
Developmental Ideophonetic Dyslexia: Challenging Issues in Learning Chinese Language

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Developmental dyslexia does not only occur in languages based on alphabetical systems. The belief that it is a rare literacy disorder among Chinese speakers, and that reading and spelling difficulties in Chinese are mainly due to visuo-perceptual factors, is incorrect. Current research and practice have shown otherwise (Allen and Ingulsrud, 1995; Leong, 1997; Pope, 1982).

Although the extent of these difficulties is not yet known, reading and writing problems in Chinese have been reported in research studies for some time (Butler, 1976; Pope, 1982). Chinese children with hyperactivity and symptoms similar to minimal brain dysfunction or other learning disorders have also been reported (Pope, 1979). Developmental dyslexia is a language-based disorder with difficulties in recognizing symbol-sound correspondence (phonological processing) and word structure (morphological processing) when learning to read alphabetical languages (Chia, 1999; Leong, 1997). While the challenges of learning to read and write Chinese are different from those of western languages, the neurological basis of developmental dyslexia that affects the processing of alphabetical systems (e.g. English or German) affects some Chinese children, albeit in different ways (Leong, 1997).

The Structure of Written Chinese

Chinese has a logographic writing system in which written symbols or characters known as *hanzi* represent lexical morphemes. Most *hanzi* are character compounds consisting of two or more semantically related characters, each of which represents an independent meaning. For instance, the character compounds 电视 (television), 电梯 (elevator), 电话 (telephone), and 电影 (movie) share the same *hanzi* 电 (*dian*) which means "electric," relating them semantically. The meaning of the whole compound can be readily understood by combining the meanings of the two ideographic *hanzi*. However, the relationship between the meaning of a character compound and its component *hanzi* is not always this regular.

Unlike in alphabetical languages, there are virtually no sound-based relationships between the written and spoken forms of Chinese. Although *hanzi*

has a phonetic component, the spoken language (*hanyu*) has changed over the centuries, erasing most relationships between *hanzi* and *hanyu*. In order to be able to read and write, the student must memorize each *hanzi*.

Specific Challenges in Learning *Hanzi*

Specific reading and writing problems in Chinese can be identified in the following areas (Chia and Ching, 1999):

- There are Chinese characters that look very much alike, differing only in very small details. For instance, 大 (*da*) which means "big" closely resembles 太 (*tai*) as in 太长 "too long" and 太热 "too hot." These ideophonetic *hanzi* present problems to Chinese children who have difficulty distinguishing details. Hence, when reading or writing, a child may misread or misspell a given *hanzi*.
- The same *hanzi* may be read differently and have different meanings in different contexts, as in 银行 (*yin hang*) which means "bank" and 流行 (*liu xing*) which means "fashionable." Although the second *hanzi* 行 is the same for both character compounds, it is read as *hang* in 银行 "bank" and as *xing* in 流行 "fashionable."
- An ideophonetic *hanzi* with a single pronunciation can have several different meanings, and each meaning has to be deduced from its context. For instance, 下雨 (*xia yu*) means "downpour" or "rain," while 下班 (*xia ban*) means "off from work." Some other examples are 下车 (*xia che*) which means "to alight from a vehicle," 下课 (*xia ke*) which means "class dismissal," and 下午 (*xia wu*) which means "afternoon."
- Chinese is also a tonal language. *Hanyu* (spoken Chinese) includes four tones which are represented in *hanzi* with four diacritical marks. This adds another layer of complexity to the learning of *hanzi*, for by changing the tone, the meaning of the character is also changed. In oral reading, therefore, a mispronunciation of the tone for a particular *hanzi* changes its meaning. For example, 妈 (*ma*) means "mother," 麻 (*ma*) means "numb," 马 (*ma*) means "horse," and 骂 (*ma*) means "to scold."
- Different ideophonetic *hanzi* with different meanings may have the same pronunciation using the same tone. For instance, the *hanzi* pronounced "sha" can be written in several forms: 沙 "sand," 杀 "to kill," or 鲨 "shark." Children who spell poorly may substitute one *hanzi* for another of the same tone.
- The inclusion of semantic or phonetic radicals is another complexity of *hanzi*. These radicals may be written either vertically or horizontally. For example, the vertical semantic radical ("of the ear") can be found either to the right or left of a *hanzi*,

although it is mostly found on the left. A misspelled radical may also produce a nonexistent or pseudo-*hanzi*. For example, 𠃉 is a misspelled form of 𠃊 that has no meaning. Although this problem is not as common as in alphabetical languages, radicals create an opportunity for reversals in vertical or horizontal dimensions.

- The writing of *hanzi* also requires correct sequencing of the pen strokes. These strokes must be written in a prescribed order so that the total configuration is formed correctly and recognizably. Therefore handwriting may present difficulties both in the control of the strokes and in their sequencing.

Obviously, *hanzi* provides many challenges to the learner, and the problems of reading and writing in Chinese are quite similar to those encountered by poor or disabled readers of English. As though to acknowledge the real difficulties encountered by many learners, some 3000 of the most commonly used *hanzi* have been modified and simplified to fewer strokes of the pen. For instance, the old *hanzi* 國 (*guo*) has twelve strokes, while its new form 国 has seven. While these modifications have assisted in the teaching and learning of *hanzi*, they have not solved the problems of all learners.

Romanization of Hanyu

Another modification in the teaching of written Chinese has been the introduction of *hanyu pinyin*, the romanization of Chinese characters. The origin of *hanyu pinyin* can be traced back to the 1958 Committee for Reform of the Chinese Written Language. Its goal was to enable every Chinese native to speak a standard language understood by all, in spite of the many dialects in spoken Chinese (Allen and Ingulsrud, 1995). It was also intended to enable more Chinese to become literate. Mastering *hanzi* was so difficult that it generally took many years to become literate. As a result of this long process, literacy had been largely confined to the ruling elite, as only they had the time and money for extended study.

Hanyu pinyin was not introduced as a substitute for *hanzi*, but rather as a pedagogical method like the audiolingual method of teaching English to the non-native speaker. Its goal in China was to enable learners to speak better Mandarin in a shorter period of time, and to provide a transition to traditional *hanzi*. Beginning last year, the Singapore Ministry of Education has required every primary school to teach Chinese using *hanyu pinyin* in the first term of primary 1. Chinese characters are introduced much later.

Linguists at Taiwan's Academia Sinica have developed a system similar to *hanyu pinyin*, known as *tongyong pinyin* (Goh, 2000). These two systems are about

85% compatible. The difference is in the romanization of a few basic sounds in the Chinese phonetic system of *bo-po-mo-fo* notations as well as some compound sounds. For instance, the "q" sound in *hanyu pinyin* is represented by "ci" in *tongyong pinyin*, and the "x" sound of *hanyu pinyin* is written as "s" (see table below). Besides some differences in phonetic representation, *tongyong pinyin* also uses many words from Taiwanese dialects.

Table: Examples of Differences (Goh, 2000)

English	<i>Hanyu Pinyin</i>	<i>Tongyong Pinyin</i>
Small	Xiao	Siao
Middle	Zhong	Jhong
Bridge	Qiao	Ciao
Female	Nu	Nyu
Wind	Feng	Fong

No matter which romanization system is used, one might expect learning issues common to other alphabetical systems to arise. Particularly noteworthy is the use of *hanyu pinyin* or *tongyong pinyin* among Chinese children who come from English-speaking backgrounds. With the phonological awareness they ought to have acquired when learning to read and write English, romanized Chinese writing would seem to be a very helpful tool. Actually, these children often find learning to read and write Chinese very tough, but the use of a Chinese dictionary written in *hanyu pinyin* provides them with a clear advantage. However, such transfer of learning can present problems as they encounter confusion over the pronunciation of some letter sounds. For example, instead of pronouncing the letter "x" as /ks/, the most likely Chinese pronunciation is /xi/; the letter "b" should be pronounced /bo/ in spoken Chinese, and so on.

Confusion between the English and Chinese phonetic systems can also occur when Chinese children learn to read and write English. I once taught English to a Taiwanese child who was familiar with *tongyong pinyin*. When I asked him to write "a new car" from dictation, he wrote "er niu ka" (which literally means "two cow card") using his knowledge of *tongyong pinyin*.

Morphological Analysis

Both simplified ideophonetic *hanzi* and *hanyu pinyin* (or *tongyong pinyin*) have been helpful for those learning to read and write Chinese. The morphological analysis of *hanzi* is another useful tool, especially when teaching older children.

The morphological analysis of *hanzi* requires a focus on the internal structure of individual *hanzi* characters. Nearly 90% of the Chinese characters are composed of components called radicals: a semantic

radical that gives a clue to meaning, and a phonetic radical that gives a clue to pronunciation (Hoosain, 1991). A radical may be a free character or it might be bound to a character occurring only within an ideographic *hanzi*. The radical 阝 can be to the left or right (e.g. can be to the left of a *hanzi* 陳 or to the right of another *hanzi* 那); it may be above or below (e.g. the radical 冫 can be above 吊 or below 告), or it may be within or outside a *hanzi* (as in 回).

A metacognitive strategy, based on rules and close inspection, can be of assistance to some students when learning to recognize and interpret radicals within individual *hanzi*. For instance, the *hanzi* 媽 (*ma*), which means “mother,” contains the *nu* radical. The semantic radical 女 (*nu*), which means “female,” is also a *hanzi*. On the other hand, the 馬 (*ma*) radical is also a *hanzi*, but it does not contribute to the meaning of the entire character; it offers its sound “*ma*.” 馬 (*ma*) in this character is a phonetic radical. In most cases a radical offers a basis for inferring the meaning of an ideophonetic *hanzi*.

Radicals, however, are not uniformly reliable guides to meaning. The system of Chinese writing has changed over centuries, with the inevitable result that there are irregular *hanzi* whose meanings are unrelated to radicals. In regular cases, the meaning relationship between the radical and the *hanzi* is called “transparent”; in irregular cases, it can be called “opaque” (Flores d’ Arcais, 1992; T’sou, 1981). It is much easier to figure out the meaning of a *hanzi* with a morphologically transparent radical. For example, the *hanzi* 燭 (*zhu*), which means “candle” contains the semantic radical 火 (*huo*), which means “to fire.” 燭 (*zhu*) is easier to analyze than the morphologically opaque *hanzi* 錯 (*cuo*), which means “mistake.” 錯 (*cuo*) contains the semantic radical 金 (*jin*) which means “metal”; it contributes nothing to the meaning of the entire character.

A Concluding Thought

Clearly, the complexities of written Chinese provide ample opportunity for neurological inefficiencies, found in developmental dyslexia, to interfere with efficient acquisition of reading and writing. Learning inefficiencies similar to those found among learners of Western language systems have been observed and documented. The description and discussion of developmental dyslexia in ideophonetic Chinese writing has just begun. Studies focusing on the basic mechanisms of reading and writing difficulties in learning Chinese are needed. Are these mechanisms the same as those that hamper learning among Western students? Is developmental ideophonetic dyslexia fundamentally the same as the developmental dyslexia long studied in relation to alphabet-based languages? How does developmental dyslexia manifest across cultures and written language systems?

In addition to the need for well-designed research studies to address these questions, there is also a need for thoughtful and complete case studies focusing on individual learners of written Chinese. Such case studies would add to the body of literature documenting learning differences and would provide fertile ground for the discussion and development of appropriate remedial techniques.

References

- Allen, K. & Ingulsrud, J. (1995). Alphabetic biliteracy among children in China. In M. Khoo, J.I. Lee, & A. Lim (Eds.), *Literacy and biliteracy in Asia: Problems and issues in the next decade* (pp. 63–80). Singapore: National Book Development Council of Singapore and the Society for Reading and Literacy.
- Butler, S.R. (1976). Reading problems of Chinese children. In L. Tarnopol and M. Tarnopol (Eds.), *Reading disabilities: An international perspective*. Baltimore, MD: University Park Press.
- Chia, K.H. (1999). Teaching dyslexics phonemic awareness. *SRL News Magazine*, 11(1), 13–14.
- Chia, K.H., & Ching, S.K. (1999). *Hanzi, hanyu pinyin and developmental ideophonetic (Chinese) dyslexia*. *SRL News Magazine*, 11(2), 13–15.
- Flores d’Arcais, G.B. (1992). Graphemic, phonological, and activation processes during the recognition of Chinese characters. In H.C. Chen & O.J.L. Tzeng (Eds.), *Language processing in Chinese* (pp. 37–66). Amsterdam: Elsevier Press.
- Goh, S.N. (2000). Row over Taiwan plan to romanise Chinese. *The Straits Times*, October 11, 2000.
- Hoosain, R. (1991). *Psycholinguistic implications for linguistic relativity: A core study of Chinese*. Hillsdale, NJ: Erlbaum.
- Leong, C.K. (1997). Paradigmatic analyses of Chinese word reading: Research findings and classroom practices. In C.K. Leong & R. Joshi (Eds.), *Cross-language studies of learning to read and spell: Phonological and orthographic processing* (pp. 379–417). Dordrecht Kluwer Academic Press.
- Pope, L. (1979). The schools of China. *The Sciences*, 19, 26.
- Pope, L. (1982). Reading instruction in modern China. *The Reading Teacher*, 35(6), 688–694.
- T’sou, B.K.Y. (1981). A sociolinguistic analysis of the logographic writing system of Chinese. *Journal of Chinese Linguistics*, 9, 1–17.

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