7

Cold Character Reading: A Chinese Literacy Strategy

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Abstract

Cold Character Reading (CCR) is a recent development in teaching K-12 Chinese as a Second Language (CSL). Developed by Waltz (2015), and now in use in a growing number of CSL classrooms, CCR is designed to establish student proficiency in reading Chinese character texts at the beginning through early intermediate levels. The approach relies on first developing strong sound-meaning connections of words and phrases by means of focused input a variety of contexts. When learners show evidence of relatively automatic auditory comprehension, the teacher leads the class in reading aloud longer texts, generally stories, including frequent use of the words and phrases heard and recognized as a result of the aural input step. Students are normally observed to progress from whole language comprehension of the text towards recognition of individual Chinese characters and join in reading aloud at their own pace of recognition. After whole-class, teacher-supported reading aloud, students demonstrate growing recognition of these words in new contexts. This report gives an overview of the process of CCR, noting similarities with and differences from other literacy approaches and research in CSL, and suggests possible theoretical support for CCR practices and current, mostly anecdotal reports about CCR student outcomes. The article concludes with a list of areas for research related to CCR.

Keywords: Chinese language teaching, Chinese literacy development, TPRS

Introduction

The belief that Chinese is the hardest language in the world is pervasive in the United States (an unfortunately common belief noted by Everson, 1994). Perhaps a

more accurate way to describe the situation is that the linguistic distance between English and Chinese is greater than that between English and languages with many cognates, and so there is less transfer from L1 English to L2 Chinese than to languages with many cognates shared with English. Since Chinese does not use the same Roman alphabet in its character script, reading Chinese character texts requires more instructional time to reach advanced levels of literacy. According to Jackson and Malone (2009), Chinese is among several languages expected to take State Department employees two full years in very intensive language study, about four times as long as for Western European languages (cited in Everson, 2011).

Learning to read Chinese character texts is a key aspect of the challenge of Chinese language learning for those whose first language is English (Hayden, 2007). Referring to languages with writing systems other than the Roman alphabet, Everson (2011) notes,

> If these languages are ever to take their place as more commonly taught languages in world languages education, it will be essential that we come to understand how these languages are mastered by students of different ages, who come from different literacy backgrounds, and who learn them in a variety of different learning settings. (p. 250)

However, how most effectively to address the needs of different learners as they begin to read Chinese texts has not yet reached consensus (Everson, 2011). Many instructors use character- and word-recognition activities as the basis for early literacy development, perhaps due to the importance of word recognition in text-level comprehension (Grabe, 2009). Students are expected to recognize words in isolation before attempting longer character texts. By contrast, Cold Character Reading (CCR) builds on aural comprehension of carefully designed discourse-length texts and strategic teacher support as a way for beginning readers of L2 Chinese to gain reading ability quickly. Single word recognition develops more implicitly, it is suggested, as a result of that process. CCR is a recently-developed classroom literacy strategy designed to make the reading of Chinese character texts more accessible by fast-tracking initial, functional reading ability for beginning-level readers of L2 Chinese.

Contemporary CSL literacy practices and research

There are some areas of difference and some areas of similarity between CCR and other literacy approaches. Very little current research has yet been applied to CCR due to its recent introduction in CSL. Let us first consider current scholarship in Chinese reading to inform our evaluation of CCR.

Everson (1994, 2016) has suggested a process-oriented approach to Chinese literacy. Rather than asking students to learn new words, their pinyin (Romanized, phonetic) spelling, and character forms all at once, he recommends first allowing students to read in pinyin, introducing the same language in characters without pinyin later. He also recommends allowing novice learners to learn Chinese characters as whole characters rather than stressing memory of character components, whether phonetic or semantic, finding that intermediate and

advanced students naturally develop component recognition. Packard (1990) found similar principles seemed to benefit college-aged beginning learners of Chinese. While research findings about benefits from delaying characters has recently been challenged by a study among middle school learners (Knell & West, 2017), Shen (2014) suggests that research evidence is strongly in favor of delaying characters. She observed, "[w]ith strongly developed phonological skills, students who come to the Chinese reading task will not have to dwell excessively on the graphic features of the characters" (p. 278).

Shen (2005, 2013) indicated that, for Chinese, comprehension of 98% of words is necessary for students to comprehend text without assistance from glossing or other clarification of meaning. That research confirms that findings by Hsueh-Chao and Nation (2000) about text comprehensibility in ESL also apply to L2 Chinese learning. Shen (2013) also notes that choral reading, in which the whole class reads a text aloud simultaneously, can serve to build sound and character connections.

Authentic texts, often defined as having been written by native speakers for native speaker audiences, are frequently treated as the priority for texts used in language teaching (ACTFL, 2016). However, Curtain, et al. (2016) note the appropriateness of Chinese teachers' creation of novice-level readings for their students. This recommendation that beginning readers benefit from texts designed for them may allow teachers to provide enjoyable, level-appropriate reading experiences for new readers of Chinese. In discussing the value of graded readers for L2 learners, Grabe (2009) noted that "one learns to read by reading (and by reading a lot)" (p. 328).

Although these scholars were not writing about CCR, many points of their work also lend support to aspects of CCR methodology, as the following section will point out. Research in Chinese classrooms in which CCR is the literacy approach will be necessary to understand CCR as an instructional technique and its potential to inform CSL education.

CCR process

CCR was developed for the needs of non-native learners of Chinese in their early years of Chinese study. The expected age of students may range from elementary school through adults. Success with this approach has been reported anecdotally by teachers of a wide range of student ages in online Chinese teacher discussion forums such as the Facebook group CI Chinese (Teaching towards proficiency with TPRS) (n.d.). Such collaboration among K-12 educators through online networking can be an important means of professional development and pedagogical innovation (Wesely, 2013). To this point, online resources and networking have been important in introducing CCR to Chinese language teachers, in addition to a manual written for practitioners, *TPRS with Chinese Characteristics*, by Terry Waltz (2015).

CCR is typically employed with students in beginning levels of Chinese (Waltz, 2015). Perhaps these students could be considered Novice through early Intermediate stages of language proficiency based on ACTFL guidelines. The

learners are initially entirely unfamiliar with Chinese language aurally and have not looked at Chinese characters with the intention of interpreting their meaning before. Because CCR has so far been most widely used in the United States, learners may be expected to come mainly from English language backgrounds.

As Terry Waltz (2015) describes, she originally developed Cold Character Reading (CCR) in 2011 as a Chinese language adaptation to reading instruction via Teaching Proficiency through Reading and Storytelling (TPRS®) "[TPRS] focuses on whole-language activities such as listening to, acting out, reading, writing, retelling, and elaborating stories told using the (simplified) target language" (Lichtman, 2013, p. 97). The general sequence of instruction in TPRS focuses on student comprehension of aural input with interaction, followed by reading activities, and then repeating that cycle (TPRS Books, 2017). Chinese TPRS also follows this sequence of instruction, though reading may proceed in a variety of ways. CCR is one way to introduce characters through contextualized, supported reading. CCR is therefore a means of adapting the reading step of TPRS to the special features of Chinese orthography in reading instruction (Waltz, 2015).

Step 1: Prerequisite-auditory comprehension

Prior to any introduction of Chinese characters, the teacher first spends one to three class periods with a focus on auditory input (Waltz, 2015). The teacher may introduce two to four phrases as guide words for aural input and interaction with the whole class. The focus is on depth of comprehension within communicative contexts rather than single-item recognition of vocabulary. The teacher indicates the meaning of words and phrases by introducing them in pinyin next to their English meaning, showing them on the board or projector in view of all students. As the new words are included in questions and answers, the teacher pauses, and points to the pinyin and English as they are spoken to clarify the link of sound to meaning. The teacher carefully observes students and paces slowly enough to allow processing time for auditory comprehension. The teacher also may use gestures, body language, pictures, and realia to help establish meaning. Pinyin is shown without any Chinese characters at this step.

The teacher's aim at this stage is to engage the class in hearing and responding to the new language within meaningful, enjoyable contexts, in what could be described as a type of input flooding (with the intention to link sound to meaning, not to draw attention to language forms). The teacher guides students in whole-group interaction. The goal is providing auditory input in the form of many questions that encourage responses from students according to their level of language development. That input may take the form of questions about the students' real-life experiences and perspectives, or may draw on their imaginations and involve hypothetical or student-created details. The teacher may also rephrase and restate students' responses and periodically retell the details of the discussion before taking a new line of questioning. Often, a simple story develops as the teacher shapes the nature of the classroom discourse, limiting how many new words and phrases are introduced, yet keeping a meaningful context for the discussion. Students may respond nonverbally, with single words, phrases, or full sentences,

naturally allowing differentiation to each learner's needs and language development. Through this auditory input step, new words are heard and understood repeatedly in meaningful contexts, perhaps with a frequency as high as one hundred or more times in an hour (Riggs, 2016). Because of the variety of contexts included in this auditory input, however, this level of repetition is aimed not to be boring or overly obvious to the learners. For example, the teacher uses a variety of unpredictable questions that elicit a variety of types of answers. Some questions check for student comprehension, while other questions seek the students' creative suggestions to advance the story. Their ideas are incorporated into the developing narrative, which can foster a sense of ownership and interest by class members (TPRS Books, 2017).

Informal assessment, such as spoken questions from the teacher which receive quick, confident answers, confirms that students comprehend the new Chinese that they hear and are then ready to begin reading those new words and phrases in Chinese character texts. After the teacher sees evidence that adequate auditory comprehension has developed, the next step is reading paragraph- and discourse-length texts created by the teacher or supplied in a curriculum designed with CCR as the instructional approach for literacy. With support from the teacher, these texts are made accessible to the students.

This initial step, with its use of pinyin, and the communicative context in which to hear and respond to vocabulary, shares much in common with those who advocate delaying character introduction until students have developed aural competence. While Packard (1990) and Everson (1994, 2016) were not referring to CCR in their writing, the principles they recommended do correspond in some respects to CCR practices. CCR likewise recommends that students first develop aural recognition while using pinyin for Chinese words, and only later (though perhaps only one or two hours of class later) begin to encounter Chinese characters for familiar words and phrases.

Step 2: Beginning to read

The class, led by the teacher, can then proceed to the step of reading aloud in unison. Choral reading has been shown to benefit Chinese literacy development (Shen, 2013). Students need some explanation of the process before beginning to read aloud as a group. The teacher may tell students that he or she will lead the class in reading aloud chorally including the new words and phrases they have been hearing in whole-class discussion. The students follow along visually as the teacher reads aloud and points at each character. As students begin to recognize words themselves, they should join the teacher in reading aloud. The teacher reads less as the students progress, filling in vocally as needed. While vocabulary items and sentence patterns will be familiar to students from the input flood phase, CCR text is not merely a repeat of auditory input, but contains unpredictable details. CCR texts are necessarily prepared by teachers or from published materials made for CCR, since reading materials designed for textbooks or authentic materials designed for native speakers do not include the level of repeated exposure to limited numbers of new words and phrases. Often, such texts are prepared as parallel stories to a story previously co-created with the class (Waltz, 2015).

The teacher shows a limited amount of text, approximately one sentence at a time. Ideally, in early experiences with CCR, the text is accompanied by pictures to support comprehension. During a first-ever CCR experience, the teacher slowly reads the first sentence aloud while pointing at each character. The teacher may ask at the end of that sentence, "那是什么意思？" ("What does that mean?") to seek to assure the students that they have understood the meaning of the Chinese text just read. The teacher clarifies in the event that students state any unexpected meanings. However, the teacher is already quite sure at this point that students understand aural Chinese from formative assessments during previous instructional time. By including students in the reading aloud, the teacher responds to the class to guide the pace, not proceeding too quickly. A pace significantly slower than the teacher's own natural pace of reading aloud is necessary. Some pausing after phrases and sentences can be helpful to allow students to process the meaning of the text. Appendix A includes links to videos of high school students in my classes using CCR to illustrate these techniques.

The reading material is generally in a narrative format that contains many exposures to a rather limited number of new characters. For example, the CCR reader *Giuseppe xiang chi pisa* (Giuseppe Feels Like Eating Pizza) contains 19 unique Chinese characters, but is over 400 characters in length (Waltz, 2017). See Appendix B for a sample from a longer CCR text authored by me and a link to the full reading (Neubauer, 2015). During initial reading aloud, little to no attention is drawn to character components and their meanings, though those may be noted in later encounters with these words.

Teachers using CCR often report that it builds students' sense of confidence that they are able to associate sound and meaning with characters, especially in the very first few times reading together (Wyatt, 2016). Asking students to gloss the meaning of Chinese sentences into English may strengthen their own recognition of their success in a process similar to that noted by Kerr (2014) and Cook (2010) in own-language use in foreign language classes. Successful reading comprehension of level-appropriate texts benefits their language development (Curtain et al., 2016) and, it may be surmised, also promotes learners' motivation, as Grabe (2009) noted repeatedly about successful reading experiences providing motivation for more reading. Initial success with character texts encourages an attitude that keeps students watching and listening, perhaps entering a state of concentration similar to that of "flow" (Nakamura & Csikszentmihalyi, 2014). Egbert (2004), in a study that found that conditions of flow could exist in a foreign language classroom environment, noted that in flow, conditions include "(a) a perceived balance between skills and challenge, (b) opportunities for intense concentration, (c) clear task goals, (d) feedback that one is succeeding at the task, (e) a sense of control" (p. 550). Egbert also pointed out that though flow is experienced by individuals, "it does not occur in isolation," but "may even depend on other participants in the environment" (p. 551). Because of the nature of choral reading in CCR, including a high level of focus, a mix of challenge (from unfamiliar characters) and skill (from auditory comprehension and predictive ability), a clear goal to read and understand, student-paced choral reading, and immediate feedback from the

teacher about correctly matching sound and meaning to Chinese character texts, many of the conditions of flow may be met. According to Grabe, "If such a flow experience comes from reading, then students are more likely to become lifelong readers" (2009, p. 181). If so, it seems reasonable to expect that successful CCR reading, especially if flow conditions are met, would motivate students to continue to read in Chinese.

Often, some students will begin reading aloud with the teacher after only a few sentences of their first CCR experience. Teachers in the aforementioned Facebook group have reported that some students express surprise in a positive way that they were able to understand the meaning of the text despite having no preliminary work with characters. Studies of Chinese character recognition have found that the ability to read characters aloud also strongly suggests comprehension of meaning as well:

> …when learners could identify the meaning of a Chinese two-character word, there was about a 90% likelihood that they also could pronounce it, suggesting that the retrieval of meaning for these learners is not exclusively a visual process, and that learners use their spoken language resources to anchor the meaning of the characters. (Everson, 2011, p. 256)

This study suggests that students who read aloud chorally may also comprehend the meaning of the text in CCR.

Step 3: Additional reading

Following initial reading aloud as a whole class, students are given additional, more independent opportunities to re-read or to read text containing the same words, thereby reinforcing their new reading skills. Repeated exposure to comprehension-level reading material helps to develop students' long-term retention (Curtain et al., 2016; Everson, 1994). TPRS includes a wide variety of reading activities, and Chinese TPRS which includes CCR likewise involves reading in various formats as follow-up to initial, choral reading as a class (Waltz, 2015). These reading activities may include partner and individual reading and responses to reading.

My own motivation for pursuing research on the process and effects of CCR stems from my previous experience as a high school classroom teacher in the United States. Because my level one classes were small (11-13 students), I was able to notice the progress of each student in classes from 2014-2017, when I taught at a high school. Anecdotally, I observed that, before I implemented CCR and among my level two students who were taught level one class by another teacher with another literacy approach, about 20-30% of students in a given class became strong readers of Chinese character texts containing previously taught language (a higher percentage of students did well in the short term on reading quizzes and tests, but lost quite a lot of that reading ability after the next unit of study began). After implementing CCR as a regular instructional practice, I observed approximately 70-80% of my students demonstrate the ability to read aloud and comprehend Chinese character texts containing previously taught language. That

is, in class, students were able to read aloud and report the meaning through acting, drawing, and/or English translation of the meaning, with few points of confusion or error, including words from previous units of study. The remaining 20-30% of students in CCR classes showed reading ability that was still generally stronger than students who were weaker readers in my prior approaches to literacy instruction. Some students remarked on their perceptions of their success with Chinese reading, usually to their own pleasant surprise, and sometimes entirely against their expectations prior to beginning Chinese classes. While these numbers are merely an estimate, noted anecdotally and not through rigorous study, it is hoped that formal studies in CCR classrooms will find more scientifically-derived data on the development of reading proficiency and other student outcomes.

Text considerations

CCR texts typically feature a story plot with some type of conflict followed by resolution. The texts are rather long, including perhaps 400 or more characters (Waltz, 2015). New vocabulary repeats a number of times within the text as can be seen in the sample reading in Appendix B. Though new words appear many times in the text, the text is communicative, not formulaic, nor entirely predictable. The text generally is shown in a large font size and with space between words, as well as color coding to represent tones (Waltz, 2015). These text enhancements, it is suggested, make the character text more accessible at early stages of literacy (Sharwood Smith, 1993). Sharwood Smith's input enhancement generally is intended to encourage noticing elements in the input, though CCR text enhancements are treated as a way to make character texts easier to read rather than to draw attention to specific aspects of the text. CCR texts are "purpose-written" and "have zero unknowns" (Waltz, 2015, p. 94). That is, students are very familiar with all words included in the texts by sound. With beginning students in their first few months of Chinese study, CCR texts may also include some words in English, such as proper names of people, places, and products. The syntactic structure of the sentences, however, is entirely Chinese.

Theoretical support for CCR

More rigorous research about CCR will be necessary to trace literacy development, more of the possible motivational benefits of the approach, and to provide thorough analysis of student outcomes. Future research needs to include specific measures of whole text reading comprehension, transfer of orthographic awareness to new contexts, and character recognition. Some such research is in progress, particularly regarding frequency effects (Riggs, personal communication, 2017).

The development of theoretical frameworks for what happens in CCR is also an area for future scholarship. The following theoretical perspectives are offered as preliminary points of support for CCR.

Comprehension-based instruction

A number of scholars have emphasized the necessity of input and comprehension in second language development (for example, Bleyhl, 2009; Krashen, 2009; Long,

M.H., 2016; VanPatten, 2009, 2017; Verspoor, Lowie, & De Bot, 2009). VanPatten, in discussing pedagogy, noted "acquisition's dependence on input and a primary focus on meaning" (2009, p. 61). Verspoor et al. defined input as "language that encodes meaning to which the learner attends for its propositional content" (p. 62), with a necessity for processing the connections of language forms and their meaning during comprehension. They observed that "input is needed as a resource for both maintenance and growth" in second language development (p. 71). Bleyhl likewise affirmed the necessity of input, along with learners' interest, in language instruction:

> …one can experience that the more instruction is based on the presentation of interesting content, the more language is authentic and embedded in relevant contexts, the more students are stimulated to roam the world of the new language according to their interests… the faster, the more sustained that particular foreign language is learned and the better the results are. (p. 152)

The Comprehension Hypothesis (Krashen, 2009) suggests that language is acquired by comprehending messages in the language, both heard and read. It suggests that by comprehending auditory messages in Chinese, the students develop a mental representation of the language (something perhaps comparable to the Chinese term语言感, or "language sense"); that is, they develop an intuitive recognition of correct sentence structure, word usage, and grammatical features of Chinese without direct instruction on these points being necessary.

As CCR texts are read in class, the students reportedly can draw on that acquired "sense" of the language that was developed through auditory comprehension. Waltz, the developer of CCR, says that this develops through auditory input and calls it the students' "Chinese voice" (2015, p. 94). Their familiarity with the phonemes and prosody of Chinese assists them in estimating and predicting what words appear in the text, because the reading material draws heavily on language made familiar through auditory input. Teachers using CCR report confirmation of this concept. This anecdotal evidence will, of course, require more rigorous examination before such statements can be considered verified or more widely generalizable about CCR.

Cognitive load

Cognitive load is the concept that there are limits on how much can be mentally processed at one time. A related concept, working memory, can be considered a temporary, cognitive "workspace" that varies among individuals and circumstances (Hayden, 2007, p. 204). Since working memory is limited, the cognitive load on a learner will affect their learning and result in variations to the effectiveness of instruction (Lee & Kalyuga, 2011). These factors apply in important ways to reading Chinese. A CSL student needs to develop connections between new sounds and their meanings, and then to recognize those sound-meaning chunks in their written forms (Everson, 2011). If students are expected simultaneously to recognize the pinyin spelling, the meaning, and the characters associated with new words, the cognitive load may become too burdensome (Everson, 1994, 2016). In CCR, students readily comprehend heard language prior to reading it, which may

reduce some aspects of the cognitive processing load during reading. Shen (2014) referred to lower cognitive load by learning in pinyin before the introduction of characters. Whether or not evidence that CCR also provides a lower cognitive load, and therefore more working memory for text comprehension and perhaps retention of character recognition, is a topic for future research.

An additional possible way in which CCR may reduce cognitive load on students as they process texts is the support of the teacher and classmates that occurs during choral reading of a CCR text. Those students who do not yet recognize a character or word can listen for the support of the voices of classmates who have begun to recognize characters, or the teacher's filling in vocally to help students match the sound and meaning to its visual representation in characters. On the topic of working memory, Hayden (2007) conducted an eye-tracking study to look for evidence of overload as non-native Chinese learners read extended texts by comparing to native Chinese readers and their eye movements. Gazing for longer times was determined to reveal heavier cognitive load, perhaps involving working memory allocation to retrieve meaning and/or sound information about the character in view. "Failure to come up with either meaning or sound or both may cause a bottleneck in comprehension processes delaying the 'click of comprehension' that signals to the reader that they have comprehended something" (Hayden, 2007, p. 214). Relating Hayden's study to CCR may provide explanation about whole class, choral reading. In CCR, any students' need for such clarification is immediately met by hearing classmates or the teacher and looking at the text as it is read aloud. This may mean that working memory is less taxed in CCR than in processes of reading without the involvement of the teacher and classmates. Hayden also observed that "over time and with relatively constant exposure and use, lower-level processing [i.e., word recognition and basic phrase, clause, and sentence comprehension] does seem to give way potentially allowing for higher-level processing [i.e., overall text comprehension] to take place more efficiently" (Hayden, 2007, p. 204). Making working memory available for lower and higher-level processing during reading is a benefit in building a text model of comprehension (Grabe, 2009). Based on that principle, it seems reasonable that the support of the class in choral reading may increase attention made available for reading comprehension, making the experience of reading more about enjoying the message in the text rather than only decoding word by word. Future studies involving eye tracking (as in Hayden's 2007 study) and other means of evaluating working memory, and applied to students trained in literacy through CCR, may be of insight about how CCR affects cognitive load.

Frequency effects

The texts used in CCR are intentionally highly repetitive, yet not formulaic. CCR texts also include plenty of exposures to characters, but limit how many unique new characters are included in each reading experience. The texts also include length and a level of detail that are intended to cause the reader to rely on reading comprehension, not memorized aural input, to interpret correctly (Waltz, 2015). Grabe (2009) noted that in deeper orthographies (that is, writing systems

that do not correspond one-to-one to the sounds of the language), frequency effects are "much stronger" in reading than for more phonetically written languages (p. 119). The frequency of characters that readers encounter has been found to aid L2 Chinese learners in developing character recognition (Wang, Perfetti, & Liu, 2003). This suggests that the frequency of characters within each CCR text may assist students in gaining recognition of those characters in other contexts.

Own-language use

In CCR texts, there is some use of English proper names of people, places, and objects, which could give those who criticize any use of the students' first language in the language classroom a reason to critique CCR. Many CSL teachers, for example, prefer providing only Chinese character-written proper names, even if the Chinese characters are a transliteration of a name in the students' L1. My anecdotal observations are that students read more fluently when proper nouns, such as names of people and places, are in English as compared with all proper names only in Chinese. Furthermore, Cook (2010), Kerr (2014), and VanPatten (2017) note that use of L1 in world language classes is a legitimate way to clarify meaning of L2 words and phrases (as noted by Riggs, 2016). With careful use, L1 can enhance rather than hinder L2 acquisition. Therefore, some inclusion of students' own language in CCR texts may be a benefit rather than a hindrance. Everson (1994) also noted that students' comprehension increased when topics in reading were culturally more familiar to students before introducing more uniquely Chinese cultural topics. By using familiar places, people, and products within reading material, it may be that students likewise find the text more comprehensible.

Predictive reading skills

CCR depends first on developing auditory comprehension not only for single words or short phrases, but also for typical collocations and sentences. Predictive reading ability based on this familiarity may in part explain the strategy. Research related to predictive reading ability and how familiar collocations inform reading abilities (Otten & Van Berkum, 2008; Vilkaitė & Schmitt, 2017) may help to explain how learners appear to predict upcoming words as they read character texts aloud. In such studies, prior discourse appeared to prime readers to predict specific words in reading, based on the meaning of that discourse (Otten & Van Berkum, 2008). In Vilkaitė and Schmitt's study (2017), advanced non-native speakers of English read familiar collocations more quickly than control phrases, suggesting that encountering collocations promoted reading speed. Studies of CCR-trained readers of Chinese would add valuable information about whether such processes develop even among L2 Chinese readers at Novice and Intermediate levels.

Limitations and future research

Some differences between CCR and other Chinese literacy instruction already have been noted. I will now explore some of these areas further, and suggest avenues for future research related to CCR.

CSL instruction typically includes direct instruction about character components and their meaning (Long, H., 2017). Often, this instruction on

character forms accompanies the introduction of new vocabulary. Much recent scholarship suggests that beginning readers benefit from ability to recognize semantic and phonetic character components (Everson, 2011). However, CCR instruction downplays explicit instruction about characters, particularly during initial introduction to those characters. Therefore, research exploring when and how CCR-trained students develop such orthographic awareness will be valuable. If a teacher wishes to assist students in drawing connections between character components and their meaning in different words, then brief, contextualized mention of such character forms can be made after the initial reading aloud (Waltz, 2015). Waltz advocated delaying this explicit instruction until the teacher sees evidence that students have developed familiarity with those characters. At that point, brief, direct instruction from the teacher informs students about phonetic or semantic details of the components. The difference in timing and context for how attention is focused on character components may be the key distinction. CCR introduces whole-language comprehension, followed by evidence of individual character recognition and character component knowledge (Riggs, 2016). Whether or not the mostly-implicit process of CCR develops students' orthographic awareness to the same or better levels than explicit instruction about character forms remains to be seen. A conjecture could be that, for many students, CCR produces initial, implicit comprehension that leads later to ability to recognize and then analyze forms, operating on a time line determined more by the students' own internal syllabus.

The specifics of how to design CCR texts, and how to train Chinese language teachers to prepare such texts for use in their own classrooms, are areas for further study and exploration. As mentioned before, CCR texts involve repeated use of a limited number of new words and phrases, as well as ample exposure to words and phrases that have been used in previous texts. Texts for CCR must be predictable enough for learners to follow easily, yet unpredictable enough that learners must actively process the meaning of each item in the reading without relying on familiar sentences or storylines. Because there is a limited number of published CCR texts now available, teachers who wish to use CCR may end up developing many of the texts read with their classes. However, exact principles for ensuring high-quality CCR texts have not yet been thoroughly delineated. Therefore, it is uncertain how teacher-produced reading material may best be designed and how burdensome the writing of CCR texts may be for teachers. Quasi-experimental studies with students using texts with different numbers of exposure to new characters and varying uses of textual enhancements may assist in the design of future CCR-compatible materials, both commercially published and created by classroom teachers. Studies of resulting levels of student reading comprehension can inform CCR practice and curricular development.

A concern often mentioned by K-12 Chinese language teachers is how to incorporate character handwriting into Chinese language instruction. In more traditional classes, students often repeatedly hand-write new characters, becoming familiar with components and stroke order as the character is initially introduced.

In fact, developing excellent character handwriting and corresponding dispositions in the learner is sometimes what Chinese literacy is considered to be (Bell, 1995).

For teachers who value handwriting as an aid to memory and perhaps as a way to inculcate Chinese cultural values, CCR may appear to neglect this aspect of Chinese language instruction. The priority of students' character handwriting skills, including correct stroke order, is a somewhat controversial topic in current Chinese language teaching (Shen, 2014). While typically a priority in Chinese instruction for native speakers, some CSL teachers believe that stroke order is a lesser priority in the limited time available in most CSL programs. Some teachers recommend allowing students to use tools, such as character memory cards or previously read stories, to assist in recalling proper character forms when called upon to write characters by hand (Waltz, 2015).

Should handwriting and accuracy of stroke order be major priorities in CSL programs? There is research that suggests that writing by hand increases retention of Chinese characters for native speaking children (Tan, Spinks, Eden, Perfetti, & Siok, 2005). However, Allen (2008) disagrees with a heavy emphasis on handwriting for beginning-level students, and Shen (2014) encourages some use of pinyin in student writing to make character handwriting "no longer a discrete memorization chore" (p. 281). Therefore, there is scholarly support for downplaying character handwriting in CSL. However, there is yet no research comparing students trained by repeatedly writing characters by hand with students who were taught through CCR and then wrote by hand without significant, direct training in stroke order. Also, there are yet no longitudinal studies to show if CCR promotes adequate retention of spontaneous handwriting over time to meet learning goals for CSL programs. The legibility of character form based on CCR's generally less explicit character handwriting instruction and practice is another consideration for which future research may find answers. If less explicit handwriting typically included with CCR literacy practices turn out not to meet CSL program goals for students' handwriting abilities, handwriting practice could be provided as a supplemental aspect of instruction. To align with CCR principles, such handwriting practice would seem more appropriate after students have begun to recognize those characters in reading.

Another area for research includes how text features and uses of CCR texts can best support different kinds of learners. Differentiating lessons so that all students are supported in comprehension while advanced students are given appropriate levels of additional challenge is an area for refinement in teacher training related to CCR. For example, students with Korean or Japanese L1 literacy read languages that have cognates with Chinese and are generally already trained in reading at least some Chinese characters. Such learners have not generally been considered as the main audience for CCR instruction, and such L1 backgrounds may benefit from adaptations to the process. Research with such learners may yield insights about how CCR may be adapted to different L1 backgrounds. Heritage Chinese learners generally have a much broader foundation of auditory comprehension than do beginning-level nonheritage learners, and this, too, could have implications for CCR classroom strategies. Assessments of literacy development among different

types of learners, including those with learning disabilities, may also yield benefits for adapting CCR to different student needs.

Some additional considerations for research in CCR include investigating aspects of the student experience such as enjoyment of reading and motivation to continue with Chinese classes. Recruitment of new students to Chinese classes can be a concern for Chinese teachers when the language is offered as an elective, competing in some ways for enrollment numbers with languages perceived to be easier. If CCR does cause more learners to enjoy the initial, more challenging phase of Chinese language acquisition and literacy development, recruitment to Chinese programs may proceed through word of mouth.

Conclusion

CCR shows preliminary successes in developing CSL students' literacy (Riggs, 2016; Wyatt, 2016). CCR methodology merits further investigation so that recommendations may be given to teachers of Chinese, helping them to guide their students as they develop character literacy. Literacy practices in CSL "have yet to find consensus among their practitioners" (Everson, 2011, p. 250). The CCR approach, with its dependence on auditory comprehension and implicit development of orthographic awareness, adds to the dialogue among Chinese language scholars and instructors.

Acknowledgements

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Appendix A

CCR video examples

Neubauer, D. (2015, August 29). Beginning Chinese class – character reading [Video file]. Retrieved from https://youtu.be/0c0CFXIn5UI

Neubauer, D. (2016, October 15). Chinese Novice I & II first time reading characters [Video file]. Retrieved from https://youtu.be/RWTKLOM43wo

Neubauer, D. (2017, April 13). Chinese reading: Cold Character Reading with 3rd/4th year class [Video file]. Retrieved from https://youtu.be/HrIhIHmuyyc

Appendix B

Sample CCR Text (Neubauer, 2015)

These are the first 31 lines as representative of a 50-line narrative text shared at that link, which introduce three words (大 big，小 little, small，狗 dog) and reinforce several other words (猫 cat，看 sees, looks at，因为 because，所以 therefore). Translation provided for this article was not part of the student reading material.

1 有 一只 小 猫。There is a small cat. [alternatively, "kitten"]

2 小 猫 喜欢 吃 小 披萨。The small cat likes to eat small pizzas.

3 小 猫 不 喜欢 大 披萨，可是 小 猫 喜欢 吃 小小的 小 披萨。The little cat doesn't like big pizzas, but the little cat likes to eat very, very small, little pizzas.

4（很小 的 披萨！）Very small pizzas!

5 因为 小 猫 很小，所以 她 也 喜欢 小 披萨。 Because the little cat is small, so she also likes small pizzas.

6 小 猫 看，有 一只 大 狗！哎呀*!* The little cat looks, and there is a big dog!

7 大 狗 很大！可是，小 猫 很小！ The big dog is very big! But the little cat is very small!

8 大 狗 想要 吃 小 猫 吗？ Does the big dog want to eat the little cat?

9 小 猫 不 想要 大 狗 吃 她。The little cat does not want the big dog to eat her.

10 因为 小 猫 想 大 狗 要 吃 她，所以 小 猫 哭了。Because the little cat thinks the big dog wants to eat her, so the little cat cried.

11 大 狗 也 看了 小 猫。The big dog also looked at the little cat.

12 大 狗 想，"因为 小 猫 很小，所以 她 很好看！The big dog thought, "Because the little cat is very small, she is really good-looking!

13 我 很喜欢 她。我 也 想 她 很好看。I really like her. I also think she's really good-looking.

14 可是，小 猫 在 哭。But, the little cat is crying.

15 为什么 小 猫 哭了？ Why is the little cat crying?

16 我 不 要 小 猫 哭。"I don't want the little cat to cry."

17 所以，大 狗 去了 小 猫 那里。So, the big dog went over to the little cat.

18 小 猫 看了 大 狗。The little cat saw the big dog.

19 大 狗 也 看了 小猫。The big dog also saw the little cat.

20 小 猫 说，"大 狗，你好。你 好 吗？ The little cat said, "Big dog, hello. How are you?

21 你 在看 我。为什么 你 在看 我？ You are looking at me. Why are you looking at me?

22 是不是 因为 你 想要 吃 我？？ Is it because you want to eat me??

23 我 很小。你 很大。我 不 要 你 吃 我。"I'm very small. You're very big. I don't want you to eat me.

24 大 狗 说，"小 猫，你好！The big dog said, "Little cat, hello!

25 哎呀，我 不 想 吃 你！我 不 喜欢 吃 猫。 Oh no, I don't want to eat you! I don't like eating cats.

26 因为 我 想 你 很好看，所以 我 看了 你。 Because I think that you're very good-looking, so I looked at you.

27 你 很小，所以 我 想 你 很好看。 You're very small, so I think you're really good-looking.

28 我 喜欢 小 猫，可是 我 不 喜欢 吃 小 猫。I like small cats, but I don't like eating small cats.

29 我 不 是 '吃猫的 大 狗'。我 是 '喜欢猫的 狗'。" I'm not a cat-eating big dog. I'm a cat-liking big dog."

30 小 猫 说，"很好！我 喜欢 '喜欢小猫的 大 狗'。"The little cat said, "Great! I like big dogs who like little cats.

31 小 猫 不 哭了。她 好了，因为 大 狗 不 要 吃 她。The little cat didn't cry anymore. She was ok, because the big dog didn't want to eat her.