The Relationship between Vocabulary Learning Strategies and Vocabulary Knowledge among Tanzanian Learners of Chinese

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Abstract

This study investigates the relationship between the use of vocabulary learning strategies and vocabulary knowledge. The participants in the study were 39 first-year students who had been enrolled on a Chinese language course at the University of Dar es Salaam. Two measuring instruments were used to collect the data: a vocabulary test and a vocabulary learning strategies questionnaire consisting of strategy items and adapted from Schmitt's (1997) taxonomy of vocabulary learning strategies and from Shen's (2005) Character Learning Strategy Inventory questionnaire. The findings reveal that the participants actively used the vocabulary learning strategies. They also show that the participants preferred strategies specific for learning over certain common strategies. They also reveal that overall use of vocabulary learning strategies was positively related to the learners' vocabulary knowledge.

Key words: *Language learning strategies, Chinese language learning, Chinese vocabulary knowledge*

Introduction

The field of language learning strategies (LLS) has received considerable attention in SLA research. Researchers have gained insights into the relationship between the use of language learning strategies, language outcomes and situational and social factors such as setting, learning task and gender.

In spite of this development in research, the nature of a target language has not featured in the learning strategy research agenda. Most of the studies which have been done in this area have focused on the learning of Indo-European target languages, particularly English. Han (2014) notes that language learners develop preferences for language learning strategies so as to cope with the unique challenges involved in learning a certain language. This implies that the findings on the strategies used to learn target languages such as English and other Indo-European languages may not be generalizable to those used to learn a language like Chinese, which is fundamentally different from such languages. Unlike alphabetic written Indo-European languages, Chinese has many homophonous words as well as tones, and uses a logographic writing

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system. As Tavassoli (1999) argues, these linguistic differences have certain qualitative implications for the processing and representation of verbal information in memory and for the way in which words are organized in, and retrieved, from memory. It follows that these characteristics of Chinese may influence learners' choice of language learning strategies and determine how effective strategies can be on the overall learning process. Therefore, to be able to understand more the effectiveness of LLS on L2 learning, we need to understand the use and the relationship between strategy use and L2 proficiency in Chinese.

A survey of LLS research reveals that learners use LLS more in learning a target language's vocabulary than in learning other components of the target language. According to Schmitt (1997), there may be two reasons for this tendency: the discrete nature of vocabulary compared to other language areas and/or learners' awareness of the importance of vocabulary in learning a language. This study therefore explores the use of vocabulary learning strategies, a subgroup of general language learning strategies, in relation to the vocabulary knowledge of the learners of Chinese as a foreign language at the University of Dar es Salaam in Tanzania.

Literature Review

Strategies Use and Language Development

LLS can generally be defined as mental or physical activities which learners do in an attempt to master the target language. O'malley and Chamot (1990) argue that the role of learning strategies is to make explicit what may occur without the learner's awareness or may occur inefficiently during early stages of learning which, in language learning, involves selecting specific information of interest in the input, transferring selected input from working memory into long term memory for permanent storage, building internal connections between ideas contained in working memory, and searching for prior linguistic knowledge in long-term memory and transferring this knowledge to working memory.

SLA literature includes a number of factors which are believed to affect learners' use of LLS. Cultural/ethnic background, learners' level of language proficiency, motivation, learning style and gender have all been shown to have considerable influence on learners' use of different types of strategies (Deneme, 2010; Grainger, 2012; Javid, Al-thubaiti, & Uthman, 2013; Loh & Teo, 2017; Oxford, 1996; Rahimi, Riazi, & Saif, 2008). According to Ellis (1994), LLS act as a

mediator between a set of factors which includes learner differences and situational and social factors on the one hand and learning outcomes on the other. Individual learners' differences together with situational and social factor variables determine learners' choice of strategies, which then influence two aspects of learning, namely the rate of acquisition and the ultimate level of achievement. Likewise, the success that learners experience and the level of L2 proficiency can have effects on their choice of strategies.

Most studies on LLS have applied grouping variables based on cultural/ethnic background, gender and language proficiency differences (Božinović & Sindik, 2011; Catalan, 2003; Han, 2014; Javid et al., 2013). Research indicates that learners from certain cultural/ethnic backgrounds are predisposed to use certain types of strategies. This, according to Oxford (1996), is because language learning is fully situated within a given cultural context hence various cultural beliefs, perceptions, and values significantly affect the strategies students adopt.

However, it is important to point out that the effect of a variable on the use of a strategy needs to be interpreted within the context of other variables. For instance, although high language proficiency is associated with the use of large number of LLS, O'malley and Chamot (1990) found evidence for this among participants in a foreign language context as opposed to those in second language contexts. In addition, Ehrman, Leaver and Oxford (2003) found out that less able learners often use strategies in a random, unconnected, and uncontrolled manner, which may result to the use of more strategies than effective learners may. This suggests that strategy use is ultimately tied to individual differences, learning styles and contextual factors and therefore, these factors should be taken into account when interpreting findings.

The majority of the mentioned strategies studies are based on the learning of English. This suggests that the nature of the target language has not received sufficient attention as a factor determining the choice of strategies. The current study investigated strategies use in the learning of Chinese vocabulary. In addition to uncover strategy use in learning Chinese, this study may allow, for a firm understanding of how other variables like ethnic background and context relate to choice of language learning strategies.

Difference between Chinese and Alphabetic Languages

There is a considerable difference between Chinese and alphabetically written languages. Perhaps the most noticeable feature that sets Chinese apart from alphabetic languages can be seen in phonological and orthographic forms. Chinese uses logographic writing system which has characters as its basic units. These characters usually represent morphemes, which, in most cases, are coextensive with syllables. However, there are as many as 7000 characters but only 1200 syllables; apparently, more than five morphemes or characters may share one syllable. This makes the relationship between orthography and phonology more opaque as it leads to the existence of many homophones. In contrast, the basic units of writing in alphabetic languages are graphemes. In many of these languages, there is a high correspondence between a grapheme and a phoneme, hence once the word is pronounced; its spelling can be correctly identified.

At the level of vocabulary, the absence of morphophonemic or paradigmatic alternation as well as grammatical agreement in the Chinese language distinguishes it from many other languages. This means that words in Chinese do not inflect to match grammatical values such as number and gender of other words in the sentence or to show the relationship between the sentence and events in the real world. In addition, the absence of morphological markers coupled with the strong correspondence between a written character, a morpheme and a syllable means that there is no sharp distinction between the root, lexeme and a word in Chinese. In fact, according to Packard (2000), to many ordinary Chinese, the intuitive notion of a word is 'zi' 字 which refers to a morpheme in spoken language as well as a written character. Although the vast majority of these morphemes have lexical properties, most of them are bound roots; that is, they are not syntactically free. The Chinese word distinct from 'zi' is called 'ci' 词. This is a technical term known mostly by language and linguistic experts. The 'ci' word is the smallest independently usable part of the Chinese language. According to Shi (2000), the majority of *ci* (80%) in modern Chinese, as opposed to old Chinese are dissyllabic. Therefore, the majority of modern Chinese words are compounds made up of two *zi.*

These characteristics of Chinese may have some implication on its learning. Research in behavioural studies reveals that language processing in Chinese is largely based on visual stimuli as opposed to phonological stimuli in alphabetic written languages (Chen & Yuen,

1991; Huang & Hanley, 1995; Lesch & Pollatsek, 1998; Tan et al., 2000). The possible reason for this tendency may be that it is more difficult to extract sound from the Chinese logographs than in alphabets. This is because the sound in Chinese is mapped at the syllable level as opposed to the phoneme level in alphabet languages. In addition, the presence of the phonetic component in the character does not provide much clue to the sound of a character forming a word. According to Fernandes et al. (2013), only 38% of the phonetic components convey consistent pronunciation information in the Chinese character. These differences in language processing mechanisms may lead to differences in the use of learning strategies and language learning preference in general.

Strategy research in CSL/CFL is still in its infancy. The review of strategy research in Chinese has revealed that the focus of LLS research has mostly been on the learning of Chinese characters, reading, speaking and listening. As vocabulary in Chinese is usually associated with character learning, little attention has been paid on vocabulary learning strategies (VLS). Research in this area is often integrated into Chinese character research. However, as highlighted previously, the majority of Chinese words are made of two characters; and if the assumption that the orthographic structure of a single Chinese character is responsible for the right hemisphere dominance as opposed to the left hemisphere of the double characters' words (Tan et al., 2000) holds, we may be able to assume differential learning between single character words and double words based on the differences in processing requirements. Therefore, although research on character learning may offer insights into the strategies used in Chinese vocabulary learning, their scope may be limited to single character words. For a complete account of VLS in learning Chinese, a study that includes both single and double character words is important.

There are few studies on Chinese VLS. One of these studies is the classroom-based case study that investigated VLS used by nine learners of Chinese as a foreign language in the USA (Winke and Abbuhl, 2007). The authors formulated a vocabulary learning strategy taxonomy based on Long's (1996) Interaction Hypothesis. Strategies were classified into three groups: input based strategies, characterized by the learner's attempt to seek input on the target language; output based strategies, involving learner producing the L2 in either speech or writing; and cognition based strategies, involving learner-internal cognitive activities. According to Winke

and Abbuhl (2007), learners indicated that all three types of strategies were fundamental to their studies. In output based strategies, the study found that the strategies used involve making and using flash cards to learn Chinese vocabulary, repeating words (oral rehearsal) in class, and writing tones on words spelled in Pinyin which, according to the authors, is a form of written rehearsal. Winke and Abbuhl (2007) concluded that the students realized that the Chinese logographic script and the tone system made unique demands on their memories; they thus made conscious efforts using output-based strategies to automate both the written and oral production of Chinese words.

Another study that has provided valuable insights into VLS use in learning Chinese is the study which compared the use of VLS by English-speaking learners of foreign languages at the University of Auburn in the USA (Han, 2014). The aim of this study, among others, was to uncover the underlying factors for the use of foreign language vocabulary learning strategies, taking both alphabet-based languages and character-based languages into consideration; describing VLS use and examining the differences in frequency of VLS use between the two language groups. The target languages in the alphabet-based group were Spanish, French, German and Italian whereas in the character based languages there were two languages: Chinese and Japanese.

The finding shows that, on average, participants learning character based languages used VLS more often than those learning alphabet based languages. The study also shows that learners of character-based languages used visualization strategies and writing repeatedly significantly more often than learners of alphabetic languages. In contrast, learners of the alphabetic target languages were frequently found to connect new (cognate or similar) words to their first languages. According to the researcher, these differences can be attributed to the fact that learning characters does require more visual efforts on one hand and perceived similarity between L1 and L2 in the alphabet-based language on the other.

Although the above mentioned strategies studies provide preliminary insights into the difference in the use of strategies between Chinese, a language that uses the logographic writing system, and languages that use alphabets, the study which explores the relationship between strategies use and vocabulary is desirable in order to

further our understanding of the use of strategies in learning Chinese vocabulary.

Methodology

Participants

The participants of the study were 39 Tanzanian undergraduate students at the University of Dar es Salaam who were enrolled on the Chinese Mandarin for beginners II course in 2017/18 academic year. This course is equivalent to Chinese proficiency level two on the HSK scale. During their first semester of the academic year, the participants had taken the Chinese Mandarin for beginners I course. This means they already had some introduction to the Chinese language. Two instruments were administered among the participants; these were a vocabulary learning strategies questionnaire and a vocabulary test. These instruments are described in more detail in the following section.

Instruments

The Vocabulary Learning Strategy Questionnaire

Data on vocabulary learning in this study was collected by the vocabulary learning strategy questionnaire with strategy items adapted from the Vocabulary Learning Strategy Inventory (Schmitt, 1997). This vocabulary learning strategy typology is, probably, currently the most comprehensive typology in vocabulary subgroup of learning strategies. Most studies on the use of vocabulary learning strategies have employed this typology. Strategy items in the questionnaire were classified following Oxford's (1990) classification system. However, recognizing the limitation of this classification in categorizing vocabulary-specific strategies, Schmitt introduced a new category, which he labelled *determination strategies*. This refers to strategies used by learners in discovering the meaning of a new word without involving other people's expertise. The resulting taxonomy of vocabulary learning strategies consisted of five basic categories of strategies: cognitive, memory, metacognitive, social and determination strategies. These are further divided, based on the distinction suggested by Cook and Mayer (1983) and Nation (1990), into discovery strategies, which involve activities used for the initial discovery of a word's meaning and consolidation strategies, which are responsible for remembering the word once it has been introduced.

The taxonomy was adapted to fit the target language and the learning context. In addition, some specific strategies that relate to the learning of Chinese vocabulary derived from Character Learning

Strategy Inventory questionnaire (Shen, 2005) were added to the inventory. The modified inventory consists of 34 items on a 5-points Likert-type scale ranging from never or almost never to always or almost always. To make sure that the questionnaire was clearly understood, strategy statements were translated into the Kiswahili language.

Vocabulary Test

The vocabulary test was designed to measure vocabulary knowledge of learners on Chinese single character words and compound character words. The test consisted of three parts. The first part contained two tasks which required a passive recognition and recalling of word forms and meaning. The first task had ten sentences, each with a missing word. The learner was required to choose an appropriate form of a word presented in pairs consisting of the target word and a distracter. The target words comprised of single-character and compound-character high frequency words. The distracters were either characters, words or a combination of characters that resembles in some way the form of the target word like in the single word-character 走 '*go*', which is presented with a non-word character 老 as a distracter or a double-character word 牛奶 '*milk*' presented with a combination of two characters 件仍, which do not constitute a word. The second task had ten sentences, each with a missing word. The learner was presented with ten words from which to choose the correct words and fill in the blanks in the provided sentences.

The second part consisted of two vocabulary productive tasks. The first task contained ten gap-fill sentences. With the context provided by the sentence, the target words were primed with Pinyin forms to make sure of the target word rather than an alternative, which might make sense to the learner. The second task in this part was a translation task consisting of ten Kiswahili words to be translated into Chinese.

The third part of the test was designed to test the depth of learners' Chinese vocabulary knowledge. It was designed in the form of Word Association Format (WAT) (Read, 1993). In this test, learners were presented with a stimulus/target word together with a group of other words, some of which are related to the stimulus word and some are not. Their task was to identify related words or associates. Two main types of relationships associates involved were paradigmatic and syntagmatic relationships.

There were seven target words in this task, each with two associate words intended to tap the paradigmatic and syntagmatic relations of the target word. Each target word in both kinds of relationships was presented with two distracters. For example, in the paradigmatic relation, the Chinese word **注意** which means pay *attention to* has **小心** '*be careful*' as a near synonym associate but not **看见** '*see*' or 请求 '*request*'. In the syntagmatic relation, it has **必须**'*have to/must*' as its collocate/colligate but not **超市** '*market*' or 计划 '*project*'.

To make sure the test was comprehensible to the learners and that the knowledge of other words in sentences does not interfere with the task completion, the sentences and structures in both tasks were taken from HSK 1, HSK 2 and HSK 3 past papers.

Procedure

Data collection took place at the University of Dar es Salaam at the end of the second semester of the 2017/18 academic year. The instructor of the Chinese intermediate class agreed to have students complete and take the test in the class. Thirty nine (39) participants agreed to complete the vocabulary learning strategy questionnaire and vocabulary test. After collection, data were coded and entered into an SPSS (Statistical Package for the Social Sciences) file for analysis.

Results and Discussion

Vocabulary Learning Strategy Use

The median and interquartile range of the strategy items listed in the vocabulary learning strategy questionnaire were compared and classified into more preferred strategies and less preferred strategies. The median splits sample data into the lower half and the upper half, thus indicating the proportion of individuals in the lower and upper halves of the median value. Interquartile range is the difference between the 3rd quartile and the 1st quartile (the middle 50% of the data). It is a measure of how the middle 50% of the data is spread around the median. A large interquartile range indicates that data are more spread, and vice versa. Strategies with the median of 4 and above and with the interquartile range of 1 were considered as preferred strategies, while strategies with the median of 4 and below and with the interquartile range of 1 or 2 were considered as less preferred strategies. Table 1 presents a summary of the participants' strategy use.

Table 1: Summary of Strategies Use

C.Strategy	Median	I.Range	Mean	Std. Deviation	D.Strategy	Median	I.Range	Mean	Std. Deviation
CSTRG16	5.00	1.00	4.5128	.64367	DSTRG1	3.00	2.00	3.4872	1.16691
CSTRG17	5.00	1.00	4.4103	.71517	DSTRG2	3.00	2.00	3.1026	1.33367
CSTRG18	4.00	2.00	3.5385	1.31482	DSTRG3	4.00	1.00	3.5641	1.09532
CSTRG19	4.00	2.00	3.5641	1.29361	DSTRG4	4.00	2.00	3.7179	1.25549
CSTRG20	4.00	1.00	3.5128	1.12090	DSTRG5	5.00	1.00	4.4872	.85446
CSTRG21	4.00	2.00	3.5641	1.16517	DSTRG6	4.00	2.00	3.5385	1.37355
CSTRG22	4.00	2.00	3.8974	1.04617	DSTRG7	3.00	2.00	3.1026	1.29361
CSTRG23	4.00	2.00	3.8462	1.18185	DSTRG8	4.00	2.00	3.9487	1.21284
CSTRG24	4.00	2.00	3.8205	1.25387	DSTRG9	4.00	2.00	4.0513	1.02466
CSTRG25	4.00	2.00	3.9744	1.11183	DSTRG10	4.00	2.00	3.7692	1.13466
CSTRG26	4.00	1.00	3.6410	1.06344	DSTRG11	4.00	2.00	4.0513	1.07480
CSTRG27	3.00	2.00	3.1026	1.39161	DSTRG12	5.00	1.00	4.3846	.84652
CSTRG28	5.00	1.00	4.4872	.88472	DSTRG13	5.00	1.00	4.2308	1.03775
CSTRG29	4.00	2.00	3.7436	1.42751	DSTRG14	4.00	2.00	3.9744	1.08790
CSTRG30	4.00	1.00	3.5385	1.18868	DSTRG15	4.00	2.00	3.3846	1.40704
CSTRG31	4.00	2.00	4.0256	1.13525					
CSTRG32	4.00	1.00	4.1538	1.08914					
CSTRG33	5.00	1.00	4.3333	.92717					
CSTRG34	2.00	4.00	2.7949	1.85216					

Note: CSTRG = Consolidating strategy
DSRTG = Discovery strategy

The table shows, with respect to discovery strategies, that using a dictionary (including phone apps and online dictionaries) to look up the meaning of a new word was the most preferred strategy. There may be two possible explanations for this. The first explanation relates to the deep-rooted notion among many language learners that learning a new word is to know the definition of a word in a dictionary. This may lead learners to direct their efforts in the use of dictionaries, which provide translations of words to learners' mother tongue or, in this case, English. The second possible explanation is that the participants of this study, being beginners, had not developed much Chinese language knowledge that could enable them to employ other strategies that require them to infer the meaning of the new words from the context. As a result, they rely on the use of dictionaries, which provide them with the meaning of the new vocabulary items in the language they already know.

The findings also show that strategies involving the orthographic features of the character/word were among the most preferred ones by the participants. These strategies involved observing a character carefully and paying attention to stroke order. The preference of using these strategies entails the importance of paying attention to orthographic features on the learning of the Chinese word, in particular the written form. These findings support research findings from behavioural studies which reveal that Chinese word processing relies more on visual than phonological processing of the language input (Chen & Yuen, 1991; Huang & Hanley, 1995; Lesch &

Pollatsek, 1998; Tan et al., 2000). Two possible reasons for this are the difficulty in extracting sound from the Chinese writing system and its associated unreliability of phonological mapping. This may have prompted learners to pay more attention to visual configurations of Chinese words.

On the uses of consolidating strategies, the findings show that most strategies used were what Winke and Abbuhl (2007) labelled *output based strategies*. These were practising with others, using written and verbal repetition and taking notice. These are common strategies that many language learners use in different parts of the world. According to Schmitt (1997), students often resist giving them up to try other new strategies. Alternatively, it may suggest the possibility of strategies transferring from the previously learned languages to the learning of Chinese. Tanzania is a multilingual country with Kiswahili and English as official languages. To most learners, these languages are learned after the acquisition of ethnic mother tongues. This may affect the use of strategies in learning Chinese, which, in this case, comes as the learning of a third language. First, learners may have managed to figure out what strategies work best for them hence may consciously apply them to the learning of Chinese/vocabulary. Alternatively, most strategies may have been proceduralized through practice while learning previous language(s) and are invoked by working memory on learning a similar new task.

The Relationship between Vocabulary Learning Strategy Use and Vocabulary Knowledge

For the relationship between strategy use and vocabulary knowledge, a Canonical Correlation Analysis was conducted to evaluate the multivariate shared relationship between the variables. The predictor variables consist of vocabulary discovery and consolidating strategy categories and the criterion variables include single character and double character words scores. The analysis is summarized in Tables 2 and 3.

Table2: Descriptive Statistics of Single Character Words and Compound Character Words

Descriptive Statistics

	N	Range	Mean	Std. Deviation
SCW_SCORES	39	13.00	17.7692	3.60162
CCW_SCORES	39	20.00	14.7692	4.47485
Valid N (listwise)	39			

Note: SCW_SCORES = Single character word scores
CCW_SCORES = Double characters word scores

Table 2 shows descriptive statistics for the vocabulary knowledge variables. The results indicate that scores were relatively closer to the mean in single character words with the range of 13 and standard deviation of 3.60 compared to the range of 20 and standard deviation of 4.47 in double character words. Overall, the performance was relatively equal in single character words (M 17.7692) and double characters cores (M 14.7692)

Since the numbers of items were different in the discovery strategy and consolidating strategy categories, the mean of each group was calculated by dividing the sum of individual strategies means to the number of items in the respective category.

Table 3: Canonical Correlation of Strategies Use with Vocabulary Knowledge

Canonical Correlations

	Correlation	Eigenvalue	Wilks Statistic	F	Num D.F	Denom D.F.	Sig.
1	.466	.277	.751	2.694	4.000	70.000	*.038
2	.202	.042	.959	1.530	1.000	36.000	.224

H0 for Wilks test is that the correlations in the current and following rows are zero

* denote significance at p<.05

Table 3 presents the results of the CCA. The analysis yielded two functions with the squared canonical correlation of 0.22 and 0.04 for each successive function. Collectively, the full model was statically significant, Wilks' λ is .751, F (4, 70) = 2.694, ρ < .05. Since Wilks' λ represents the proportion of variance unexplained by the model, 1 minus Wilks' λ provides the proportion of variance explained by the full model (effect size). Thus, for the full model, the effect size was 0.249, which indicates the full model explained about 25% of variance shared between the two sets of variables. On the basis of

these results, the null hypothesis that there is no relationship between the variables is rejected. Thus, there is a relationship between vocabulary knowledge and vocabulary learning strategy use. This relationship is captured by the first canonical function (*Rc* .466) which explains 22% of variance within its function. Examining function 1 in Table 4.8, we note that the canonical weight shows that the criterion variable in this function has a relatively higher contribution from double character words scores (.614) than single character words scores (.456) while the predictor variable has a higher contribution from consolidating strategies (.717) and a secondary contribution from discovery strategies (.388).

This result shows that overall use of vocabulary learning strategies relates positively with the vocabulary knowledge of the learners of Chinese as a foreign language in Tanzania. The findings support the widely believed theoretical assumption that the more successful language learners use more language learning strategies (O'malley & Chamot, 1990; Selinker & Gass, 2008). The findings also support empirical evidence which has established a positive correlation between language learning strategies and language achievement (Wong & Nunan, 2011; Zhang, 2011). Furthermore, the results reveal that both discovery and consolidating strategies made a useful contribution to the relationship mentioned above. For language learning to take place, a learner must be able to encode the target language input and organize it into his or her cognitive system. This requires the interaction between target language input and a learner's cognition. The use of the language learning strategies maximizes the efficiency of this interaction by directing the selection of features of language input and their organization into a learner's cognitive system.

Although the study does not emphasize the causal relationship between the use of vocabulary learning strategies and vocabulary knowledge, this relationship may be implied from the findings. The results suggest that the use of vocabulary learning strategies help learners organize their learning and process language input, which facilitates the development of the knowledge of the target language vocabulary.

Conclusion

This study investigated the use of vocabulary learning strategies by learners of Chinese as a foreign language in Tanzania. The results indicate that the participants actively use vocabulary learning

strategies to learn Chinese vocabulary items. The results also reveal a positive relationship between vocabulary learning strategy use and vocabulary knowledge. This suggests that frequent use of vocabulary learning strategies contributes to the development of vocabulary knowledge among learners. This has exciting implications for second language learning. The integration of language learning strategies instruction into second language pedagogy will increase learners' awareness of the strategies and boost the overall language learning process.

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