in Urdu, the sentence was adapted by replacing the verb ‘dribble’ with ‘tairna’, which means to swim. For item 189, the word "sausage" was used as a loan word and is generally used by the upper class, so it was adapted as "gosht", which means meat. The items 184, 187,190, 191 and 192 were translated along with their semantically anomalous or non-anomalous structures without any additional modification. In the Sardinian adaptation of the BAT, only one item (item 188) is adapted, as the word "dribbling" has no Sardinian equivalent (Zanetti et al., 2012).
Repetition of Words and Nonsense Words, and Lexical Decision (Items 193–252):
This section consists of 60 items, divided into two parts: 30 items for word/nonsense word repetition and 30 items for lexical decision-making. It serves as a comprehensive test of listening and speaking skills, assessing the patient's ability to repeat and identify both monosyllabic and multisyllabic real words, along with monosyllabic and multisyllabic nonsense words. The subtests within this section required the adaptation of both real and nonsense words to ensure conformity with phonological and lexical structures in Urdu. It was imperative that the nonsense words maintained phonological plausibility in Urdu, utilising only Urdu phonemes. Additionally, it was crucial to clarify that while the nonsense words derived from the English version of the BAT might be deemed nonsense in Urdu, they should not inadvertently correspond to real Urdu words. The selection of words and nonsense counterparts for these subtests adhered to the criteria outlined in the handbook "The Assessment of Bilingual Aphasia" (Paradis & Libben, 1987). This criterion involved selecting monosyllabic, disyllabic, and trisyllabic words, along with phonologically compatible nonsense words. The nonsense words were constructed by substituting one consonant with another in the corresponding real Urdu word. The real words for these subtests were drawn from the verbal auditory discrimination (VAD) section (items 48-65) of the adapted BAT-Urdu. The length of the words in the adapted items remained consistent with those in the source text.

The stimuli of this section for repetition was divided into six parts;
1- Repetition of monosyllabic real words; these are 10 items (193, 195, 197, 201, 207, 211, 213, 215, 217 and 221), all monosyllabic real words were stimuli drawn from the VAD subset. For instance, in item 193, "raan" /rɑn/ which means thigh, is a monosyllabic real Urdu word.

2- Repetition of monosyllabic nonsense words; these are 5 items (199, 203, 205, 209 and 219), all monosyllabic nonsense words were taken from real words of Urdu and one consonant had been replaced that maintained the phonological and lexical Urdu structure. For instance, in item 199, "raash" /rɑʃ/ which is a nonsense word. This monosyllabic nonsense Urdu word was constructed by replacing the final consonant ‘n’ of the item 193, i.e., "raan" /rɑn/ with ‘sh’.
3- Repetition of bi-syllabic real words; these are 5 items (223, 225, 229, 235, 237), all bi-syllabic real words were monomorphemic real Urdu words. For instance, in item 223, "roti" /rəti/ which means bread, is a bi-syllabic real Urdu word.
4- Repetition of bi-syllabic nonsense words; these are 5 items (227, 231, 233, 239 and 247), all bi-syllabic nonsense words were monomorphemic real Urdu words with one consonant replaced that maintained the phonological and lexical Urdu structure. For instance, in item 227, "tuti" /ʈəʊti/ which is a bi-syllabic nonsense word. This bi-syllabic nonsense Urdu word was constructed by replacing the initial consonant ‘r’ of the item 223, i.e., "roti" /rəti/ with ‘t’.
5- Repetition of tri-syllabic real words; these are 5 items (241, 243, 245, 249 and 251), all tri-syllabic words were monomorphemic real Urdu words. For instance, in item 241, "aas’man" /ɑːsmɑnˀ/ which means sky, is a tri-syllabic real Urdu word.
6- Lexical decision for monosyllabic words; these are 15 items (194-222).
7- Lexical decision for polysyllabic words; these are 15 items (224-252).

Sentence Repetition (Items 253–259):
This section comprises 7 items, each meticulously designed to assess the patient's ability to process and repeat auditory stimuli in the form of sentence repetition, which may measure the patient's mnemonic ability. All stimuli in this section were already utilised in the syntactic comprehension task. For instance, item 253 "larka larki ko dakelta hy" is a direct translation of item 253 from the English version of the BAT, which means "the boy pushes the girl." The adapted sentences' length and complexity were kept comparable to the source text to prevent any unintended cognitive burden on the patient's short-term memory. The linguistic and cultural aspects of adapting syntactic structures are extensively discussed in the syntactic comprehension section.

Series (Items 260-262):
This section consists of 3 items aimed at evaluating the patient's proficiency in delivering highly prescribed and practised speech. The stimuli for this task consist of the same series used across all languages. The patient is prompted to count from 1 to 25, name the days of the week, and list the months of the year. Item 260 requires the patient to recite the names of the days of the week. The names of the days of the week in English are of similar length and structural complexity as in Urdu. Likewise, the same is the case with counting from one to twenty-five and naming the months.

Verbal Fluency (Items 263-268):
This section includes 6 items designed to assess the patient's verbal fluency and ability to find words. The stimuli for this task include initial consonantal sounds commonly used in Urdu. In contrast to the Sardinian version of the BAT, which opted for different consonantal sounds ('t', 'm', and 'p'), more suited to Sardinian speakers (Zanetti, et al., 2012), the Urdu adaptation of BAT employs consonants ('p', 'f', and 'k') identical to those in the English version. These sounds are as familiar to Urdu speakers for generating words beginning with these specific phonemes as they are to English speakers. The questions in the subtest pertaining to the total number of words and the count of acceptable words recited were translated directly.

Naming (Items 269-288):
This section consists of 20 items intended to evaluate the patient's ability in single-word finding and production. The stimuli for this task include common everyday objects. Among these, 10 objects are newly introduced, while the remaining 10 have already been used in the pointing subtest (items 23-32). For instance, item 23, "baraye meharbani angothi ko haath lagayen" (Please touch the ring), serves as a reference for item 284, where the patient is asked to identify and name the object shown, which in this case is a ring. Five of the stimuli had to be culturally adapted to ensure appropriateness within the context and easy portability.
For instance, the word "cup" (item 272) is a loanword in Urdu, referring to a handled container for liquid, similar to English. While it is an everyday object, it might not be familiar to individuals from lower socioeconomic backgrounds. To address this, the object "cup" was adapted to "peyali", another container with a similar construction and purpose but without a handle. Likewise, the object "topi", meaning cap (item 273), was used instead of "tie". Although 'tie' is used in Urdu-speaking communities, it may not be widely recognized in rural areas or among less-educated individuals, and it could be perceived as threatening to religious sensitivities.
Item 279 was adapted as "glass" (a drinking container), and item 282 as "churi" (knife). While the fork is an everyday item with a known word in Urdu, it is less common in Pakistani contexts, especially among rural and less-educated populations. Similarly, item 283 was adapted as "kanga" (comb). This adaptation was made because the common Urdu translation for "wing" (item 283 in the English version of BAT), "per", is often interpreted to mean both "wing" and "feather", leading to potential confusion.

Sentence Construction (Items 289-313):
This section comprises 25 items designed to assess the patient's ability to construct sentences from various perspectives. Firstly, the task evaluates whether the patient can construct a sentence at all. Secondly, it assesses the grammaticality and semantic coherence of the sentences. Thirdly, it checks if the patient utilises all the given words and adheres to the minimum length requirement. The stimuli in this section were translated directly, considering that Urdu has translation equivalents of the source text, ensuring cultural and linguistic appropriateness. The only alteration made was adjusting the word order to accommodate Urdu's Subject-Object-Verb (SOV) structure. There were five sets of items: in the first set, two words were provided to form a sentence of minimum length; in the second set, three words were provided; in the third set, again three words were given; in the fourth set, four words were provided; and in the fifth set, four words were offered to create a sentence of the minimum possible length, incorporating all available words. For example: item 309, "pencil/likhna, neela/kaghaz" (pencil/write/blue/paper).

Semantic Opposites (Items 314-323):
This section consists of 10 items aimed at evaluating the patient's lexical comprehension, word-finding ability, and production. It specifically assesses whether the patient can comprehend the stimulus word, access its antonym, and produce that antonym. All the stimuli in this section, except one (item 318), were directly translated without any change. These words were selected based on their commonness and having clear opposites with translation equivalents in Urdu that are culturally appropriate. For instance, in item 314, the words "durust" (correct) and "ghalat" (wrong or incorrect) were considered opposites. In item 314, "kharab" (damaged or bad) was also considered an appropriate opposite to "durust".
However, in item 318, the stimulus "tall" and its opposite "short" in English were adapted as "acha" (good) and its opposite "bura" (bad) in Urdu. In Urdu, both "big/small" and "tall/short"

can indeed be translated in similar ways, with minor differences mainly used in literary contexts. Therefore, adapting the pair "tall/short" to "good/bad" to avoid potential confusion was required. This adaptation was also made because the word 'tall' can be translated into Urdu as both "lamba" (tall) and "uncha" (high), while the translation of the stimulus word "high" (item 321) is also "uncha". Therefore, to avoid confusion, "acha" and "bura" were used instead of "tall" and "short".

Derivational Morphology (Items 324-333):

This section consists of 10 items designed to evaluate the patient's morphological ability to transform a noun into an adjective. The method of morphological derivation can vary from one language to another depending on the syntax and morphology of the language. Contrary to Rarotongan, where there is little morphological marking and no morphological marking of opposites (Amberber, 2011), Urdu employs affixation to construct morphological derivatives. This involves the addition or deletion of prefixes, suffixes, or infixes to transform words.

For example, in item 324, the noun " taqat", meaning "power", is transformed into the adjective "taqatwar", meaning "powerful", by adding the suffix "war" as a morphological derivative. One adaptation was required for item 330, where "susti" (laziness)/ "sust" (lazy) were used. This adaptation was necessary because the Urdu translation of "calmness" and "calm" produced compound words, so the word set was replaced by "laziness" and "lazy". For item 333, the adaptation was made with "udas" (sadness)/ "udasi" (sad) because the Urdu translation for the stimulus in the source text, "noise/noisy", was considered an unfamiliar term.

Morphological Opposites (Items 334-343):

This section comprises 10 items aimed at assessing the patient's morphological ability to transform a word into its antonym by adding a negative prefix. The method of constructing morphological antonyms can vary from one language to another, depending on the syntax and morphology of the language. In the previous section, the examiner prompts the patient to transform a word into another by employing affixation to construct morphological derivatives. However, in this section, the patient is asked to form a morphological opposite by adding a negative prefix. For instance, in item 334, "hazar" (present) is transformed into its antonym "ghairhazar" (not present) by adding the negative prefix "ghair-".

The researchers from Carleton University, in March 2016, reported that in Cree, antonyms might not always be formed through derivational morphology; instead, they may require other linguistic operations to construct new words, even though these words are not true antonyms. This approach is used to assess the patient’s morphological ability (Barbu et al., 2016). In contrast, Urdu typically forms morphological opposites by adding negative prefixes like "ghair-", "na-", "un-", "bai-", and "bud-". These prefixes are commonly used to create antonyms in Urdu. In more literary terms, prefixes like "adam-", 'bin-", "bina-", "la-", and "ba-" are also considered as negative prefixes, but these literary prefixes are not used to create morphological opposites. Because the negative prefix used for forming antonyms varies across languages, adaptation was needed for all items in this section. For example, in item 335, "qanooni" (legal)/ "ghair qanooni" (illegal) was adapted for Urdu.

Description (Items 344-346):

This section consists of 3 items designed to facilitate a comparison between the patient's spontaneous speech production and the ability to narrate a structured story using picture description. The stimuli for this subtest consist of a picture story, which remains mostly consistent across all BAT versions. The set of six pictures used in this section is culturally appropriate, with the only necessary change being the alteration of the girl's clothing to ensure

cultural appropriateness and with a crescent instead of the cross on the ambulance. In the Urdu script, pictures are numbered from right to left, following the usual reading direction of Urdu text.

Mental Arithmetic (Item 347-361):
This section comprises 15 items aimed at assessing the patient's capacity to perform primarily nonlinguistic cognitive operations. However, the problems are presented in the language being tested, and the patient is required to respond in that language. This aspect of the test allows for a controlled cross-linguistic comparison of the patient's language input and output performance in an automated task. The mathematical operations, the stimuli, for this task were translated directly without any alteration. Generally, this task remains the same across all versions of the BAT. Since this subtest is fundamentally a language test, mathematical symbols for additions, subtractions, multiplications, and divisions should be avoided. There are four different types of mathematical operations in this section: four additions, four subtractions, four multiplications, and three divisions. For example, item 347: "kitny hoty hein panch jama char?" (How much is five plus four?). It's important to note that the patient's premorbid level of arithmetic knowledge may interfere with scoring in this section.

Listening Comprehension (Item 362-366):
This section consists of 5 items and provides a multifaceted assessment of the patient's ability to comprehend verbal text and produce connected discourse. In the listening comprehension task, the stimulus is a story that may vary in each language to accommodate cultural norms. However, the overall structure of the paragraph remains the same, with sentences being of similar type, length and complexity, and the number of referential noun phrases and predicates being consistent. Despite this, only the lexical items change, ensuring that the information load remains identical across all languages (Paradis, 2004; Paradis & Libben, 1987). This section underwent adaptation by altering the content of the story. In the original text, 'the boy and his sister were at the beach,' whereas in the adapted text, "Ek baap aur uska beta khareedari ke liye bazaar gaye" (the father and his son went shopping to the market). This adaptation was made for cultural appropriateness.

Reading Words (Item 367-376), Sentences (Item 377-386) and Paragraph (387-392):
This section (items 367-392) comprises 26 items designed to assess the patient's ability to read aloud words, sentences and a paragraph. The stimuli for reading word tasks (10 items) were selected from the picture inventory of the Verbal Auditory Discrimination. These stimuli were chosen because they constitute minimal pairs with auditory discrimination in each language, which ensures cross-linguistic equivalence (Paradis, 2004; Paradis & Libben, 1987). All stimuli in this subtest are nouns. For example, in item 367, "pan" is given, which translates to "betel leaf" in English. The stimuli for the task of reading aloud sentences (10 items) were selected from among those adapted for the Syntactic Comprehension subtest (Paradis, 2004; Paradis & Libben, 1987). The intricacies of adaptation for this subtest have already been discussed in the relevant section.
The text reading comprehension task (6 items) measures the patient's ability to comprehend written text and to articulate connected speech. In this section, a different story is utilised for each language. However, the structure of the text remains consistent, with sentences of the same type and length, and an equal number of referential noun phrases and predicates. Only the lexical items change, while the information load remains identical across all languages. The stimuli for the task of reading aloud a paragraph and questions were adapted as a culturally appropriate story. For example, the paragraph was adapted as, "ek aurat apni beti ke saath kapas

chunnay kheton mein gayi" which translates to "a woman went to pick cotton in the fields with her daughter," replacing "the man left to go fishing with his son" (English version of the BAT).

Copying (Items 393-397):
This section (items 393-397) comprises 5 items designed to evaluate the patient's graphemic ability in copying written words onto paper. The stimuli for the copying task were selected from the picture inventory of Verbal Auditory Discrimination. These stimuli were chosen because they constitute minimal pairs with auditory discrimination in each language, ensuring cross-linguistic equivalence (Paradis, 2004; Paradis & Libben, 1987).
Four of the stimuli in this subtest are nouns, and one is a verb. For example, in item 393, "janda" is a noun, which translates to "flag" in English, and in item 394, "dhona" is a verb, which translates to ‘wash’ in English.

Dictation of Words (Items 398-402) and Sentences (Items 403-407):
The section (items 398-407) consists of 10 items designed to measure the patient's receptive and productive abilities. Additionally, this subtest evaluates the patient’s auditory word comprehension. The stimuli (398-402) for the dictation of words task were selected from the picture inventory of Verbal Auditory Discrimination. These stimuli were chosen because they constitute minimal pairs with auditory discrimination in each language, ensuring cross-linguistic equivalence (Paradis, 2004; Paradis & Libben, 1987). Furthermore, these adapted stimuli are culturally appropriate. For example: item 402, "sari" (an Indian dress), was adapted from item 58 of VAD, the 1st minimal pair on the stimulus book of the BAT-Urdu. The stimuli (403-407) for the dictation of sentences task were selected from among the adapted stimuli used in the Syntactic Comprehension section (Paradis, 2004; Paradis & Libben, 1987). For example, item 403, "wo unhein kheenchti hai", which translates to ‘she pulls them’ in English. The stimuli had minor variations as compared to the Syntactic Comprehension task, but their structural contents were the same. The stimuli for item 403 contains a sentence with pronominal reference to animated items (P). This sentence uses pronouns instead of animated nouns. The item 404 contains a sentence with pronominal reference to non-animated items (A). This sentence involves pronouns referring to non-animated items. The item 405 contains a passive construction which uses a noun instead of subject and object. This is a type 1 non-standard sentence (NS1). The item 406 contains a standard negative sentence (SN), and item 407 contains a type 2 non-standard sentence (NS2) with topicalization of subject.

Reading Comprehension for Words (Items 408-417) and Sentences (Items 418-427):
The section (items 408-427) consists of 20 items designed to measure the patient's visual words and sentences comprehension ability. The stimuli (items 408-417) for the words reading comprehension task were selected from the picture inventory of Verbal Auditory Discrimination. These stimuli were chosen because they constitute minimal pairs with auditory discrimination in each language, ensuring cross-linguistic equivalence (Paradis, 2004; Paradis & Libben, 1987). Additionally, the stimuli (items 418-427) for the sentences reading comprehension task were those used in the comprehension of syntactic structures of increasing complexity tasks. The words and sentences needed to be culturally appropriate, which were already done in the previous sections. For example, item 408 is "raan" which is used as item 48 in VAD, the 1st minimal pair, which means thigh in English.

Spontaneous Writing:
This segment evaluates the patient's capacity for expressive communication. It gathers information essential for evaluating the patient's fluency, the grammatical intricacy and

precision of their speech, the diversity of their vocabulary, and the coherence and semantic appropriateness of their discourse. Additionally, it offers insights into the occurrence of paraphasias, neologisms, and perseverations, providing a comprehensive assessment of the patient's spoken language abilities.

Standardisation of the BAT-Urdu:

The first step was to standardise the BAT-Urdu to resolve the problem of subject variables contamination (cf. Paradis, 1987). The standardisation process involved administering the BAT-Urdu to a control group of 60 native speakers to ascertain their opinions on the acceptability of the linguistic and iconographic materials utilised in adapting the BAT-Urdu.

The examiner recorded the participants' responses to the BAT-Urdu test items and reported on items that caused problems because of transcription errors or ambiguity in pictorial or linguistic structures and unexpected socio-cultural adversity. This data was presented to the researcher, who performed a subsequent analysis of the information. The participants' responses to test items failing to meet a predetermined threshold criterion were investigated and reviewed. The transcription errors found were only human errors that could be resolved easily, but more complex or ambiguous items were retranslated and readapted. The retested items were administered to a new control group of 60 native speakers with the same criterion of age and sex stratification that is described later in this article. The data obtained in the retest were again analysed similarly to the main test items and modifications were made accordingly. Thus, the first step of the BAT-Urdu standardisation involved an acceptability study, wherein all items of the test must achieve unanimous acceptance by the control group, setting the threshold criterion at 100%.

The researcher again selected 30 participants of the new control group from outdoor patients in a clinical setting of Lahore (Naseem Medical Center, Lahore) in July 2020, and 30 hospital-admitted patients (Medical Unit IV, Jinnah Hospital, Lahore). Lahore is one of the most progressive cosmopolitan cities of Pakistan, whose population represents a representative sample of the country. The clinical history and diagnosis of these patients without aphasia, mentioned on their consultant prescriptions and hospital record, were used as a reference to rule out their linguistic and cognitive impairment such as aphasia, dementia or any cognitive impairment, etc.

Part-B of the final draft of the BAT-Urdu was administered to the control group comprising 60 native, bilingual speakers of the Urdu language, non-brain damaged and non-psychotic, in a clinical setting. This sample was stratified by age and sex, (30 males and 30 females of which 20 participants were between age 50 and 59, other 20 participants were between age 60 and 69 and 20 of them were over 70 years of age). The participants were informed of the protocol of the study before they were asked to consent. The average age of the participants in the female control group is 65.6 years, and the average age of the participants in the male control group is 66.3 years. In this way, the control group is homogenous in age. Thus the average age of the control group is 65.95 years. The average years of school attendance of the participants in the female control group is 12.63 years. On the contrary, the average years of school attendance of the participants in the male control group is 13.96 years. The participants in the male control group have a higher number of school attendance years. Thus the average years of school attendance of the control group is 13.29 years.

The stimuli of the BAT-Urdu are in black and white and all items reached the threshold criterion of 100%, i.e, according to the participants of the control group, all items of the test are easy to understand and unambiguous, signifying a 100% acceptability rate.

Sociocultural Aspect of Adapting the BAT-Urdu and Conclusion:

This article detailed the adaptation process of the BAT to Urdu, the national language of Pakistan, where the whole population is bilingual in nature. It also described a brief linguistic sketch and background of the Urdu language. Its evolving role in the complex linguistic environment of a country where the majority speaks their regional languages enhances national cohesion. As Urdu has a distinctive phonological system, particular challenges arose in achieving a rigorous BAT adaptation, compounded by the fact that regional variants of Urdu exist and are widely used. The purpose of this adaptation was to adapt the BAT while factoring in these hurdles. The adaptation process and strategies, ensuring linguistic equivalence across distinct language pairs, were debated, and socio-cultural hurdles considered in the course of the adaptation into Urdu were discussed. Obtaining opinions of the expert bilingual linguists and achieving consensus in finalising the test items and resolving discrepancies in the adaptation were rigorous progression of this adaptation. The challenges faced during the adaptation process of typologically distinct languages were discussed. These typological differences alone across Urdu and English necessitate a careful adaptation, rather than a translation. The benefits of using a specifically adapted BAT instead of mere translations of standard tests that were developed in different socio-linguistic contexts were described. Assessment of linguistic deficit using translations of standard tests that are not adapted considering criteria for linguistic equivalence is of minimal value, especially for typologically diverse languages, possibly leading to misdiagnosis and failing to differentiate the nature of linguistic deficit and residual abilities. Therefore, the Bilingual Aphasia Test stands out as an exceptional language assessment test for aphasia that particularly designs to provide a cross-linguistically equivalent evaluation of language abilities. Despite the obvious adaptation and modification that are made in adapting the BAT to the Urdu language, no other assessment instrument tackles the intricate measures of language modalities across diverse languages. Consistent to Amberber (2011), the syntactic comprehension subtest is instrumental and provides clear measures of patients' impaired and residual syntactic abilities and needs little modification. In summary, it is suggested to adapt the BAT into other regional languages of Pakistan with diverse linguistic features. Currently, there is no published language instrument for Pakistani aphasia patients in any of their languages, either in their national and regional languages. Moreover, further adaptations of the BAT will not only offer valuable assessment instruments, but will also have clinical implications in facilitating their differential diagnosis and comparing aphasia symptoms across diverse languages in a bilingual context (Paradis, 2001). In conclusion, it is emphasised that every bilingual individual has the right to receive accurate and comprehensive language assessment in each of their languages, regardless of how commonly these languages are spoken within the community.

In conclusion, the BAT is a flexible neuropsychological test for aphasia. It is utilised as a language assessment tool in clinical settings and as a research instrument in lab activities (Paradis, 2011). An accurate assessment of linguistic deficits and their recovery patterns guides future research and strategies for intervention (Paradis, 2001). Data obtained through utilising the BAT helps clinicians to correlate the recovery patterns of the patients with aphasia with various factors and allows to understand the language organisation in the human brain (Paradis, 2001, 2004, 2011), which is a challenge in modern neuroscience. Additionally, this can also assert that the factors which are essential for research in the field of neuro-functional

organisation of a bilingual brain have clinical implications in improving patients' diagnoses and developing strategies for effective interventions and treatment protocols (Paradis, 2004).

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