

In My Opinion: Modality in Japanese EFL Learners' Argumentative Essays

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This study seeks to add to the current understanding of learners' use of modality in argumentative writing. A learner corpus of argumentative essays on four topics was created and compared to native English speaker data from the International Corpus Network of Asian Learners of English (ICNALE). The relationship between learners' use of modal devices (MDs) and the devices' appearance in the school's curriculum was also examined. The results showed that learners relied on a very narrow range of MDs compared to those in previous studies. The frequency of use of MDs varied based on the topic and did not seem to be driven by cultural factors as has been previously suggested. Learners used more hedges than boosters on all topics, contradicting most previous studies. Curriculum was determined to have a direct correlation with MD use, and other important factors may include perception of topic and overreliance on certain MDs over others (the One-to-One principal). This research implies that learners' perception of topic should be explored further as a variable affecting MD use. Curricula should be designed based on frequency of MD use by English native speakers, and learners should receive instruction that teaches the norms of MD use in academic writing. The methodology used in the study to determine correlations between MD use and the curriculum has a wide range of potential applications in the field of Contrastive Interlanguage Analysis.

Keywords: Contrastive Interlanguage Analysis, Corpus Linguistics, Modality, Argumentative Writing, Curriculum

1. Introduction

Argumentative writing is a critical skill for learners who wish to gain admission to college in English-speaking countries or to pass English proficiency exams in non-English speaking countries. The Test of English as a Foreign Language (TOEFL) and the International English Language Testing System (IELTS) are two popular tests which measure English proficiency of non-native speakers. These tests are accepted by universities and other institutions in many countries around the world. For each of these tests, writing scores are based on the clarity of organization, development of ideas, absence of irrelevant ideas and details, and accuracy in language use. These are the skills which must be mastered for learners who wish to study abroad in these institutions.

One of the writing features that has attracted particular attention is the modality issue. Hinkel (2009) found that learners' use of modal devices (MDs) is affected by the essay topic and suggested that their approach to topic depends on their cultural background. On the other hand, Hu and Li (2015) suggested that learners' MD use was affected by first language (L1) influence, the One-to-One principal (learners' tendency to over-rely on one form to express one meaning rather than learning alternative forms which serve a similar function), L2 proficiency, and classroom instruction. One complicating issue is that the authors of modality studies often do not include the list of MDs counted, making it difficult to compare results.

This research aims at addressing some of these issues. This study was based on learners at the pre-

university level studying argumentative writing. A mini learner corpus using four prompts from two previous studies was created. MD use of learners was examined by topic and compared to that of NS students. The correlation of the MDs' frequency in the curriculum with learners' MD use was also examined. This paper begins with a review of literature regarding modality before describing the method and results, which show learners' limitations in their use of MDs. It closes with a discussion of the results and limitations of the study before proposing directions for future studies.

2. Background

The relevant background to this study includes a description of modality and types of modal devices. It also includes a summary of previous research on modality in learners' writing and the relationship of curriculum and modal use.

2.1. Modality and Modal Devices

According to Halliday (1970), modality derives from the interpersonal function of language and allows a speaker to take up a position and participate in a speech event. Kiefer (1994, p. 2516) defines modality as an expression of "the speaker's cognitive, emotive, or volitive attitude toward a state of affairs." It has also been defined as expressing varying degrees of commitment to or belief in a proposition (Saeed, 2009). It has more specifically been defined as expressing a speaker's "judgment that a proposition is possibly or necessarily true or that the actualization of a situation is necessary or possible" (Depraetere & Reed, 2006, p. 269). To put it simply, modality is an expression of a speaker's stance toward the possibility or necessity of a proposition.

Modality can be divided into two main types: epistemic or deontic. Coates (1995, p. 55) defines epistemic modality as actions "concerned with the speaker's assumptions or assessment of possibilities, and, in most cases, it indicates the speaker's confidence or lack of confidence in the truth of the proposition expressed." It has similarly been defined by Palmer (2001, p. 8) as an expression of a speaker's "judgments about the factual status of the proposition."

Deontic modality is typically defined as an expression of obligation or permission (Charlow & Chrisman, 2016; Palmer, 2001; Saeed, 2009). It indicates what is necessary or allowable based on the rules, laws, or norms that shape our interactions. Hinkel (1995, p. 329) argued that it also has a cultural component, representing "culture-specific norms, expectations, roles, and concepts defining relationships between people and events."

Though many modality studies focus on modal verbs, modality in fact appears in various parts of speech. Holmes (1988) identified over 350 relevant lexical items including modal verbs, lexical verbs, adverbials, nouns, and adjectives. Portner (2009, p. 2) proposed that modality exists at the sentential, sub-sentential ("the expression of modal meaning with constituents smaller than a full clause"), and discourse levels. Corpus analysis lends itself to the study of MDs found at the sentential and sub-sentential levels (i.e. individual lexical items).

Epistemic modality can further be divided into boosters and hedges. Lackoff (1972, p. 195) defined these as "words whose job it is to make things fuzzier or less fuzzy." Boosters (e.g. *clearly*, *indeed*, *obviously*) are used to express certainty toward a proposition. They make claims sound stronger by helping to express a sense of confidence in the truth of a proposition. Hedges (e.g. *possible*, *perhaps*, *might*) are used to weaken the force of commitment to a proposition. They help to communicate that a proposition should be taken as opinion rather than fact. A working knowledge of boosters and hedges allows authors to "have at their disposal a repertoire of devices that allow them to make claims with the exact degree of certainty or doubt that they intend" (McEnery & Kifle, 2002, p. 183).

2.2. Modality in Learners' Writing

Several studies have shown that learners have difficulty expressing modality in writing. Most have found that learners use more boosters than hedges, opposite to NS students. Additionally, learners at higher proficiency levels become more native-like by using more hedges than boosters. These tendencies have been documented in Chinese (Hyland & Milton, 1997; Milton & Hyland, 1999; Chen, 2010; Chen, 2012), Korean (Oh, 2007), and Japanese (Takimoto, 2015) learners. Other studies (McEnery & Kifle, 2002; Hu & Li, 2015) have directly contradicted the above findings by showing that learners use more hedges than boosters. Hu and Li found that this was consistent across all proficiency levels. In addition, learners used both fewer boosters and fewer hedges than NS students, also consistent across proficiency levels. Hu and Li also found that learners relied on a very narrow range of EDs compared to NS students. To explain this, they cited the One-to-One principle, learners' tendency to over-rely on one form to express one meaning rather than learning alternative forms which serve a similar function. The present study will consider this as a factor influencing learners' MD use.

Two studies by Hinkel explored the effect of topic on modality in Asian L2 writing. Hinkel (1995) found that Asian learners used more obligation or necessity (deontic) modals on topics related to family roles, relationships, tradition, academics, and patriotism. Hinkel (2009) found that Japanese learners overused possibility or ability (epistemic) modals on the topics of parents and major. Japanese, Korean, and Chinese learners overused obligation/necessity (deontic) modals on the topics of parents, grades, major, and manner. According to Hinkel, the overuse of EDs was due to the Japanese tendency to convey ambiguity in one's opinions as a way of seeking agreement (Maynard, 1993, cited in Hinkel, 2009). She also claimed that the overuse of DDs was caused by the lingering effect of "the Confucian model of social and mutual responsibility and collaboration" (2009, p. 678) on Asian cultures. This study hopes to further the conversation about Asian learners.

2.3. Effect of Curriculum on Modal Use

Teaching and materials have been shown to affect learners' use of MDs. Holmes (1988) found that many ESL textbooks focus only on modal verbs and ignore other modal devices that would be used by NS students. Other textbooks provide scales to illustrate degrees of certainty for MDs, but these are often inaccurate and not based on modality research. Similarly, McEnery and Kifle (2002) discovered that teaching materials inordinately emphasize certain EDs over others and that these EDs appeared more frequently in learner output.

Hu and Li (2015, p. 27) also showed that the frequency of university learners' output of modal verbs tended to correlate with the frequency of the modal verbs' appearance in junior high school textbooks. For example, *may* was the most frequent item in textbooks and also the most frequently used by learners. To explain this, the authors cite the "frequency effect" proposed by Ellis (2002), which states that higher input frequency reduces processing time and allows lexis to be named more rapidly. However, a direct correlation between frequency in the curriculum and learner output was not found for every modal verb, which indicates that "not all learners' modal behavior is traceable to input frequency."

Another study by Hyland (1994) evaluated several popular English for Academic Purposes textbooks and found inadequate coverage of hedges in lower level textbooks. He argued that hedges can and should be taught to learners even at elementary levels in order to provide an accurate representation of their importance.

3. Methods

Research was conducted at a large private girls' high school in Japan. This is a three-year program

as is typical for Japanese high schools. The participants were 102 Year 3 high school learners. Learners are assigned to classes randomly and not based on academic ability, so the groups of learners included in the study were selected based on the convenience of the researcher's teaching schedule. The following research questions were addressed:

1. What are the differences in the modal devices learners use, based on the essay topic?
2. Which devices do learners underuse or overuse compared to native speakers?
3. How do limitations of the curriculum correlate with learners' modal use?

3.1. Instrument

To design the learner corpus, four topics were selected (Table 1). Topics 1 and 2 were taken from the ICNALE corpus, a corpus of spoken and written English with a focus on Asian learners. These topics were selected because they were used in Hu and Li's (2015) study and also because NS data from ICNALE on the same topics was available for direct comparison. Topics 3 and 4 were taken from Hinkel (2009).

Table 1. Topics and Prompts in the Learner Corpus

No.	Topic	Prompt
1	Job	Is it important for college students to have a part-time job?
2	Smoking	Should smoking be completely banned at all the restaurants in the country?
3	Major	Some people choose their major field of study based on their personal interests and are less concerned about future employment possibilities. Others choose majors in fields with a large number of jobs and options for employment. What position do you support?
4	Wealth	Some of the wealthiest, most famous people in the world are musicians, singers, movie stars, and athletes. Do you think these performers and athletes deserve high salaries such as millions of dollars every year?

To collect the data, the essays were assigned to learners during regular class time. Due to scheduling and time constraints, one group of 57 learners was assigned the Job, Smoking, and Major topics (Group 1) and a separate group of 45 learners was assigned the Wealth topic (Group 2). The groups may be considered roughly comparable because all participants attended the same school where class members are not determined based on academic ability. In Group 1, there were slight differences regarding which learners wrote on each topic because some learners failed to submit one or more assignments. Learners were given about 30-40 minutes of class time to write their essays and were allowed to complete the unfinished portion as homework.

After creating the learner corpus, a list of MDs including EDs, DDs, boosters, and hedges was developed. Although Holmes' (1988) list of 350 EDs was the most comprehensive one available, it was too lengthy and unwieldy for the purposes of this study. Instead, EDs, boosters, and hedges were selected by combining the list of EDs in Hyland and Milton (1997) and the list of boosters and hedges in Kim and Suh (2014). Because boosters and hedges are a type of ED, the two lists were added together and duplicates removed. These lists were chosen because they are relatively compact while still including various classes of EDs beyond just modal verbs. Kim and Suh's list of boosters and hedges was also used in Hu and Li's (2015) study.

DDs were selected through a different process. As no comprehensive list of DDs could be located, a new list was created based on examples from Biber et. al (1999), Halliday (1970), and Palmer (2001). The learner and NS corpora were also searched for other possible DDs from the researcher's own knowledge, and any that were found were added to the list. See the Appendix for the list of EDs, DDs, and hedges and boosters included in the study.

The following decisions were made during the creation of the MD list:

- MDs that were found in the corpora but were not already on the list were added to the list, including *can* as both an epistemic modal verb/hedge and a deontic modal verb.
- EDs were grouped into the grammatical categories from Hyland and Milton (1997) and Holmes (1988), excluding nouns, which occurred infrequently in the corpora.
- DDs were divided into modal verbs and adjectives, as those seemed to be the main types that were mentioned in the literature and found in the corpora.
- Two of the epistemic lexical verbs, *think* and *believe*, which were categorized as boosters in Kim and Suh (2014), were counted as hedges in the present study.
- Modal auxiliaries that have both positive and negative forms (e.g. *should/shouldn't*) were counted as one device.
- Different forms of the same verb lemma (e.g. *think/thinks/thought* for the lemma THINK) were counted together as one device.
- Devices that were found not to exist in the corpora were removed from the list and excluded from the study.

3.2. Specific Methods for Each Research Question

To answer Research Question 1, a learner corpus was made by manually entering all of the learners' handwritten essays into a computer. During the transcription process, the decision was made to correct spelling mistakes in order to create a fully searchable database, but learners' language was otherwise left as is. Each essay was recorded in a separate plain text file and labeled according to the writer's student ID number, proficiency level, and the essay topic. The distribution of learner essays in the corpus is shown in Table 2.

Table 2. Distribution of Essays in the Learner Corpus

	Job Topic	Smoking Topic	Major Topic	Wealth Topic	Total
Essays	53	46	46	45	190
Tokens	11,737	10,071	10,594	9,800	42,202

The corpus analysis software AntConc was used to analyze learners' MD use. After searching for each MD included in the study, the number of hits for each learner on each topic was recorded (in a spreadsheet). The frequency of each device per 1,000 tokens was calculated, followed by the totals for each category of MD.

For Research Question 2, learners' overuse and underuse of each MD was calculated by comparing their frequency of use to that of NS students. The NS corpus came from ICNALE. For this study, the university student subcorpus within the NS corpus in ICNALE was used.

There were no NS corpora available for the Major and Wealth topics, so specific data regarding learners' overuse or underuse of certain MDs could not be generated for these topics. Still, general comparisons could be made between these and the other two topics and to Hinkel's (2009) results. Table 3 summarizes the distribution of essays in the NS corpus.

Table 3. Distribution of Essays in the Native Speaker Corpus

	Job Topic	Smoking Topic	Total
Essays	100	100	200
Tokens	22,623	22,124	44,747

The MDs used by NS students were counted using AntConc, the totals were entered into a

spreadsheet, and frequencies per 1,000 tokens were calculated the same way as with the learner data. Then a log-likelihood ratio calculator was used to check whether the difference in the frequency of learners' use of MDs compared to NS students was statistically significant.

To answer Research Question 3, the MDs taught in the school's curriculum were determined by collecting and examining the textbooks for each of the school's English courses. The number of occurrences of each MD in the textbooks was recorded in a spreadsheet. This summary was intended to be representative rather than exhaustive, as it was impossible to determine what MDs may spontaneously be used by teachers during classes or included in extraneous class materials.

To calculate correlations between the frequency of MDs in the textbooks and their use by learners, the data for both of these was fed into SPSS, a software for statistical analysis. Using this software, the Pearson correlation coefficient was calculated to determine any correlation between the two factors.

4. Results

The results of analysis for each research question are presented and explained in this section. Learners' use of MDs for all topics is presented including the top MDs used and the frequencies of EDs, DDs, and boosters and hedges. The frequencies of learners' MD use for the Job and Smoking topics are then compared to the frequencies for the same topics for NS students. This is followed by an analysis of the correlation between MD use by learners and occurrences of MDs in the curriculum.

4.1. Modal Devices Used by Learners

The top ten MDs for each topic were generally quite similar (Table 4). Epistemic *can*, *think*, *will*, *very*, *have to*, and deontic *should* appear in the lists for all topics with various frequencies. Epistemic *may* and *in my opinion* also appear in three out of the four topics. Learners' range of MDs was calculated by comparing the frequency of use of the top ten MDs to all other MDs. The top 10 MDs accounted for 88.3% of all MDs in the Job topic, 86.5% in the Smoking topic, 85.4% in the Major topic, 85.3% in the Wealth topic, and 84.4% for all topics combined.

Table 4. Modal Devices Most Frequently Used, by Topic (per 1,000 tokens)

Rank	Job Topic		Major Topic		Smoking Topic		Wealth Topic		All Topics	
	Modal Device	Freq.	Modal Device	Freq.	Modal Device	Freq.	Modal Device	Freq.	Modal Device	Freq.
1	can (E)	26.1	can (E)	14.5	think	12.7	think	15.3	can (E)	14.3
2	think	11.5	think	13.7	should (D)	12.3	can (E)	9.1	think	13.2
3	will	9.1	will	8.8	banned	9.9	should (D)	4.7	will	6.9
4	very	2.7	should (D)	4.3	will	6.3	have to	3.5	should (D)	5.8
5	have to	2.5	have to	2.7	can (E)	5.6	very	3.4	very	2.7
6	should (D)	2.3	very	2.5	very	2.2	will	3.0	have to	2.6
7	may (E)	1.6	may (E)	1.4	may (E)	2.0	in my opinion	1.5	banned	2.4
8	could	1.5	must (D)	1.1	would	1.7	always	1.2	may (E)	1.4
9	must (D)	1.4	in my opinion	1.0	have to	1.6	often	1.2	in my opinion	1.2
10	in my opinion	1.2	would	0.8	can (D)	1.3	sometimes	0.9	would	1.0

Note. Modal verbs that can be either epistemic or deontic are marked with (E) for epistemic usage and (D) for deontic usage.

The distribution of MDs used by learners according to grammatical category and topic are shown in Table 5. All totals and percentages were calculated from raw data. The data shows that EDs were more frequent than DDs for all topics. This is to be expected because more EDs were included in the

study than DDs. Of the EDs, modal verbs were the most frequently used for each topic followed by lexical verbs, adverbials, and adjectives. Of the DDs, modal verbs were used more frequently than adjectives, as was the case with the EDs. Overall, learners used the greatest number of EDs for the Job and Major topics and used fewer EDs for the Smoking and Wealth topics. The frequency of DDs was similar across topics except for a much higher frequency for the Smoking topic.

It is apparent that the high frequency of DDs for the Smoking topic was due to the inclusion of *should* and *banned* in the wording of the prompt, as these two items were used very frequently for this topic (see Table 4). After removing instances where learners merely repeated the wording of the prompt (generally the topic sentence of their essays), *should* turned out to have a frequency of 4.5 per thousand tokens, and *banned* came out to 0.8. The new total frequency for deontic modal verbs was 9.1, deontic adjectives was 1.5, and total DDs was 10.6. This would put DDs for the Smoking topic at a similar frequency to that of the other topics.

Table 5. Frequencies of Epistemic and Deontic Devices, by Topic

Modal Device	Category	Job Topic		Major Topic		Smoking Topic		Wealth Topic		All Topics	
		Freq. /1000	% of Total	Freq. /1000	% of Total	Freq. /1000	% of Total	Freq. /1000	% of Total	Freq. /1000	% of Total
EDs	modal verbs	39.6	67.9	26.5	53.9	16.1	45.3	14.2	36.1	24.8	53.7
	adjectives	1.0	1.8	1.1	2.3	0.5	1.4	0.5	1.6	0.8	1.8
	lexical verbs	12.2	20.9	15.3	31.1	13.9	39.1	15.9	40.5	14.2	30.8
	adverbials	5.5	9.5	6.2	12.7	5.1	14.3	8.6	21.8	6.3	14.6
	TOTAL	58.3	100.0	49.1	100.0	35.6	100.0	39.3	100.0	46.1	100.0
DDs	modal verbs	7.1	88.3	8.8	94.9	17.0	61.5	9.3	90.1	10.4	76.7
	adjectives	0.9	11.7	0.5	5.1	10.6	38.5	1.0	9.9	3.2	23.3
	TOTAL	8.0	100.0	9.3	100.0	27.6	100.0	10.3	100.0	13.6	100.0
All		66.4	100.0	58.4	100.0	63.2	100.0	49.6	100.0	59.7	100.0

The frequency of boosters and hedges for each topic is shown in Table 6. All totals and percentages were calculated from raw data. Hedges were used more frequently than boosters for all topics. Based on frequency alone, learners used both more boosters and more hedges on the Job and Major topics than the Smoking and Wealth topics. However, based on percentages, learners used a smaller proportion of boosters and larger proportion of hedges for the Job and Wealth topics and vice versa for the Major and Smoking topics.

Table 6. Frequencies of Boosters and Hedges, by Topic

Modal Device	Job Topic		Major Topic		Smoking Topic		Wealth Topic		All Topics	
	Freq. /1000	% of Total	Freq. /1000	% of Total	Freq. /1000	% of Total	Freq. /1000	% of Total	Freq. /1000	% of Total
Boosters	13.3	22.4	14.0	28.3	10.5	28.7	8.9	21.7	11.8	25.0
Hedges	46.1	77.6	35.5	71.8	26.1	71.3	32.0	78.3	35.4	75.0
All	59.4	100.0	49.5	100.0	36.6	100.0	40.9	100.0	47.2	100.0

4.2. Comparison to Native Speakers' Modal Use

Learners' use of MDs was compared to that of NS students (Table 7). NS data from the ICNALE corpus for the Job and Smoking topics was available to compare to the Japanese learners in this study. Log-likelihood calculations were made using absolute frequencies, but normalized frequencies (per 1,000 tokens) are shown for ease of comparison. The table shows several statistically significant differences between learner and NS MD usage. In total, EDs were overused for the Job topic but

underused for the Smoking topic. Total DDs showed no significant difference for the Job topic but were overused for the Smoking topic. However, this was likely influenced by the wording of the prompt as explained previously.

Table 7. Comparison of Frequencies of Epistemic and Deontic Devices for NS Students and Learners, for Job and Smoking Topics (per 1,000 tokens)

Modal Device	Category	Job Topic			Smoking Topic		
		NS Students	Learners	Overuse/ Underuse (+/-)	NS Students	Learners	Overuse/ Underuse (+/-)
Epistemic	modal verbs	22.3	39.6****	+	18.7	16.1	-
	adjectives	1.0	1.0	=	1.9	0.5**	-
	lexical verbs	7.0	12.2****	+	12.4	13.9	+
	adverbials	12.7	5.5****	-	14.5	5.1****	-
	Total	43.1	58.4****	+	47.4	35.6****	-
Deontic	modal verbs	8.1	7.1	-	10.9	17.0****	+
	adjectives	0.8	0.9	+	6.4	10.6****	+
	Total	8.9	8.0	-	17.3	27.6****	+

Note.

* statistical significance (p<0.05)

** high statistical significance (p<0.01)

*** very high statistical significance (p<0.001)

**** highest statistical significance (p<0.0001)

Learners' use of boosters and hedges for the Job and Smoking topics was also compared to that of NS students (Table 8). Log-likelihood was calculated using absolute frequencies, but normalized frequencies (per 1,000 words) are shown for ease of comparison. These results show that learners underused boosters for both the Job and the Smoking topics. Hedges were highly significantly overused for the Job topic and slightly underused for the Smoking topic.

Table 8. Comparison of Frequencies of Boosters and Hedges for NS Students and Learners, for Job and Smoking Topics (per 1,000 tokens)

Modal Device	Job Topic			Smoking Topic		
	NS Students	Learners	Overuse/ Underuse (+/-)	NS Students	Learners	Overuse/ Underuse (+/-)
Boosters	16.8	13.3*	-	18.2	10.5****	-
Hedges	26.0	46.1****	+	29.0	26.1	-

Note.

* statistical significance (p<0.05)

** high statistical significance (p<0.01)

*** very high statistical significance (p<0.001)

**** highest statistical significance (p<0.0001)

4.3. Correlation with the School's Curriculum

All of the epistemic modal verbs and deontic modal verbs in this study were found to appear in the curriculum twice or more. Many of the other MD types were not found in the textbooks, and those that were found were generally taught once or twice. Table 9 shows the average frequencies of EDs and DDs in the textbooks along with their average frequency of use by learners, and Table 10 does the same for boosters and hedges.

These tables show that, generally, the MDs that appeared more frequently in the textbooks were also used more frequently by learners. For example, epistemic and deontic modal verbs were taught most frequently and were used the most by learners. Boosters and hedges that were taught were used

more frequently than those that were not. *Feel* was not taught and was underused by learners for both the Smoking and Job topics. *Think* and *in my opinion* were taught frequently and were overused by learners for both topics.

For other MDs, there is not such a direct relationship. Deontic adjectives not taught in the textbooks were used by learners more frequently (though this is likely due to influence of *banned* in the Smoking prompt). *Believe* was taught as frequently as *think* but was used by learners much less frequently. Epistemic *can* was found only twice in the textbooks but was significantly overused by learners for the Job topic. Finally, *very* was not taught but was used by learners fairly frequently (it is likely that *very* was taught in junior high school).

Table 9. Frequencies of Epistemic and Deontic Devices in the High School Textbooks and Used by Learners

Modal Device	Category	No. of Lexical Items in Category	Devices in the Textbooks		Devices Not in the Textbooks
			Average Times Taught per Lexical Item	Average Freq./1000 of Use by Learners	Average Freq./1000 of Use by Learners
Epistemic	modal verbs	8	2.0	3.2	n/a
	adjectives	10	1.2	0.1	0.0
	lexical verbs	18	1.7	1.1	0.0
	adverbials	50	1.4	0.1	0.2
Deontic	modal verbs	8	2.6	1.3	n/a
	adjectives	7	1.5	0.2	0.9

Table 10. Frequencies of Boosters and Hedges in the High School Textbooks and Used by Learners

Modal Device	No. of Lexical Items in Category	Devices in the Textbooks		Devices Not in the Textbooks
		Average Times Taught per Lexical Item	Average Freq./1000 of Use by Learners	Average Freq./1000 of Use by Learners
Boosters	33	1.3	0.6	0.2
Hedges	58	1.7	1.1	0.0

SPSS was used to more precisely determine the relationship between MDs' frequency in the curriculum and learners' MD use (Figure 1). Each data point represents a particular MD. The graph shows a positive correlation between the two variables. For a more precise figure, Pearson's correlation coefficient was calculated. A positive correlation of .394** ($p < 0.01$) was found, meaning learners did more frequently use the MDs that were in the textbooks.

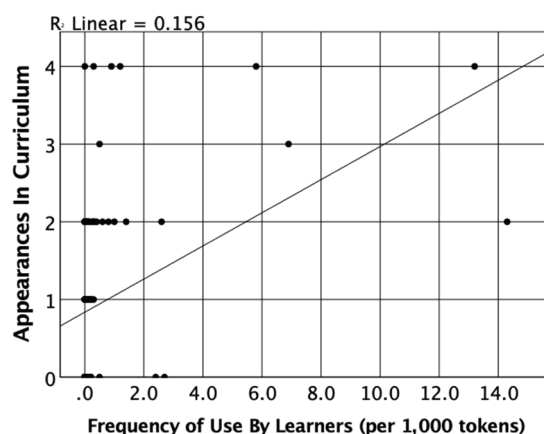


Figure 1. Correlation between Frequency of Modal Devices in the Curriculum and Their Use by Learners

5. Discussion

This discussion analyzes the results with a view towards their implications in terms of other studies, such as Hinkel (2009), Hu and Li (2015), and others regarding questions raised about modal usage by university L2 learners in argumentative writing.

5.1. Learners' Modal Use

Learners in this study were very restricted in their range, even more so than those in previous studies. Kim and Suh (2014) found that Korean learners' top ten EDs accounted for more than 75% of all EDs at the lowest proficiency levels and around 60% at the highest levels. Similarly, Hu and Li (2015) found that the top ten EDs used by Chinese learners accounted for 73% of all EDs for learners at the lowest proficiency level and 61% for those at the highest. For learners in this study, the top ten MDs accounted for 84.4% of all MDs for all topics, with slightly higher or lower results depending on the topic.

In terms of ED and DD use, the Job and Major topics yielded similar results, and the Smoking and Wealth topics yielded similar results, while each of these two sets of topics yielded different results from each other. To explore these differences, the Job and Major topics will be called Set 1, and the Smoking and Wealth topics Set 2. EDs were used more frequently in the Set 1 topics than the Set 2 topics. The frequency of DDs was similar for all topics. One exception was that learners used a large number of DDs on the Smoking topic, but this was likely due to influence of *should* and *banned* in the wording of the prompt. When controlling for this, the frequency of DDs was similar across topics.

In Hinkel's (2009) study, Japanese learners used twice as many epistemic modal verbs for the Major than for the Wealth topic. The present study had similar results with 26.5 epistemic modal verbs per 1,000 tokens for the Major topic and 14.2 for Wealth. Hinkel also found that learners used nearly four times as many deontic modal verbs for the Major topic as they did for the Wealth topic. In the present study, however, there were similar frequencies for both topics, 8.8 per 1,000 tokens for Major and 9.3 for Wealth. Thus, Hinkel's assertion that Japanese learners approach academic topics such as Major with a greater sense of obligation due to cultural differences is shown not to be true for the learners in this study.

Learners consistently used more hedges than boosters, but they used more of both on the Set 1 topics than with Set 2 topics. However, percentage-wise, they used a larger proportion of boosters to hedges on the Smoking and Major topics and a smaller proportion of boosters to hedges on the Job and Wealth topics. A review of their essays reveals that learners were more divided in their opinions on the Smoking (36-10) and Major (31-15) topics but more unanimous on the Job (50-3) and Wealth (41-4) topics. It could be that learners felt a greater need to strengthen their arguments on topics that were more divisive and so used a greater proportion of boosters. For the topics that were more generally agreed upon, they may have been so confident in their opinions that there was less of a need to emphasize their points.

Previous studies (e.g. Hyland & Milton, 1997; Milton & Hyland, 1999; Chen, 2010, 2012; Takimoto, 2015) found that learners used more boosters than hedges, opposite to NS students, except at the highest levels of proficiency. Hu and Li (2015), however, found that learners consistently used more hedges than boosters and that this was relatively consistent across proficiency levels. This study also found that learners consistently used more hedges than boosters for each topic, similar to Hu and Li's study.

5.2. Learners' Over- and Underuse

Hinkel (2009) found that Japanese learners overused epistemic modal verbs and overused deontic modal verbs for the Major topic. For the Wealth topic, both of these were neither overused nor

underused. Though NS data was not available for these topics for this study, rough comparisons can be drawn to learners' overuse/underuse for the Job and Smoking topics (Table 11). Hinkel proposed that Japanese learners' overuse of epistemic modal verbs is caused by a self-effacing "interpersonal caution" in their culture. The present study showed that learners overused epistemic modal verbs for the Job topic but not the Smoking topic. If it were true that Japanese learners overuse these as part of a cultural disposition, it would seem that they would be overused for all topics in Hinkel's study and the present study, regardless of topic. As this was not the case, there may be other factors that predict the overuse of epistemic modal verbs.

Table 11. Overuse (+) and Underuse (-) of Modal Verbs in Hinkel (2009) and the Present Study

Modal Verb	Hinkel (2009)		Present Study	
	Major	Wealth	Job	Smoking
Epistemic	+	=	+	=
Deontic	+	=	=	+

Note. Instances of overuse and underuse that were not statistically significant are viewed as equal and are represented here with a = symbol.

Hinkel's study also suggested that overuse of deontic modal verbs is caused by a "hierarchical view of social and kinship roles" carried over from Confucianism. Learners in the present study, when controlling for interference from the wording of the prompt for the Smoking topic, did not overuse or underuse deontic modal verbs for either topic. If cultural views of social hierarchy were an important factor, it seems likely that this would affect deontic modal verb use for the Job topic in particular, but this was not the case. It would therefore appear that the importance placed on social roles and responsibilities varies from one learner group to the next, and cultural background cannot be generalized to predict modal use.

Regarding boosters and hedges, Hu and Li (2015) found that learners underused both compared to NS students. Learners in the present study similarly underused boosters for both the Smoking and Job topics, but they overused hedges for the Job topic. Hedges in the present study were not overused or underused for the Smoking topic to any significant degree.

5.3. Learner Output and the Curriculum

A positive correlation was found between the frequency of MDs taught in the high school textbooks and the frequency of their use by learners. This aligns with McEnery and Kifle's (2002) finding that curriculum influences MD output of learners. However, learners' use of some specific MDs did not correlate with the frequency in the textbooks. For example, learners overused *think* but underused *believe*, though these both appeared four times in the textbooks. For these MDs, frequency was likely influenced not by the curriculum but by other factors such as the One-to-One principle. Learners may have been reluctant to use *believe* simply because *think* was already available. Another example is that *can* was taught frequently in the curriculum, but frequency of use varied based on the influence of topic. These exceptions align with Hu and Li's (2015) assertion that learner output does tend to correlate with frequency in the curriculum, but not in all cases.

5.4. Quality and Usefulness of the Results

Previous studies offered suggestions about the factors that may influence learners' MD use in argumentative writing, and this study sought to test those factors. Though topic does seem to affect the use of MDs as suggested by Hinkel (2009), this study does not support generalizations about learners' cultural background as a predictor of MD use. Instead, learners' perception of topic may be a more precise indicator. This suggestion is based on a previous study (Hamp-Lyons & Mathias, 1994), which

found that the type of topic, whether about a personal or public issue, affects test scores in ESL learners. In this study, learners might have perceived the Set 1 (Job and Major) topics as more personal and relevant to their lives, while the Set 2 (Smoking and Wealth) topics were viewed as more public. This would mean that the learners used more EDs for topics they perceive as personal. This study does support Hu and Li's (2015) finding that learners use more hedges than boosters regardless of topic, though this contradicts most previous studies. It also supports Hu and Li's suggestions that MD use is affected by the curriculum and learners' tendency to rely on a narrow range of MDs (the One-to-One principle).

While still producing valuable findings, there were several limitations of this study. Firstly, the size of the learner corpora were small with only about 10,000 words for each topic, about half the size of the NS corpora from ICNALE. Next, NS data was available for comparison to only two of the four topics. Also, curriculum data was gathered from textbooks, and it was impossible to account for which MDs were actually used or emphasized by teachers in class. Lastly, it was not possible to count all of the MDs that exist in English, so some were inevitably excluded from the study.

There were also limitations relating to the writing conditions for learners. One issue was that learners discussed their opinions with classmates before writing and wrote their essays as homework. This was different from participants in the ICNALE corpus who wrote their essays alone and within a specified timeframe. Ideally, conditions would have been the same to avoid creating any extraneous variables. Another issue was that the wording of the Smoking prompt contained two MDs that clearly influenced learners' writing. Though the choice was made not to change this in order to be consistent with the wording of the ICNALE prompt, it might have been more useful to see what MDs learners used without this influence.

Further research is needed to understand how topic and other factors affect learners' MD use. Such research would help determine more precisely why learners struggle to use MDs in argumentative writing, allowing future learner corpus studies to be designed in a way that accounts for these variables. Future studies could include a greater variety of topics along with NS data for each topic for comparison. Learners and NS students could be surveyed to determine whether they perceive each topic as personal or public in order to verify if this affects MD use. The influence of other factors such as study abroad experience, gender, or introversion/extroversion could also be studied. Further research could also be used to inform classroom instruction and curriculum design. Longitudinal studies could test the effect of teaching on learners' MD use in argumentative writing. For example, learners could benefit from a curriculum that includes the MDs most frequently used by NS students. They may also benefit from more/less exposure to the MDs learners tend to underuse/overuse. Further, they could benefit from more exposure to NS student writing as well as consciousness-raising activities to help highlight semantic differences between similar MDs. Learner writing samples taken before and after these methods could be checked to see if learners develop more native-like argumentative writing abilities.

The methodology developed here to find correlations between curriculum and language output could potentially be useful for future learner corpus studies on argumentative writing as well as other writing genres. By calculating the Pearson correlation coefficient in SPSS, it was possible to find relationships between the number of MDs in the curriculum and learners' MD output. In future studies, any number of other learner factors could be quantified through a learner survey and be compared to lexical features quantified from a learner corpus. This methodology would be particularly useful for researchers in the Contrastive Interlanguage Analysis (CIA) field who wish to understand how learner factors influence the progression of language competence.

6. Conclusion

It has been well-established that modality is an important element of argumentative writing but is difficult to master for second-language learners. The literature on learners' modal device (MD) use has shown some conflicting results, impeding understanding of how and why learners have struggled. Some research has suggested that learners' cultural background affects their approach to certain topics, which affects their use of MDs (Hinkel, 2009). Others have asserted that MD use is affected by the One-to-One principle, learners' tendency to over-rely on one form to express one meaning rather than learning alternative forms which serve a similar function. Other suggested factors include L1 influence, L2 proficiency, and curriculum (Hu & Li, 2015).

The key implications of the study are that, while learners certainly do struggle with MD use in argumentative writing, how and why they struggle depends on the particular MDs being measured and the curriculum. It may also depend on their perception of the topic as personal or public. Learners require a great deal of exposure to NS writing in order to understand the norms and expectations of the discourse community. They should also be taught the roles of the different types of MDs as well as the subtleties of semantic distinction between modals. To prevent overreliance on a small range of MDs (the One-to-One principle), learners need to be shown how devices with similar functions can be used to convey different nuances of meaning. Lastly, curricula should be designed based on the MDs found in NS corpora in order to give a realistic representation of their importance. These curricula should include all grammatical categories of MDs rather than just modal verbs.

This study has shown that it is possible to empirically determine the relationship between linguistic output and the curriculum. Calculating the Pearson correlation coefficient using SPSS made it possible to empirically determine the relationship between the number of occurrences of MDs in the curriculum and language use frequencies. Further studies could explore if and how other linguistic features are affected by learner variables by employing this methodology. This could be an especially useful tool for researchers studying learners' writing in the field of CIA.

Ultimately, it is up to teachers to understand the needs of their particular learners and to address these needs adequately. By linking situational or learner variables to linguistic output, teachers can understand learners' needs in precise detail and identify the factors that create obstacles to effective writing. This prevents teachers from taking a one-size-fits-all approach and allows them to create curricula and classroom activities tailored to their individual learners. Learners who are given the correct tools to improve linguistic competence will have greater understanding of their own limitations and be better equipped to meet the demands of the L2 discourse community.

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Appendix

Modal Devices Included in the Study

Modal Device	Category	Lexical Item			
Epistemic	modal verbs	can* could	may might	must should	will would
	adjectives	certain clear definite	likely obvious possible	probable rare* sure	true
	lexical verbs	appear argue assume believe bet*	claim expect feel figure* find	guess hope* realize seem show	tend think wonder*
	adverbials	absolutely* about actually almost always apparently approximately around beyond doubt certainly clearly conclusively decidedly	definitely essentially extremely* fairly frequently generally in fact in general indeed kind of* largely likely mainly	maybe mostly never no doubt obviously of course often perhaps possibly presumably probably quite rarely	rather really relatively sometimes somewhat surely truly undoubtedly usually very* without (a) doubt
	modal verbs	can had better	have to may	must need to	should ought to
	adjectives	allowed banned	essential necessary	needed required	supposed
	Boosters	absolutely* actually always beyond doubt certain certainly clear clearly conclusively	decidedly definite definitely extremely* find in fact indeed must never	no doubt obvious obviously of course realize really show sure surely	true truly undoubtedly very* will without (a) doubt
	Hedges	about almost apparently appear approximately argue around assume bet* believe can* certain amount certain level claim could	doubt essentially expect fairly feel figure* frequently from a logical perspective* from this perspective generally guess in ___ cases in general in my opinion	in my view kind of* largely likely mainly may maybe might mostly often perhaps possible possibly presumably probable probably	quite rare* rarely rather relatively seem should sometimes somewhat tend think usually would

Note. *added from corpus (not found in source lists)

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