

A cross-sectional investigation of the use of modal verbs in Chinese EFL learners' English writing

XIA GAO

Beihang University

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ABSTRACT: This study, based on a corpus of Chinese EFL learners' writing, has investigated their use of modal verbs at levels 1 to 7 according to China's Standards of English Language Ability (CSE). The results of quantitative and qualitative analyses indicate that: 1) Chinese EFL learners at CSE 1-7 levels use more modal verbs in writing than native learners in MICUSP; 2) they consistently overuse CAN, WILL and SHOULD whereas underuse WOULD in writing across levels; 3) salient forms and fundamental senses of modal verbs are the most recurrent in writing at CSE 1-3 levels and learners' use becomes more productive and variant at higher levels; and 4) form-function pairs seem to exist--modal verbs with the perfect aspect structure and their associated senses are rare in Chinese learners' writing. Cross-register variation and structure complexity may account for the absence of some modal verb forms in learners' writing.

Key words: Modal verbs, corpus, cross-sectional, academic writing, China's Standards of English Language Ability (CSE)

Una investigación transversal del uso de verbos modales en la escritura en inglés de los estudiantes chinos de inglés como lengua extranjera

RESUMEN: Este estudio, basado en un corpus de escritura de estudiantes de inglés como lengua extranjera, ha investigado el uso de verbos modales en los niveles 1 a 7 de acuerdo con los Estándares de China de Capacidad del Idioma Inglés (CSE). Los resultados de los análisis cuantitativos y cualitativos indican que: 1) los estudiantes chinos de inglés como lengua extranjera en los niveles 1-7 de CSE usan más verbos modales por escrito que los estudiantes nativos en MICUSP; 2) constantemente abusan de CAN, WILL y SHOULD, pero infrutilizan WOULD en su escritura de niveles cruzados; 3) las formas sobresalientes y los sentidos fundamentales de los verbos modales son los más recurrentes en la escritura en los niveles 1 a 3 de CSE y el uso de los estudiantes se vuelve más productivos y variables en los niveles superiores; y 4) los pares forma-significado parecen existir: los verbos modales con la estructura de aspecto perfecto y sus asociados sentidos son raros en la escritura de los estudiantes chinos de inglés. La variación de registros cruzados y la complejidad de la estructura pueden explicar la ausencia de algunas formas verbales modales en la escritura de los alumnos.

Palabras clave: verbos modales, corpus, transversal, escritura académica, los Estándares de China de Capacidad del Idioma Inglés (CSE)

1. INTRODUCTION

Modality expresses a writer's attitude, stance toward or judgment of the possibility or necessity of a proposition or situation at the sub-sentential, sentential, and discourse levels (Portner, 2009). "It operates in a great deal of everyday language-behavior" (Lyons, 1977, p. 849) with diverse grammatical and lexical means including adjectives, adverbs, modal verbs and periphrastic modals. Among them, modal verbs, a syntactically distinct class, are the most important owing to their high frequency and expressive force. The appropriate use of modal verbs is critical to successful writing. Writers deploy modal verbs to add shades of meaning to the main verbs that follow them to adopt a position, convey attitude, and express a point of view. Such usage however constitutes a considerable learning problem for EFL learners (Aijmer, 2002; Elturki & Salsbury, 2016; Hinkel, 2009). Extensive research has been conducted comparing learners' use of modal verbs in writing with native speakers' (e.g., Fujimoto, 2019; Kim & Suh, 2014; McEnery & Kifle, 2002; Pemberton, 2020) to reveal patterns indigenous to specific learner groups. Few studies delve into learners' development of modality in terms of quality or across time. The present study intends to contribute to this line of research by investigating how Chinese EFL learners' use of modal verbs progresses with the improvement of proficiency and whether it diverges from native learners' use in the Michigan Corpus of Upper-level Student Papers (MICUSP) (Römer & Swales, 2010). Typical forms and senses of modal verbs employed by Chinese learners in writing at different levels are depicted and summarized. Hopefully, developmental patterns will be revealed.

2. STUDIES ON MODAL VERBS

Modal verbs, as a central formal resource to encode modal meanings, "have expressive power far beyond what their simple forms would suggest" (McDorman, 2020). One line of previous research conducts syntactic (Axel-Tober & Gergel, 2016; Huddleston & Pullum, 2002) or semantic analyses (Coates, 2014; Collins, 2009; Palmer, 2001) of modal verbs attempting to dispel the confusion about this complicated category. These studies shed light on the nature of modal verbs and advance our understanding of the distinction between literal and pragmatic meanings of modal verbs, their different values and types and unique structural-semantic distribution. In the past two decades volumes of corpus-based analyses have been conducted on the evolution or development of modal verbs based on diachronic corpora (e.g., Bowie & Aarts, 2013; Gotti, 2003; Leech, 2003) or the syntactic patterns, semantic senses and cross-register use variation on large general English corpora (e.g., Biber et al., 1999; Collins, 2009). The overall decline of modal use in spoken British English has been noted based on the investigation of changing usage of core modal verbs over the period 1960–1990 (Bowie & Aarts, 2013). To be more specific, the evanescing in the use of SHALL (Gotti, 2003) and the downward trend in the obligation sense of MUST (Leech, 2003) have been detected. Synchronic corpus-based studies demonstrate that "the use of specific modal exponents in discourse is highly variable and perhaps text/genre and context bound" (Knight, 2015, p. 25).

As a fundamental component of English learning, the use of modal verbs constitutes a focal concern in English textbooks but hardly ever receives the full recognition it deserves as the explanation for English verbs mainly concentrates on tense and aspect in most EFL textbooks (McDorman, 2020). Moreover, the polysemy, multi-functionality and uniqueness in the structural-semantic distribution of modal verbs pose a considerable learning problem to learners, whose L1 does not have modal verbs in particular. Extensive contrastive work has been done on the use of modal verbs in writing by learners from different cultural backgrounds such as Arab (Elturki & Salsbury, 2016), Chinese (Hyland & Milton, 1997; Ma & Lv, 2007; Xiao, 2017), Eritrean (McEnergy & Kifle, 2002), Japanese (Fujimoto, 2019; Pemberton, 2020), Korean (Kim & Suh, 2014), Macedonian (Mitkovska et al., 2012), Spanish (Carrió-Pastor, 2014), and Swedish (Aijmer, 2002). Learners' L1 and native culture (Aijmer, 2002; Gao, 2020), L2 proficiency (Elturki & Salsbury, 2016; Mitkovska et al., 2012), essay topics (Hinkel, 2009; Pemberton, 2020), and curriculum and teaching materials (McEnergy & Kifle, 2002; Pemberton, 2020) are reported to be factors impacting their use.

Previous studies mainly focus on intra-L1-group homogeneity. That is, to consider learners sharing the same L1 as a group and compare their use of modal verbs to native speakers'. Few studies attempt to track group development by investigating learners' use across proficiency levels. Moreover, existing research mainly calculates and compares the frequencies of modal verbs without further distinguishing the distribution of different forms or senses. Such practice may confound the data as both L1 and L2 studies demonstrate that it is specific senses or forms that learners acquire and use at different proficiency levels (e.g., O'Keeffe & Mark, 2017). Elturki & Salsbury (2016), Mitkovska et al. (2012), the English Grammar Profile (EGP) (O'Keeffe & Mark, 2017) and the CEFR-Japan Grammar Profile (CEFR-JGP) (Ishii, 2018) are some exceptions. Elturki and Salsbury (2016) explore the development of English modality in Arab learners' writing at six self-assigned levels without explaining what each level represents and the findings therefore are incomparable. Mitkovska et al. (2012) investigate Macedonian learners' use of obligation modal verbs at CEFR A1 to B2 levels and focus on the corresponding use context of English and Macedonian modal verbs and learners' most common errors. The CEFR-JGP lists a very general categorization of modal verb forms and their frequencies in Japanese learners' writing at each CEFR level. The EGP is the most comprehensive to elaborate forms and senses of 239 modality items in EFL learners' writing across six CEFR levels considering learners from various backgrounds as a whole. To advance our understanding of learners' modality development, more longitudinal or quasi-longitudinal studies need to be conducted to testify if there exist L1-specific development features or inter-L1-group heterogeneity, i.e., differences in modality development between learners of different L1s.

The present study attempts to further this line of research by investigating the development of Chinese learners' use of modal verbs in writing across proficiency levels. Writing samples by Chinese middle school and university students were collected and graded according to China's Standards of English Language Ability (CSE) (Ministry of Education of China, 2018). A description was attempted, based on the corpus of Chinese learners' CSE-graded essays, to depict what Chinese learners can do with different forms and senses of modal verbs at each CSE level. Specifically, the study was guided by the following research questions:

How do Chinese learners progress in their use of modal verbs when their proficiency improves? Do they perform in writing differently from or similarly to native learners in MICUSP in terms of modal verb use?

Do the developmental patterns of modal verbs by Chinese learners conform to or diverge from the universal sequence of EFL learners stated in the EGP? Are there any L1-specific developmental features? If yes, what are they?

Chinese learners' writing used in this study was graded according to the CSE, a national English language proficiency scale issued by the Ministry of Education and National Language Standard Committee of the People's Republic of China in 2018. The English ability of Chinese learners is defined by three stages--elementary, intermediate and advanced stage, which is further divided into nine levels: CSE 1, CSE 2 to CSE 9 in ascending order from lower proficiency levels to higher ones with every three levels corresponding to one stage. The CSE takes a use-oriented approach to the description of language ability based on the communicative language ability model and the educational needs of Chinese learners. With around 2,400 descriptors, the CSE has both an overall description of the language ability of Chinese learners and specific descriptions matching their different levels, in which language ability is further divided into language comprehension (listening and reading), language expression (oral and written) and mediation (translation and interpretation). The link between the CSE and the CEFR is expressed in Fig. 1 (Dunlea et al., 2019, p. 112). Chinese learners' writing graded according to the CSE was used to address a longitudinal research question--the development of modal verb use in Chinese learners' writing according to cross-sectional groupings using proficiency level as a proxy for the variable of time. Based on the calibration of Chinese learners' proficiency using the CSE, the present study takes a fine-grained descriptive approach to documenting Chinese learners' modal verb usage at each CSE level.

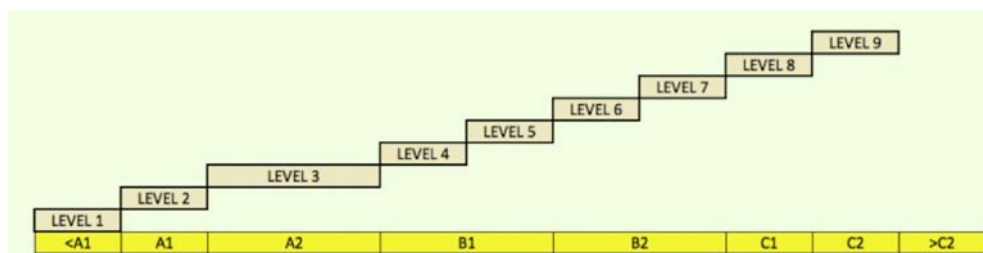


Fig. 1 Comparing CSE and CEFR levels

3. DATA AND METHODOLOGY

3.1. Data

2,164 essays written by Chinese middle school and university students from five provinces were collected from 2011 to 2015 via their teachers. 56% of the participants were female and 44% were male, whose ages ranged from 13 to 21 years old. Each student was notified of the research aim and asked for written permission before the collection. Their essays were typed and submitted through email to their teachers. Various genres were included--narrative, descriptive, expository, persuasive, letter or email and book summary. 304 different essay topics were covered with some related to personal and family life such as *my school* and

others to the public such as *Shall smoking be banned in the public*. The length of essays ranges from 35 to 1,163 words. Each document was tagged with meta-data which includes essay prompt, register, and writer information: level of education, gender, submission time of the essay, school type and region. The grading of essays' CSE levels relied on raters' cohort of opinions. 10 essays were randomly selected from each genre and two raters (member of the CSE compilation team with a PhD degree in applied linguistics) were invited to grade these 60 essays independently. The CSE levels assigned by these two raters were then compared and discussions were conducted to identify and resolve their differences on 21 essays so that the grading criteria were unified. After that, they were asked to grade the remaining 2,104 essays independently. The levels of 1,168 essays were agreed upon by them two and decided as the final levels whereas 936 essays on which they differed in grading were assessed by another rater again independently. The level of an essay was decided to be the final one if two of the three experts' grading agreed with each other. 69 essays, whose grading varied among the three raters, were rated and decided by the fourth expert. The total corpus size is 422,814 running words (see Table 1 for details). No essay at level 9 is included and sub-corpora of CSE 1, 7, and 8 levels contain limited pieces respectively.

Table 1. *Corpus of Chinese EFL learners' essays: sub-corpus breakdown*

LEVEL	THE NUMBER OF ESSAYS	TOKENS	AVERAGE LENGTH OF WORDS	MINIMUM LENGTH (TOKENS)	MAXIMUM LENGTH (TOKENS)	STANDARD DEVIATION
CSE 1	27	1,679	4.26	35	112	14.33
CSE 2	270	29,386	4.14	44	320	10.51
CSE 3	462	67,200	4.33	44	1,199	9.82
CSE 4	722	133,386	4.42	50	700	9.22
CSE 5	495	129,231	4.55	62	1163	8.74
CSE 6	167	52,030	4.69	95	1021	9.65
CSE 7	19	8,878	4.75	172	843	11.63
CSE 8	2	1,024	4.64	320	704	12.69

3.2 Research procedures

- 1) Nine core modal verbs--CAN, COULD, SHALL, SHOULD, WILL, WOULD, MAY, MIGHT, and MUST were used as node words for the lexical search carried out with WordSmith 5.0 (Scott, 2008). After all concordance lines containing these words were extracted from the corpus, each line was examined manually to delete the non-modal-verb uses such as CAN and WILL used as nouns in *rubbish can* or *strong will*. The rest were saved for later analyses. The raw and normalized frequencies (per 10,000 words) of modal verbs in Chinese learners' essays across levels were calculated (see Table 2 for details). The occurrences of modal verbs in the native speaker section of MICUSP were adopted as our guide. This provided our threshold frequency from a comparable native learner corpus of academic writing in

a non-exam context, below which per 10,000 words were not considered for later analysis.

- 2) The concordance lines of each modal verb were read and examined one by one and errors were identified. Following the EGP, the accuracy cut-off rate of 60% was adopted as the criterion for mastery of a specific modal verb. Both grammatical and pragmatic mistakes were considered. Instances with syntactic correct form but inappropriate pragmatic use were also counted as errors.
- 3) The dispersion of modal verb use was calculated by dividing the number of different essays in which each modal verb occurs by the total number of essays at this level. Here the use of a modal verb in more than 20% of the texts in the sub-corpus is set as the measure. Use concentrated in only a narrow range of texts will not be considered for further analyses.
- 4) The number of different genres in which each modal verb occurs was also counted to investigate the spread of stylistic context. If the use of a modal verb is not concentrated in one genre but spans a range of stylistic contexts of use, it is considered mastery of this modal verb.
- 5) If a modal verb recurs in one particular task, we consider these occurrences as caused by task effect and delete them from qualitative analysis. This often occurs when a modal verb exists in a task rubric or instruction and learners then reproduce it in their writing either as a display tactic or out of necessity. For example, the essay topic *Shall smoking be banned in public* results in a high frequency of the modal verb SHALL in learners' writing.
- 6) The use of CAN in essays from CSE 1-7 levels met the above criteria and was selected for further qualitative analyses. Its occurrences in essays at CSE level 8 were excluded from analyses mainly because there are only two essays at this level and the use and distribution are reflections of an individual writer rather than representative of the generic group. The concordance lines of CAN were examined and its different forms and senses were identified and coded. Their distribution across levels was then summarized (Table 3) and analyzed. The guide words in the table were quoted from the EGP (O'Keeffe & Mark, 2017). Examples were extracted from learners' writing at different levels with infelicities remaining without change.

4. RESULTS AND DISCUSSION

4.1. General distribution of modal verbs across levels

As illustrated in Table 2, Chinese learners in broad stroke use more modal verbs in their essays across CSE 1-7 levels (ranging from 160.81 to 259.32 cases per 10,000 words) in comparison to 92.67 cases per 10,000 words by native learners in MICUSP. In most cases the Modal verb+Verb pattern is employed with no tense or aspect change. This can explain EFL learners' overuse to some extent that the simplicity of structure entices them to use in neglect of the subtle shades of meaning associated with modal verbs. The way of modal verb introduction in English textbooks in China may be another reason. Namely the one-to-one English to Chinese translation such as CAN--*nenggou* (ABILITY), *keyi* (PERMISSION) misleads learners to acquire and employ modal verbs in a lexical mode.

Table 2. *The normalized frequencies of modal verbs across levels in Chinese EFL learners' writing and native learners' in MICUSP (per 10,000 words)*

	CSE1	CSE2	CSE3	CSE4	CSE5	CSE6	CSE7	CSE8	MICUSP
CAN	53.60	93.24	101.6	93.04	86.67	72.46	60.82	19.53	19.79
COULD	17.87	4.08	7.29	8.77	8.59	9.23	24.78	19.53	8.38
WILL	41.69	74.53	56.70	66.42	46.58	39.98	40.55	0	20.10
WOULD	0	8.51	7.59	11.70	14.47	10.57	5.63	48.83	16.92
MAY	5.96	3.74	9.08	12.37	15.40	14.61	14.64	0	10.49
MIGHT	5.96	0.68	0.89	1.42	1.78	2.11	2.25	0	3.59
MUST	11.91	11.91	12.95	11.77	11.37	5.57	4.51	0	5.89
SHALL	0	0	0.30	0.67	0.93	1.15	0	0	0.52
SHOULD	23.82	30.97	42.56	53.15	41.71	27.29	11.26	0	6.99
TOTAL	160.8	227.7	238.9	259.3	227.5	182.9	164.5	87.9	92.7

Zooming in on the use of specific modal verbs, we can see that Chinese learners across levels overuse CAN, WILL, and SHOULD whereas underuse WOULD. This conforms to the findings of previous research that Chinese learners generally overuse modal verbs in writing, CAN, WILL, and SHOULD in particular (Ma & Lv, 2007; Milton & Hyland, 1999; Xiao, 2017). A similar overuse tendency has been reported in Arab (Elturki & Salsbury, 2016), Spanish (Carrió-Pastor, 2014), Japanese (Pemberton, 2020) and Korean (Kim & Suh, 2014) learners' writing. The salience of CAN and WILL is a possible reason for EFL learners' overuse as both modals exhibit high frequency and low variability (Biber et al., 1999). Their early introduction in English textbooks targeted at grade 1 primary school students in China may be another reason as Chinese learners are reported to feel safe using modal verbs that are taught early (Ma & Lv, 2007). The high frequency of SHOULD, on the other hand, is more often attributed to L1 transfer and Chinese learners' proclivity for deontic modality. Influenced by the hierarchical social order and positively-oriented culture, Chinese learners tend to employ SHOULD to give advice in writing, which in their eyes displays intimacy and in-groupness but is perceived as imposition or interference in others' affairs in negatively-oriented cultures (Stewart, 2005).

Chinese learners' use of COULD as presented in Table 2 fluctuates across levels with more occurrences in essays at CSE 1 (17.87 cases per 10,000 words) and CSE 4-7 levels (8.59 to 24.78 cases per 10,000 words) but fewer cases at CSE 2 and 3 levels (4.08 and 7.29 cases per 10,000 words) in comparison to that in native learners' writing in MICUSP (8.38 cases per 10,000 words). Their use of MAY in essays from CSE 1-3 levels (3.64 to 9.08 cases per 10,000 words) is lower than that in native learners' writing (10.49 cases per 10,000 words) and then increases to surpass that in MICUSP from CSE 4 to 7 (12.37 to 15.40 cases per 10,000 words). Chinese learners' writing at CSE 2-7 levels has lower occurrences of MIGHT (0.68 to 2.25 cases per 10,000 words) while their writing at CSE 1 deviates to feature more occurrences (5.95 cases per 10,000 words). These three modal verbs of low values--COULD, MAY and MIGHT are usually reported to be avoided by Chinese learners

in writing (Gao, 2020; Ma & Lv, 2007; Xiao, 2017). It is said to be difficult to wrest a MIGHT or COULD out of EFL learners' mouths (McDorman, 2020). The findings here present a variegated picture: MIGHT is avoided by Chinese learners across levels; COULD however is used more frequently by the majority of the learners, those at higher levels in particular; learners at lower levels (CSE 1-3) use less MAY while those at higher levels (CSE 4-7) deploy MAY much more frequently in writing. Proficiency level seems to be an impacting factor influencing learners' use of low-value modal verbs. Advanced learners tend to employ more cases of COULD and MAY in writing to mitigate the risk of opposition and build writer-reader relationships.

Chinese learners' use of the two high-value modal verbs--MUST and SHALL presents a different picture. Table 2 shows that SHALL is used more frequently by Chinese learners at intermediate levels from CSE 4 to 6 (0.67 to 1.15 cases per 10,000 words) but seldom in essays at other levels. Task effect may be the main reason for its higher occurrences as 78 essays at CSE 4 to 6 levels are titled *Shall smoking be banned in the public* and learners inevitably employ SHALL in their writing. Arab learners across levels, similarly, seldom use SHALL in writing (Elturki & Salsbury, 2016). The rarity of SHALL in Arab and the majority of Chinese learners' writing may be a reflection of its vanishing in use. Chinese learners' use of MUST is high in essays at lower levels (CSE 1-5) (11.37 to 12.95 cases per 10,000 words) and then decreases sharply at CSE 6 and 7 (5.57 and 4.51 cases per 10,000 words) to be less than that in native learners' writing. The use pattern of MUST indicates that Chinese learners at basic and intermediate levels prefer the use of MUST for the strong assertion of a proposition while advanced learners use less to avoid strong claims and negotiate an accurate presentation. The overuse of MUST in Chinese learners' writing reported in previous research (Ma & Lv, 2007; Milton & Hyland, 1999; Xiao, 2017) is somehow corroborated. The findings here imply that the inappropriate overuse of directive and authoritative assertions with MUST may be the feature of lower level learners' writing not Chinese learners' as a whole. Lack of proficiency may also explain the more frequent use for MUST might be lower-level learners' only available form to convey certainty while learners at higher levels can express certainty with other equivalents such as adverbs *definitely* and *undoubtedly*.

4.2. Noticeable findings on the specific modal verb CAN

Table 2 shows that CAN is the most frequent modal verb employed in writing by Chinese learners across levels, about three to five times of that in MICUSP. Its frequency in Chinese learners' writing decreases when their proficiency progresses, leaving the figure at CSE 1 out. An expanding repertoire of CAN forms is discerned from Table 3 with the presence of affirmative and negative forms across all levels and the emergence of question form since CSE 2, passive, inversion and use after IF clauses from CSE 3, ellipsis and use with adverbs from CSE 4. Variant syntactic structures of CAN are employed by advanced learners in their writing, which increases the syntactic complexity and sophistication of writing and is a reflection of language development (Elturki & Salsbury, 2016). The developmental pattern of CAN forms discovered here, however, diverges from that reported in the EGP to some extent: the negative question form appears at the B1 level, and the passive form at the C1 level in the EGP (O'Keeffe & Mark, 2017) whereas the passive form is used by Chinese learners from the basic-intermediate level and there is no occurrence of the negat-

ive question form in their writing. Neither can the past negative form be found in Chinese learners' writing across levels. The absence of the negative question form in Chinese learners' writing may be attributed to register variation. The negative question forms are mainly used in spoken language in main clauses and question tags such as *Can't you go with your friends some time?* or *You can ask your teacher what he thinks you should do, can't you?.* The corpus employed in this study includes only learners' writing, which features no evidence of this form. The CEFR-JGP reports a similar finding with no occurrence of the negative question form of CAN in Japanese learners' writing (Ishii, 2018). The null occurrence of the past negative form in Chinese learners' writing across levels may be accounted for by its complex structure. Even the most advanced learners have difficulty with the all-important CAN'T+HAVE+Past participle construction for deduction. Japanese learners are also reported to seldom use modal verbs with the perfect aspect in their writing (Fujimoto, 2019). Their failure to express subjectivity on something that happened in the past with this structure is attributed to its insufficient coverage in teaching materials. Whether the modal verb with the perfect aspect structure is introduced appropriately in textbooks in China and if its textbook introduction impacts learners' use warrants further exploration.

Table 3. *Forms and senses distribution of CAN across levels*

GUIDE WORD	CSE1	CSE2	CSE3	CSE4	CSE5	CSE6	CSE7
FORM: AFFIRMATIVE	+	+	+	+	+	+	+
FORM: NEGATIVE	+	+	+	+	+	+	+
FORM: QUESTION	-	+	+	+	+	+	+
FORM:NEGATIVE QUESTIONS	-	-	-	-	-	-	-
FORM: WITH ADVERBS	-	-	-	+	+	+	+
FORM/USE: PAST NEGATIVE, DEDUCTIONS	-	-	-	-	-	-	-
FORM: PASSIVE	-	-	+	+	+	+	+
FORM: INVERSION	-	-	+	+	+	+	+
FORM: AFTER IF CLAUSES	-	-	+	+	+	+	-
FORM: ELLIPSIS	-	-	-	+	-	+	-
USE: ABILITY	+	+	+	+	+	+	+
USE: OFFERS	-	-	-	-	-	-	+
USE: POSSIBILITY	+	+	+	+	+	+	+
USE: PERMISSION	-	+	+	+	+	+	+
USE: GENERAL TRUTHS AND TENDENCIES	-	-	+	+	+	+	+
USE: GUESSES AND PREDICTIONS	-	-	-	-	+	+	+
USE: EMPHASIS	-	-	+	+	+	+	+
USE: REFLECTIONS	-	-	+	+	+	+	-

+: occurrence -: non-occurrence

An inspection into the concordance lines of CAN's passive forms reveals that Chinese learners at CSE 3 and 4 levels mainly use it in the SOMETHING+CAN+BE+Past participle pattern as in *The number of the private cars can be controlled* or the specific pattern *AS CAN BE SEEN from the table/figure* while since CSE 5 their use begins to diversify to include more cases of passive reporting clauses in a more formal impersonal style such as *It can be noticed/concluded that ...* That is, Chinese learners at lower levels more often use the passive form of CAN to state common facts or describe a table or graph whereas learners at higher levels tend to use it in reporting clauses to express logical relationships. The IT+CAN+BE+Past participle pattern occurs frequently to express logical possibility and avoid the mention of the agent of actions expressed by verbs in academic writing (Biber et al., 1999). The more occurrences of CAN in passive reporting clauses in learners' writing at higher levels suggest that the formality of Chinese learners' writing improves with their proficiency.

Analysis of the specific senses as illustrated in Table 3 demonstrates the sophisticated growth in the use of CAN relative to lexical and pragmatic development. Chinese learners at lower levels mainly use CAN to express ABILITY and POSSIBILITY as in *A person who can take responsibilities* (CSE 1) or *Maybe you can write them in a piece of paper* (CSE 2). As learners' proficiency progresses to CSE 4 level, more senses appear in their writing such as PERMISSION (*If you are a shop owner, you can wear dress you like*), GENERAL TRUTHS and TENDENCIES (*Fish cannot leave without water*), EMPHASIS (*As you can see, the library is a land of books*) and REFLECTION (*But how can we have confidence?*). Learners at intermediate and advanced levels use CAN or CAN'T to GUESS, PREDICT and DEDUCE as in *when I am 50 years old, I can be as elegant as Teacher Su* (CSE 5). There are some divergences in the distribution of senses across proficiency levels between what we found here and that reported in the EGP. Using 'how can' to reflect through rhetorical questions is said to appear in C2 learners' texts and expressions with 'can' or 'can't' to give focus or add emphasis, such as 'as you can see', 'I can tell/assure you that' etc. at C1 level in the EGP (O'Keeffe & Mark, 2017). Chinese learners, however, since CSE 3 and 4 levels employ CAN in its EMPHASIS and REFLECTION senses. In expository and argumentative writing Chinese learners after stating a problem quite often employ the HOW CAN pattern to raise a rhetorical question introducing the possible measures to tackle or solutions to the problem. It seems like a common text organization device employed by Chinese learners frequently. Their EMPHASIS use of CAN concentrates in the AS YOU CAN SEE pattern. That is, Chinese learners seem to acquire AS YOU CAN SEE as a chunk or formula rather than use the various CAN patterns for emphasis. The GUESS, PREDICT and DEDUCE sense poses difficulty to Chinese learners and can only be found in essays at CSE 5-7 levels, which conforms to the reported level of this sense--B2 in the EGP. Some senses popular in spoken language such as OFFER (*Can I give you a lift?*), REQUEST (*Can you help me with my homework?*), and SURPRISE (*It cost me 50 yuan! Can you believe that?*) never occur or occur very rarely in Chinese learners' essays due to cross-register variation. The absence of sense SPECULATION in Chinese learners' essays might be explained by its complex syntactic structure, the CAN'T+HAVE+Past participle pattern. Learners tend to avoid the use of complex structures to ensure the grammaticality of writing or lack the ability to use CAN with the perfect aspect.

The form analyses of CAN across levels conform to the general trend reported in the literature that expressions of modality become more productive and variant as learners'

proficiency improves (Elturki & Salsbury, 2016; O’Keeffe & Mark, 2017). Chinese learners at higher CSE levels employ modal verbs in various syntactic structures while beginners are constrained to the affirmative, negative and question forms. Though stated as a pattern that can be used by learners at CSE level 5, the Modal verb+HAVE+Past participle structure seems void in our data. The corresponding senses associated with this pattern seldom appear in Chinese learners’ essays accordingly such as talking about possibilities, regrets, or an undesired situation in the past. It is worth investigating to see whether the absence of a such pattern is an avoidance phenomenon or due to learners’ lack of proficiency. The distribution of modal verb senses across levels indicates an obvious cross-register variation--the senses such as REQUEST, INVITATION and OFFER frequent in spoken register seldom appear in learners’ writing. In addition to the senses closely associated with the past perfect structure, Chinese learners’ essays are devoid of the majority of senses listed at C2 level in the EGP such as the SPECULATION sense of CAN, the WILLFULNESS or DISAPPROVAL sense of WILL and the PREDICTIONS sense of SHALL. The lack of learners’ essays at CSE 8 and 9 levels might explain this.

5. CONCLUSIONS

This study, based on a corpus of Chinese learners’ writing at different levels, has investigated the development of their use of modal verbs. The data reveals that Chinese learners at CSE 1-7 levels use more modal verbs in writing than native learners in terms of tokens. When the use of specific modal verbs is compared, it is discerned that Chinese learners consistently overuse CAN, WILL and SHOULD but underuse WOULD in their writing across levels while their use of the other five modal verbs fluctuates. The analyses of specific forms and senses of CAN demonstrate that learners’ use at basic levels is constrained to the affirmative, negative and question forms and the fundamental core senses of modal verbs like ABILITY and PERMISSION, which then becomes more variant with inversion, after IF clauses and use with adverbs and senses to express GUESSES and DEDUCTIONS, REFLECTIONS etc.

Chinese learners’ development agrees with the universal sequence of EFL learners reported in the EGP in most cases. Some divergence exists such as the use of REFLECTION and EMPHASIS senses of CAN in writing from intermediate levels. No inter-L1-group heterogeneity has been revealed here as neither the CEFR-JGP nor Elturki & Salsbury (2016) provide any detailed information about the different forms and senses of CAN in Japanese or Arab learners’ writing and thus no between-group comparison is possible. Whether the divergences discovered are developmental features indigenous to Chinese learners needs further investigation.

EFL learners’ writing is reported to be infused with spoken informal features (Crawford, 2005; Gilquin & Paquot, 2007). EFL learners are therefore argued to lack register consciousness. Findings here lend little support for this claim that senses common in spoken register rarely occur in Chinese learners’ writing. Later elaborate analyses of the association between different senses and text genre or essay topic may reveal possible factors contributing to this clear register variation in Chinese learners’ use of modal verbs.

Chinese learners' avoidance of modal verbs with the perfect aspect structure and their associated senses and the rare deployment of senses at the CEFR C2 level call for a more balanced introduction or presentation of modal verbs in teaching materials. Needs-based and learner-centered materials and teaching activities may be developed based on research findings from learner corpora. For instance, offer learners with focused exemplars of the modal verb+have+past participle structure extracted from a corpus and ask them to analyze the potential senses conveyed and the possible context in which it is used. Such form-focused activity may arouse learners' attention and develop greater salience to modal form and function pairings (Boyd & Goldberg, 2009).

The corpus size of CSE-graded essays is not big enough, the sub-corpora at CSE 1, 7 and 8 levels in particular. The lack of essays at advanced levels (CSE 7-9) may confound the data which makes the findings less generalizable. The occurrence of the forms and senses of CAN in learners' essays at each level has been coded and recorded in this study without calculation of the percentages each form or sense accounts for. Further elaborate manual coding will be carried out to investigate the distribution of senses at different levels and to verify whether Chinese learners' use of modal verbs becomes diversified with less concentration in the fundamental core senses.

The corpus of Chinese learners' essays used here is limited to writing produced as part of their regular schoolwork with freedom of access to facilitating devices such as dictionaries and no time limitation. Learners' essays written under time pressure in class will be collected later to supplement the data for further comparison of learners' use of grammatical features under various contexts. Essay topic is another impacting factor identified in previous research which has not been covered here. As the essays collected include 304 topics, it is too dispersed for the impact study of essay topics on the use of modal verbs. When essays written in class are collected, essay topics may be controlled for later comparison.

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