Oral reading in bilingual aphasia: Evidence from Mongolian and Chinese*

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Cognitive neuropsychological studies of bilingual patients with aphasia have contributed to our understanding of how the brain processes different languages. The question we asked is whether differences in script have any impact on language processing in bilingual aphasic patients who speak languages with different writing systems: Chinese and Mongolian. We observed a pattern of greater impairment to written word comprehension and oral reading in L2 (Chinese) than in L1 (Mongolian) for two patients. We argue that differences in script have only a minimal effect on written word processing in bilingual aphasia when the age of acquisition, word frequency and imageability of lexical items is controlled. Our conclusion is that reading of familiar words in Mongolian and Chinese might not require independent cognitive systems or brain regions.

A key question in bilingualism is how different languages are processed in the brain. Much of this research has focussed on investigating whether language processing in the first acquired language (L1) uses the same or different brain regions to the second language (L2). In the past decade, this question has been approached using brain-imaging techniques including fMRI, EEG and MEG studies of bilingual speakers (Vaid and Hull, 2002). However a different method is to study bilingual speakers who acquire language problems following brain damage (aphasia).

Studies of bilingual aphasia date back to the late nineteenth century (Fabbro, 1999), and today this methodology forms a part of the cognitive neuropsychological approach to studying brain mechanisms in bilingual language processing (Paradis, 1977, 1995; Gollan and Kroll, 2001). These studies suggest that brain damage produces dissociations in language processing, i.e. one language can be more impaired than the other language (Paradis, 1977). For example, some patients display a pattern of DIFFERENTIAL RECOVERY from stroke whereby L2 is recovered only after recovery in L1. Another pattern is SELECTIVE RECOVERY whereby L2 is not recovered at all. Two other patterns are ALTERNATING ANTAGONISM, i.e. patients access one language in spontaneous speech for alternating periods of time (Nilipour and Ashayeri, 1989; Paradis, Goldblum and Abidi, 1982) and SELECTIVE APHASIA, i.e. impairment to one language with no deficits to the other (Paradis and Goldblum, 1989). These patterns suggest that L1 and L2 may be processed in different brain regions (Lebrun, 1971; Albert and Obler, 1978; Benson, 1985; Cremaschi and Dujovny, 1996). An alternative view is that dissociations result from extraneous factors. including age of acquisition, premorbid proficiency and familiarity with each language (Paradis, 2001) or the different linguistic properties of L1 and L2 that constrain the possible manifestations of aphasia in different languages (Nilipour and Paradis, 1995; Yiu and Worrall, 1995).

One controversy in the field of bilingual language processing concerns the question of whether separate brain regions are necessary for successful written word identification in L1 and L2. Some evidence from brain imaging suggests that written language processing in L1 and L2 activates separate brain regions (Dehaene et al., 1997; Paulesu et al., 2000; Sakurai et al., 2000; Chen, Fu and Iversen, 2002). If this claim is correct, then it should be possible to observe selective impairment to written language processing (dyslexia) in one language and preserved processing in the other. Some studies suggest that there are dissociations in impaired oral reading in bilingual aphasia. For example, Masterson, Coltheart and Meara (1985) reported a Spanish–English speaker who produced more oral reading errors in English (L2) than Spanish (L1). Raman and Weekes (2005) reported a similar pattern in a Turkish–English speaker. These data tend to support the claim that separate brain regions are necessary for written language processing within alphabetic scripts because brain damage selectively disrupts written language processing. The contrasting view is that dissociations in oral reading performance across languages are the result of extraneous factors.

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Indeed, when these variables are controlled adequately in studies of normal language processing, the evidence from brain imaging suggests that word identification in L1 and L2 in fluent bilingual speakers recruits overlapping brain regions (Uchida et al., 1997; Koyama et al., 1998; Chee et al., 1999; Illes et al., 1999; Chee et al., 2000; Chee et al., 2001).

Studies reporting selective disruption to written language processing using cross-script comparisons in biscriptal and bilingual speakers allow a relatively strong test of the claim that separate brain regions may be necessary for written word identification in L1 and L2 (Weekes, 2005). Some data suggest that the type of script has an effect on the oral reading performance of patients with bilingual aphasia. For example, Caramelli et al. (1994) reported more reading and writing errors in Japanese than Portuguese in a Brazilian "Nisei" patient, even though their patient had acquired both languages at an early age and he was a scribe in Japanese premorbidly. Caramelli et al.'s patient showed a dissociation when reading Japanese. The Japanese language uses two scripts – Kana and Kanji. Both scripts are acquired at the same age when learning to read and all literate speakers are biscriptal. Their patient was more impaired at reading in Kana than Kanji (and Portuguese) compatible with reports of monolingual Japanese biscriptal aphasic patients with acquired dyslexia in one script only (Sasanuma, 1975; Sasanuma and Monoi, 1975; Iwata, 1984; though see Sugishita et al., 1992). Beland and Mimouni (2001) reported better reading of non-words in French (L2) than Arabic (L1), and Eng and Obler (2002) reported more semantic reading errors in Chinese (L1) than English (L2).

The question we asked here is whether differences in script have an impact on the written language processing of bilingual aphasic patients who speak East-Asian languages with different orthography: Mongolian which uses an alphabet and Chinese which uses a non-alphabetic script. Alphabetic scripts are characterised by a finite number of symbols that can be combined to produce an infinite number of words and where a given symbol does not represent meaning. By contrast, non-alphabetic scripts such as Chinese and Japanese Kanji use a relatively arbitrary system for mapping orthographic units onto phonology. All Chinese characters are composed of strokes formed into components that are written together into a square shape to form a character. Ancient Chinese characters were pictographic because the written character portrayed the form of the object that it symbolised. So for example, the character for "horse", 马 /ma/, suggests to some a figure galloping across the page. However, few pictographic characters are used today. All characters represent a morpheme in Chinese. This means that each written word form is associated with a morpheme in the spoken language. The script is therefore MORPHOGRAPHIC (Yin and Rohsenow, 1994). Although mappings between orthography and phonology are relatively opaque in non-alphabetic scripts, there are phonetic radicals that denote a common pronunciation across characters. However, these phonetic radicals are reliable in less than 40% of characters containing them (Zhou, 1978).

Written Mongolian is called the Uighur script and was invented by Ghengis Khan in the 13th century. It is considered an alphabetic script that was derived from Aramaic and shares a common source with Indo-European and Semitic alphabets (Poppe, 1970). Although Uighur was replaced by Cyrillic in the Republic of Mongolia, the traditional script has remained in use in Chinese-controlled Inner Mongolia, where it is taught with Chinese characters to all children. Symbols are written from left to right in a vertical orientation from top to bottom and all letters in a word are connected by a continuous pen stroke. Words are written in a continuous line that runs vertically with lines and loops written to the left as the word progresses downward. Some examples of Mongolian script, including the word *bolon* "and" are shown in Figure 1.

Like other Turkic languages, vowel harmony is an important part of the grammar (Poppe, 1954). There are two groups of vowels called masculine (A/O/U) and feminine (E/Ü) and there are three different versions of a vowel that are depicted in print based on their respective position in the word. These are referred to as Initial, Medial and Final. One letter is used when the vowel is in the first syllable of a word, and another for subsequent occurrences of the vowel in a word. Therefore, although Mongolian is alphabetic, letters can be ambiguous and understanding word context may be necessary to read aloud correctly. For example, the word *bolon* could be read as different words (letter combinations) and thus requires knowledge of the language to be read correctly (Poppe, 1970). This is different to other alphabetic scripts such as Turkish where the mappings between print and sound always generate a correct response. It is interesting to note that although Uighur symbols do not represent morphemes in the same way as Chinese, access to meaning from print may be necessary in both scripts for the skilled processing of written words.

In our view the extant evidence for an effect of script on the written language processing of patients with bilingual aphasia is relatively weak. This is because few studies have controlled test stimuli for critical variables such as the age of acquisition, premorbid proficiency and word familiarity with lexical items – all variables that have an impact on bilingual language processing (Paradis, 2001). Other factors that affect performance include word frequency and imageability of word forms, i.e. low imageability words such as *justice* are usually more impaired than high imageability words such as *house* (Kiran and Tuchtenhagen, 2005). We controlled these critical variables in two ways. First, we recruited patients who acquired written Mongolian and Chinese

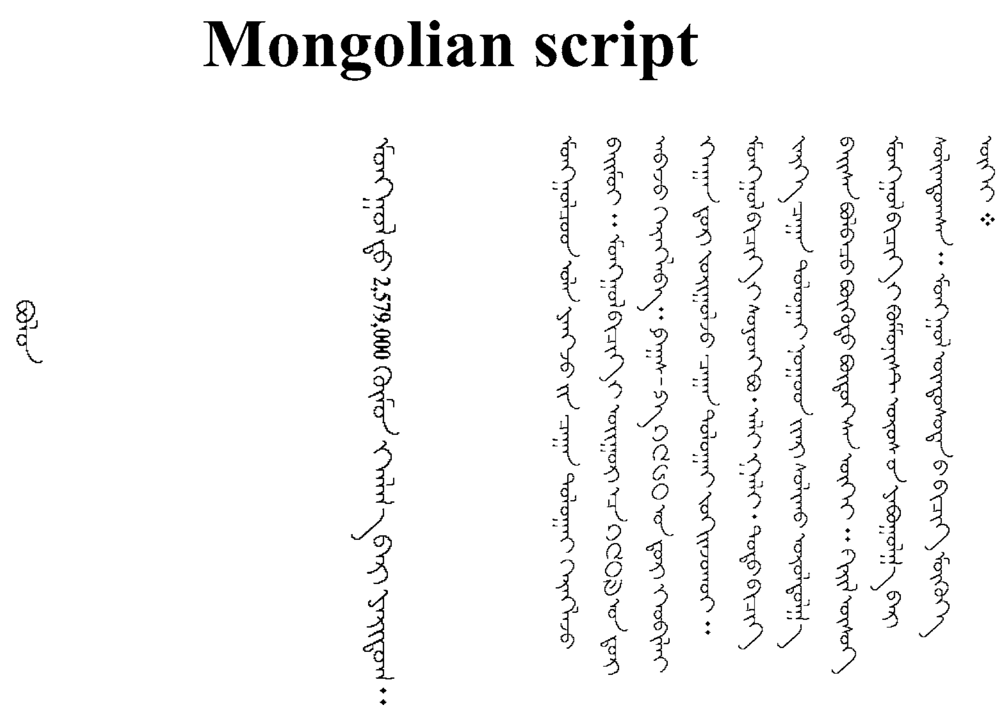


Figure 1. Example Mongolian script (Kapaj, 2001). The word *bolon* “and” is depicted on the left.

Table 1. *Biographical details of each patient.*

Case	Sex	Age	Handedness	Education	CT/Pathology/Test date
WT	Male	58	Right handed	Polytechnic	Left basal ganglia infarction
TGX	Male	47	Left handed	Middle school	Right temporal lobe and basal ganglia infarction
BG	Male	47	Right handed	High school	Left putamen haemorrhage
XGL	Male	39	Right handed	High school	Right basal ganglia infarction
SL	Male	56	Right handed	Middle school	Left putamen haemorrhage
BY	Male	56	Left handed	Middle school	Pons infarction
LH	Male	38	Right handed	Middle school	Left temporal infarction
DY	Female	58	Right handed	Middle school	Right occipital lobe haemorrhage

at approximately the same (young) age, to minimise any effects of age of acquisition of L2 on performance. Second, we compared performance in both languages using high frequency words that are common nouns, e.g. “star”, “cat”, “eye” in order to minimise effects of premorbid proficiency.

Case descriptions

Bilingual Mongolian–Chinese stroke patients were recruited from Tongliao People’s Hospital in Inner-Mongolia Autonomous District. Biographical details of each case including results from CT are shown in Table 1. Lesion location was variable across patients and not a criterion for selection. All patients were native speakers of Mongolian (L1) who learned to speak Chinese (L2) at an early age. Patients were recruited into the study according to several criteria, including formal instruction in reading and writing in Chinese during elementary school, at least average premorbid IQ based on education and work history and a preserved ability to comprehend task instructions. We used the Chinese Aphasia Examination Scale (Wang, Gao and Hu, 1988) and a translation of that scale in Mongolian (by the last author), to screen all patients for language problems in Mongolian and Chinese. The purpose of screening was to ensure participants were capable of comprehending task instructions in both languages. Participants performed tests of auditory comprehension and expression, including serial word recall, word repetition, object naming, colour

Table 2. *Results of language screening in Mongolian and Chinese (% correct).*

	WT	TGX	BG	XGL	SL	BY	LH	DY
Mongolian								
Repetition	80	80	90	90	80	70	80	100
Object naming	100	80	100	100	80	10	70	100
Color naming	100	100	100	100	100	10	100	100
Sound–object matching	100	100	100	100	100	90	100	100
Sound–picture matching	100	90	100	100	100	90	100	100
Serial recall	90	100	100	100	100	0	100	100
Command	100	100	100	100	100	80	90	100
Passage comprehension	70	70	90	100	100	80	90	100
Picture–picture matching	90	80	90	100	90	50	90	100
Word reading	100	90	100	100	100	na	90	100
Phrase reading	100	90	100	100	90	na	90	100
Passage reading	100	90	90	80	90	na	90	90
Chinese								
Repetition	70	80	90	100	80	100	80	100
Object naming	100	80	100	100	90	70	60	100
Color naming	100	100	100	100	100	70	100	100
Sound–object matching	100	100	100	100	100	70	100	100
Sound–picture matching	100	100	100	100	100	70	100	100
Serial recall	90	100	100	100	80	90	100	100
Command	90	100	100	100	100	70	80	100
Passage comprehension	80	60	90	100	100	70	80	100
Picture–picture matching	90	60	90	90	100	50	80	90
Word reading	100	na	100	100	100	na	90	100
Phrase reading	100	na	100	100	90	na	90	100
Passage reading	100	na	90	100	80	na	90	90

Note. na = data not available.

naming, spoken word picture matching, responding to command, short passage understanding, and picture–picture matching as well as reading of words, passages and phrases. Results from the test battery in both languages are summarised in Table 2. Although the number of items on each subtest was small (n = 3) it is notable that within-patient differences in language impairment in Chinese and Mongolian were minimal. Patients were excluded if they did not perform above 90% correct on spoken-word–picture-matching tasks in both languages. These criteria produced eight patients over a five-year period. It is important to note also that screening excluded a number of bilingual patients and so our results will be limited to understanding lexical processing in patients with preserved word comprehension in Mongolian and Chinese.

Experimental investigations

All patients were given four lexical processing tasks: oral reading, lexical decision, written-word–picture matching, and spoken-word–picture matching. Each task was presented on two different occasions separated by at least a week and items were presented in either Chinese or Mongolian with order counterbalanced across participants to minimise effects of expectation of a bilingual environment (Grosjean, 1998, 2001). Words were selected according to several criteria: concrete words that are acquired early, high imageability and high frequency. Stimuli were thus highly familiar to all patients in both languages premorbidly. Each task contained the same lexical items (n = 14), reported in the Appendix (“star”, “cat”, “eye”, “ship”, “table”, “ox”, “square”, “grandmother”, “skirt”, “egg”, “elephant”, “bowl”, “fish”, “woman”). Performance is summarised in Table 3.

ANOVA found a significant effect of task $F(1,7) = 2.90$, $p < .05$ but no effect of script and no interaction between script and task. Performance in oral reading was more impaired than all other tasks. Inspection of Table 3 shows that this effect was observed for a subset of patients only. For patients BG, XGL and DY, there was little

Table 3. *Results of experimental investigations in Mongolian and Chinese (% correct).*

	BG	XGL	DY	TGX	WT	SL	LH	BY
MONGOLIAN								
Oral reading	100	92	100	64	100	57	28	0
Lexical decision	100	100	100	71	100	100	50	0
Written–picture matching	100	100	85	85	85	92	78	0
Spoken–picture matching	100	100	100	71	92	100	78	35
CHINESE								
Oral reading	92	100	100	71	92	14	0	0
Lexical decision	100	100	100	100	100	100	71	0
Written–picture matching	100	100	100	85	57	50	78	0
Spoken–picture matching	100	100	100	85	71	57	78	35

impairment on any task in either script. For patient BY, performance on most tasks was at floor. Given our primary interests, we selected patients for further analysis only if there were differences in performance across scripts (patients TGX, WT, SL and LH). We then examined the effect of script on performance for each task on a case by case basis. It is common in cognitive neuropsychological studies of lexical processing in aphasia to report task effects for individual cases separately. One rationale for this procedure is that grouping patients can mask effects that are due to individual variability in brain damaged patients (Caramazza, 1984). Inspection of Table 3 shows a different pattern of effects across our selected patients. Therefore, the data will be reported and analysed separately for each case.

We used McNemar's (1947) test to compare performance across the same lexical items in both languages for all tasks. This statistic gives an estimate of the significance of the difference between two correlated proportions following a Chi-squared distribution (Ferguson, 1966). For patient TGX, reading was impaired in both languages and there was a significant effect of task on performance. However, there was no significant effect of script on any task. Lexical decision in Chinese was significantly better than oral reading $X^2(1) = 4.0$, $p < .05$. TGX produced semantic errors in oral reading of written words in Mongolian, e.g. "woman" read as "teacher" and in Chinese, e.g. "ox" read as "horse". For patient WT, there was a significant effect of script on written word comprehension which was worse in Chinese than Mongolian $X^2(1) = 4.1$, $p < .05$ but no effect of script on other tasks. There were also effects of task, i.e. written word comprehension in Chinese was worse than oral reading $X^2(1) = 5.0$, $p < .05$ and lexical decision $X^2(1) = 6.0$, $p < .05$. However, there were no significant effects of task on lexical processing in Mongolian. For patient SL, there were effects of script on performance in written word comprehension $X^2(1) = 6.0$, $p < .05$, spoken word comprehension $X^2(1) = 6.0$, $p < .05$ and oral reading $X^2(1) = 5.0$, $p < .05$. However, lexical decision was preserved in both languages. Similarly, for patient SL, there were significant effects of task in both languages. Oral reading in Mongolian was more impaired than lexical decision $X^2(1) = 6.0$, $p < .05$, and written word comprehension $X^2(1) = 5.0$, $p < .05$ and in Chinese spoken word comprehension $X^2(1) = 6.0$, $p < .05$ and oral reading were more impaired than lexical decision $X^2(1) = 11.0$, $p < .05$, written word comprehension $X^2(1) = 4.1$, $p < .05$ and spoken word comprehension $X^2(1) = 5.0$, $p < .05$. SL produced semantic errors in Mongolian and Chinese, and "translation errors", i.e. reading aloud a Chinese word with a Mongolian syllable. There was also an effect of script on performance for patient LH but in oral reading only $X^2(1) = 4.0$, $p < .05$. There were significant effects of task for LH in both languages. Oral reading in Mongolian was worse than written word comprehension $X^2(1) = 7.0$, $p < .05$ and spoken word comprehension $X^2(1) = 7.0$, $p < .05$, and oral reading in Chinese was worse than lexical decision $X^2(1) = 13.0$, $p < .05$, written word comprehension $X^2(1) = 11.0$, $p < .05$ and spoken word comprehension $X^2(1) = 11.00$, $p < .05$. LH produced semantic errors in Mongolian, e.g. "table" read as "stool" but not in Chinese. To summarise, there was an effect of script on written word comprehension for TGX, SL and LH with worse performance in Chinese (L2) than Mongolian (L1), and for two patients – SL and LH – type of script had an effect on oral reading which was more impaired for both in L2 than L1.

We performed further testing with SL and LH on all tasks one month after first testing. Our rationale for further testing was to test for patterns of alternating recovery. Performance at first testing (Time 1) and second testing (Time 2) is summarised in Table 4. For patient SL, oral reading in Mongolian improved significantly over time $X^2(1) = 6.0$, $p < .05$ as did oral reading in Chinese $X^2(1) = 8.0$, $p < .05$, written comprehension in Chinese

Table 4. *Results of experimental investigations for patients SL and LH (% correct).*

	SL Time 1	SL Time 2	LH Time 1	LH Time 2
Mongolian				
Reading	57	92	28	92
Lexical decision	100	100	50	100
Written–picture	92	100	78	100
Spoken–picture	100	100	78	100
Chinese				
Reading	14	85	0	42
Lexical decision	100	100	71	78
Written–picture	50	100	78	71
Spoken–picture	57	100	78	78

$X^2(1) = 7.0$, $p < .05$ and spoken word comprehension in Chinese $X^2(1) = 5.0$, $p < .05$. Thus, the effects of script on lexical processing at Time 1 were no longer significant at Time 2. For patient LH, oral reading in Mongolian also improved significantly $X^2(1) = 9.0$, $p < .05$ as did lexical decision in Mongolian $X^2(1) = 7.0$, $p < .05$ and oral reading in Chinese $X^2(1) = 6.0$, $p < .05$. There was no significant improvement to lexical decision, written word comprehension or spoken word comprehension in Chinese. However, the effect of script at Time 2 was significant for oral reading only $X^2(1) = 7.0$, $p < .05$. Thus, the effects of script on lexical processing observed on initial testing had a sustained impact on oral reading for patient LH only. We also observed that even though written and spoken comprehension of an item improved significantly in both languages, e.g. for patient SL the word "ship" and for LH the word "rectangle", oral reading of these items did not improve in either language during recovery.

Discussion

The results reveal new findings relevant to bilingual aphasia. For two patients, SL and LH, we found that performance on tests of written word processing was more impaired in L2 (Chinese) than L1 (Mongolian). These results are compatible with evidence of dissociations in language processing following brain damage that affects L2 more than L1 (Paradis, 1977; Masterson et al., 1985; Caramelli et al., 1994; Ferrand and Humphreys, 1996; Fabbro, 1999; Beland and Mimouni, 2001; Gollan and Kroll, 2001; Eng and Obler, 2002; Edmonds and Kiran, 2004; Raman and Weekes, 2005). The present results extend those observations to lexical processing in East-Asian languages. Despite our observations, the evidence for an effect of script on written language processing was relatively weak. This suggests to us that if extraneous factors including the age of acquisition, premorbid proficiency and familiarity with each language are well controlled, dissociations in written language processing following brain damage are limited.

Our results are more compatible with the view that differences in brain activation during written word identification in L1 and L2 result from variability in proficiency and familiarity with the script (Sugishita et al., 1992; Koyama et al., 1998; Chee et al., 2001). For example, in the study by Chen et al. (2002), adult biscriptal Putonghua speakers were asked to identify written words presented as characters or pinyin (alphabetic) symbols with the former activating frontal regions and the latter activating parietal regions. However, after initial instruction when learning to read in Chinese, pinyin symbols are rarely encountered in printed text. Thus, pinyin symbols are relatively unfamiliar to most adult Chinese speakers. We therefore advise caution when interpreting an effect of script on written word processing in acquired dyslexia in bilingual and biscriptal patients if differences in word age of acquisition, proficiency and familiarity are not adequately controlled.

Models of oral reading in Chinese can explain the pattern of impaired oral reading shown by patients TGX, SL and LH. Weekes, Chen and Yin (1997) argued that normal oral reading in Chinese can proceed via at least two pathways: a lexical semantic pathway that allows reading for meaning; and a non-semantic pathway linking input orthographic representations, i.e. strokes, radicals and characters to phonological representations, i.e. syllables and tones. This framework is illustrated in Figure 2 (see also Yin and Weekes, 2003). Impaired oral reading with preserved lexical decision can be explained by reduced access to mappings between orthographic and phonological representations or reduced activation in phonological representations themselves. That was the pattern shown by patients TGX and SL. Patient LH, who showed more severely impaired oral reading (at first testing), also showed impairment on lexical decision tasks in Chinese, which could result from reduced activation within orthographic representations. The framework in Figure 2 also explains impaired comprehension with spared reading in Chinese – the pattern shown by patient WT who was able to read characters aloud better than comprehend the same characters from printed or spoken word input. Damage to the lexical semantic pathway would result in impaired written word comprehension with intact oral reading. Preserved oral reading with impaired comprehension has been reported in other Chinese speakers. For example, Weekes et al. (1997) described an anomic Putonghua speaker who was unable to name pictured objects (depicted in the figure as a break between semantic representations and phonological output) but who could read the printed characters of the names perfectly. As anomia reflects the operation of

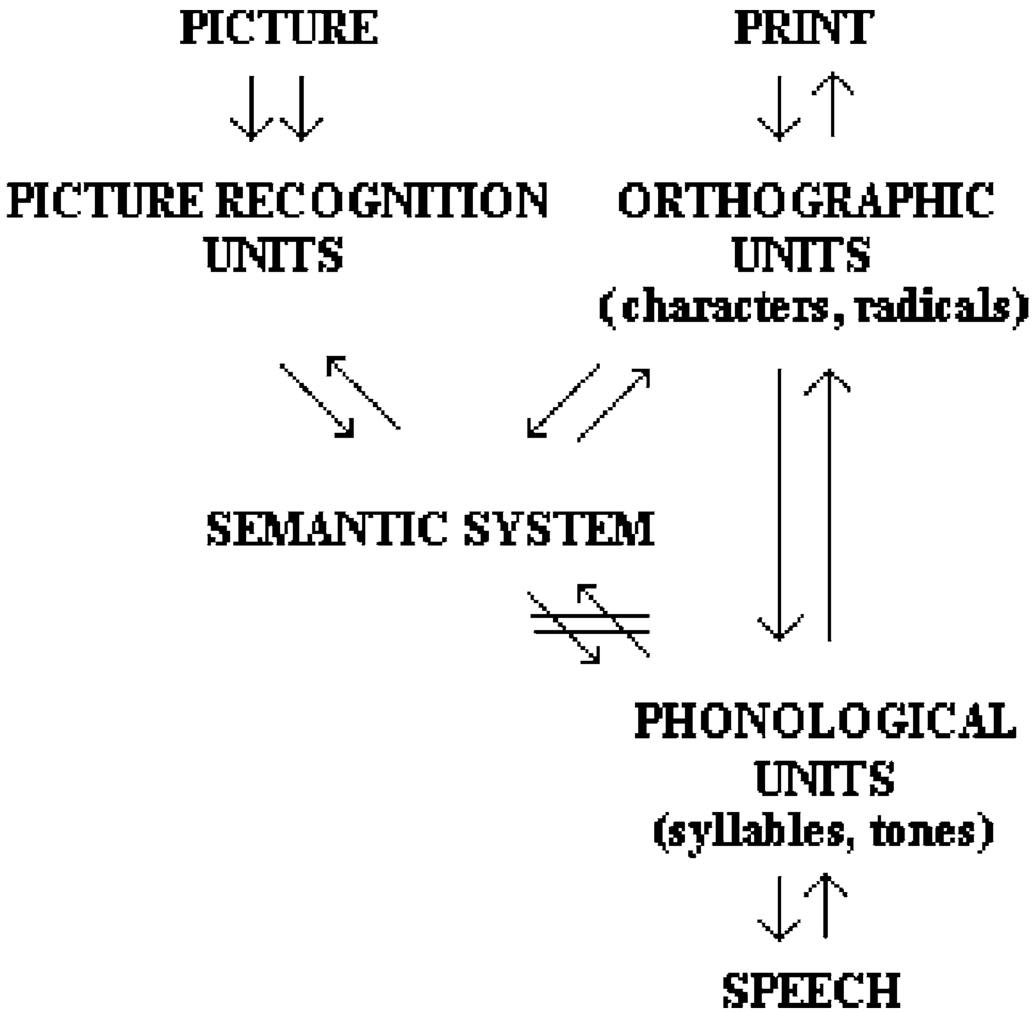


Figure 2. A functional model of reading and writing in Chinese. The arrows represent the direction of access from one level of representation to another during normal oral reading and writing to dictation. The broken arrow depicts the locus of damage for patients who have anomia without dyslexia.

the lexical semantic system in all models of language processing, ANOMIA WITHOUT DYSLEXIA in Chinese shows that even if a lexical semantic pathway is impaired it is possible to read aloud in Chinese. This dissociation has also been observed in other patients (Law, 2004; Han et al., 2005; Law, Wong and Chui, 2005; Bi et al., in press).

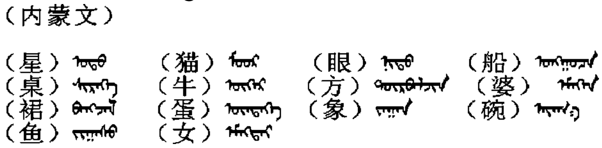
Although there is no model of oral reading in Mongolian, the framework in Figure 2 allows us to compare disorders of oral reading in Mongolian with Chinese. A written word form presented in either script for normal oral reading will activate an orthographic representation as well as lexical representations related by meaning via the lexical semantic pathway and by phonology in the non-semantic pathway. An oral reading response in either language could then be produced. However, errors will not be produced routinely during the oral reading of non-brain-damaged bilingual speakers. This is because input from the non-semantic pathway can inhibit semantically related (although incorrect) responses and input from the lexical semantic pathway can inhibit phonologically related errors. Damage to the non-semantic pathway however may result in over-reliance on lexical semantic reading, leading to semantic and cross-linguistic reading errors. Evidence of interactions between pathways in monolingual Chinese speakers is now plentiful. For example, Law (2004) reported that patient LKK produced more semantic errors in picture naming than reading, suggesting that semantic reading errors can be inhibited with sufficient input from the non-semantic reading pathway (see also Han et al., 2005; Bi et al., in press). In the case of biscriptal Chinese–Mongolian patients, damage to the non-semantic pathway will lead to reliance on lexical semantic reading resulting in the possibility of translation errors (see also Raman and Weekes, 2005). The framework in Figure 2 thus allows a division of labour in oral reading across scripts for bilingual speakers without the requirement of separate lexica for word forms in L1 (Mongolian) and L2 (Chinese). This is compatible with most contemporary models of bilingual word recognition (Dijkstra and van Heuven, 2002; Kroll and Dijkstra, 2002; Brysbaert and Dijkstra, 2006).

In sum, we found evidence of bilingual aphasia in Mongolian–Chinese speaking patients recovering from stroke. Ours is the first reported investigation of impaired language processing in Mongolian and the first report of bilingual aphasia and acquired dyslexia in Mongolian–Chinese speakers. The patterns of performance reported are compatible with cognitive models that assume oral reading in the less dominant language can be selectively inhibited after brain damage (Green, 2005). Our conclusion is that oral reading of familiar words in Mongolian and Chinese does not require independent cognitive systems or separate brain regions.

Appendix . *Items used in experimental investigations*

English-Chinese	
Star	星
Cat	猫
Eye	眼
Ship	船
Table	桌
Ox	牛
Square	方
Grandmother	婆
Skirt	裙
Egg	蛋
Elephant	象
Bowl	碗
Fish	鱼
Woman	女

Chinese-Mongolian
（内蒙文）



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