Patterns of elaboration and inter-language development: an exploratory corpus analysis of college student essays

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Abstract

Corpus linguistic analysis has been increasingly applied to the studies of variation in surface linguistic features of second language writing. Previous research found that nonnative English speaking (NNS) writers at higher levels of proficiency produced larger quantity (measured by the number of words) and greater quality (measured by the number of varieties of lexical items used in the texts) than those at lower levels of proficiency (e.g. Ferris, 1994). Karasawa (2001), however, found large quantity did not always mean judged higher quality of NNS essays. The present study compared the patterns of elaboration found in NNS student essays in high, intermediate, and low holistic score ranges. The specific target linguistic features examined were lexical items used for modification of nouns and other clause elements, namely, adjectives, adverbs, past/present participles, to-infinitives, prepositional phrases, and that- and wh- clauses. These three NNS sub-groups were further compared with two sub-groups of essays written by native English speaking (NS) students. The results showed some differences in the combinations of linguistic items used for elaboration among the NNS essays in different score ranges while the NS essays did not show any clear trends. This paper concludes that the different patterns of elaboration found in the NNS essays may reflect different stages of inter-language development.

1. Introduction

Corpus linguistic analysis is becoming a valuable tool for examining learner language. Learner corpora may not necessarily share the same characteristics found in corpora of published work produced by expert writers, and observations and descriptions of learner language use through corpus analysis could contribute to a better understanding of linguistic features used by second language (L2) learners. Variations are also likely to be found among L2 learners in different stages of language acquisition, which calls for a comparative analysis of corpora produced by learners at different proficiency levels.

The present study analyzes the types and the numbers of linguistic features used for elaboration in the essays written by nonnative English speaking (NNS) college students who were classified into three different proficiency levels. The main purpose of the study is to examine whether there are different elaboration patterns found among the NNS writers at each proficiency level. This study is exploratory in nature and examines relatively small corpora. The results reported in this paper are primarily descriptive although some inferences are also made from them.

The next section briefly reviews the previous research and gives a rationale for the present study. The third section describes the research method of the present study. The fourth section presents and discusses the results. The final section draws a tentative conclusion, discuss the limitation of the present study and offers some suggestions for future research.

2. Background to the study

The length of an essay, measured by the total number of words, has been widely used as a quantitative fluency variable in second language (L2) writing research (Reid, 1990). The use of this variable for measuring fluency has validity in that higher linguistic competence, which includes lexical and syntactic knowledge, should be necessary for producing essays in greater length.

Greater length of individual sentences, however, may not always guarantee greater quality. Lengthy sentences may contain repetitive use of the same lexical items and may consequently become excessively redundant. Lengthy sentences may, on the one hand, express highly complex ideas, but they may, on the other hand, obscure the main point and may not necessarily convey meanings in the most efficient and comprehensible manner.

Ferris (1994), responding to Biber's call for more multi-dimensional approaches to written discourse (Biber, 1985), examined 28 lexical and syntactic variables in essays of 60 low and 100 high proficiency level ESL students. The study found that the differences in the numbers of 18 of the 28 variables were statistically significant, and the total number of words was one of them.

Karasawa (2001) examined the introduction of argumentative essays written by NNS college students, and found greater numbers of instances of unnecessary types of redundancy in the essays in intermediate score ranges. The study was initially inspired by Blum-Kulka & Olshtain's research on NNS subjects' speech act realization patterns (Blum-Kulka & Olshtain 1986). They applied Grice's theory of conversation, quantity and manner maxims in particular (Grice 1975), and found relative verbosity observed among L2 speakers at intermediate proficiency levels. They argued that L2 learners needed more words to accomplish the same task than first language (L1) speakers, which could result in a pragmatic failure (Thomas 1983). They identified three types of verbosity: (1) "verbosity per se" – using too many words, which may be caused by "overindulgence in words," (2) "overinformedness" – trying to explain contextual backgrounds that are irrelevant, and (3) "double messages" – using several contradictory expressions (Blum-Kulka & Olshtain 1986, 175-76). They further argued that verbosity was prevalent in intermediate level speakers because L2 speakers at lower proficiency levels would lack linguistic competence for being verbose while advanced level speakers would gradually approximate native norms.

If an intermediate proficiency level is where verbosity is most prevalent, examining only high and low proficiency levels may mask the phenomenon because some of the intermediate level learners would be classified at a high proficiency level while others would be at a low proficiency level. It is, therefore, of crucial importance to examine at least three levels of proficiency.

More instances of occurrences of unnecessary redundancy found in intermediate level essays in Karasawa (2001), to some extent, support Blum-Kulka & Olshtain's (1986) findings. Karasawa (2001) only examined redundancy present in the introduction of student essays, but the study also analyzed overall linguistic features of entire texts of sample essays drawn from the same data. The analysis found textual variations among NNS essays in high, intermediate, and low score ranges, but the statistical method used in the study could not locate specific linguistic items that accounted for the variations.

The present study selected a few lexical items used for elaboration as target linguistic features of analysis on the grounds that different patterns of elaboration may result in wordiness or terseness in written discourse.

3. The present study

The corpora analyzed in the present study were collected from 53 NNS students who were enrolled in freshman composition courses at a large four-year university in the U.S. Another set of data was also collected from 54 NS students in the same composition courses as a comparison group. The data collection was fully integrated into the courses to elicit natural performance, and the data were collected as one of the essay assignments for the courses.

Two essay assignments from the composition courses, one of which provided the data for this study, were assigned scores by two independent raters, using a six-point holistic scale. The inter-rater reliability was r=0.90. Although the holistic scoring used for this study is not direct measurement of the writer's linguistic competence, Karasawa (2001) found a fairly high correlation between the score and TOEFL, and therefore, the assigned scores were used for classifying NNS writers into three different proficiency levels. The main target population of the present study is intermediate level writers, and to increase the validity of the research, only the essays written by the subjects who received intermediate scores (i.e. 3-4) on both of the essays were selected for the analysis. The rationale for the selection was that receiving intermediate scores on both essays indicated consistent performance of intermediate level learners. Due to the limited numbers of high score and low score essays (5-6 and 1-2 respectively), the same selection method could not be used for high and low proficiency levels. In the NS data, none of the essays received low scores. Thus, only high and intermediate score essays were used for comparison. The numbers of the NNS and NS essays are listed below in Table 1:

Table 1: Numbers of NNS and NS essays used for analysis

	NNS	NS
High	7	12
Intermediate	15	19
Low	8	N/A

First, the total numbers of (1) adjectives, (2) simple adverbs, (3) high frequency prepositions *at, in, of, on,* and *to*; (4) that- and wh- clauses and (5) present and past participles used as a noun modifier were counted. Word List, one of the WordSmith Tools (version 3.0, Mike Scott & Oxford University Press, 1998), was used for identifying and counting the numbers of these lexical items; and Concord, another tool of the same program, was used for putting them into appropriate word classes. Then the following sub-categories of linguistic items were sorted from the classified lexical items for making a specific observation of elaboration patterns used for modification of nouns and other clause elements: (1) adjectives that are in attributive use, (2) adverbs as a premodifier, (3) prepositional phrases used as either (a) adverbial adjuncts or (b) a postmodifier to a noun, (4) the preposition *of* used as a postmodifier in noun phrases (5) to-infinitives used as a postmodifier, (5) that- and wh- relative clauses used as a postmodifier, and (6) present and past participles as a noun modifier. The classification followed that in *Comprehensive grammar of the English language* (Quirk, Greenbaum, Leech & Svartvik 1991). The total numbers of the two sets of lexical items listed above were compared within the NNS and the NS sub-groups, and across the NNS and the NS sub-groups.

Next, the number of each of the linguistic items in each essay was converted to the standardized numbers, which indicated the predicted numbers of occurrences of these items in every 330 words (i.e. overall average essay length). Then a correlation study was conducted to examine possible relationships among different linguistic items. Finally, a set of regression analyses was conducted to find out whether any of the target linguistic items could be a strong predictor variable for the essay score.

4. Results and discussion

The descriptive statistics of the NNS and NS corpora examined in this study are shown below in Table 2.

Table 2: Descriptive statistics of the NNS and the NS corpora

Sub-groups	Bytes	Token	Type	T/T Ratio	# of Sentences	Ave. Sent.Length
NNS high (n=7)	19978	3407	961	28.21	168	20.28
NNS intermed. (n=15)	19766	3426	828	24.17	165	20.76
NNS low (n=8)	9777	1689	511	30.15	95	17.78
NS high (n=12)	23929	4164	982	23.58	211	18.55
NS intermed. (n=19)	21994	3978	879	22.10	205	19.40

Type/token ratio is sensitive to text length, which makes the corpus of low score essays incomparable to the other corpora because it is less than half the size of the others. Both the NNS and the NS pairs of corpora of high and intermediate score essays, however, are of similar lengths, and the NNS high score essays show a clearly higher type/token ratio than the NNS intermediate essays.

As the numbers of the essays and the total numbers of the tokens show, both the NNS and the NS high score essays were generally longer than other sub-groups. This supports the notion that greater length indicates higher quality. The average sentence length, on the other hand, show a slight decline from the intermediate to high score essays in both the NNS and the NS data.

Table 3 below lists the total number of the first set of lexical items presented above in the previous section. The figures in the parentheses are the percentage of the particular item in the corpus.

Table 3: Total numbers of lexical items

Sub-groups	NNS high (n=7)	NNS intermed (n=15)	NNS low (n=8)	NS high (n=12)	NS intermed. (n=19)
Adjectives	179 (5.25%)	158 (4.61%)	81 (4.89%)	161 (3.87%)	193 (4.85%)
Adverbs	63 (1.85%)	58 (1.69%)	21 (1.24%)	53 (1.27%)	65 (1.63%)
Prepositions	324 (9.51%)	270 (7.88%)	136 (8.05%)	376 (9.03%)	314 (7.89%)
Th-/Wh- Clauses	84 (2.47%)	81 (2.36%)	35 (2.07%)	90 (1.27%)	99 (2.49%)
Participles	9 (0.26%)	7 (0.2%)	2 (0.12%)	6 (0.14%)	9 (0.27%)

The numbers of the lexical items almost consistently show some increase from the low to the high score essays in the NNS corpora, whereas the NS corpora show more mixed results.

The numbers of specific target linguistic items used for elaboration of nouns and other clause elements, however, indicate slightly different trends. They are listed in Table 4 below.

Table 4: Total numbers of target linguistic items used for noun/clause element modification

Sub-groups	NNS high (n=7)	NNS intermed (n=15)	NNS low (n=8)	NS high (n=12)	NS intermed. (n=19)
Adjectives	133 (3.90%)	144 (4.20%)	39 (2.31%)	117 (2.81%)	118 (2.97%)
Adverbs	10 (0.29%)	16 (0.47%)	7 (0.41%)	7 (0.17%)	13 (0.33%)
Prep. Phrases	94 (2.80%)	69 (2.01%)	34 (2.01%)	118 (2.83%)	99 (2.49%)
Modifier *of*	50 (1.47%)	31 (0.90%)	5 (0.30%)	40 (0.96 %)	27 (0.68%)
To-infinitives	18 (0.51%)	32 (0.93%)	16 (0.94%)	27 (0.65%)	29 (0.73%)
That Clauses	17 (0.50%)	21 (0.61%)	12 (0.71%)	29 (0.70%)	37 (0.93%)
Wh- Clauses	27 (0.79%)	29 (0.85%)	23 (1.36%)	26 (0.62%)	26 (0.65%)
Participles	9 (0.26%)	7 (0.20%)	2 (0.12%)	6 (0.14%)	9 (0.27%)

The numbers of linguistic items except for prepositional phrases, the modifier *of*, and participles are higher in the NNS intermediate score essays than the NNS high score essays. Once again, the NS portion shows more mixed results although prepositional phrases and the modifier *of* seem to be the types of elaboration patterns favored in both the NNS and the NS high score essays.

A comparison of Tables 3 and 4 reveals that the percentage of adjectives used in an attributive function was the highest in the NNS intermediate essays (91.1%). Less than half of the adjectives in the NNS low score essays, on the other hand, were used in this way (48.15%). This may indicate that a predicative use of adjectives as subject complement is easier for the low proficiency level learners to use.

All levels of the NNS essays show a higher use of wh- relative clauses than the NS essays. This could be interpreted as transfer of learning from formal L2 writing instruction where use of this linguistic item is often explicitly taught. That- clauses are more highly favored than wh- clauses in the NS essays.

One additional observation, which is not shown in the table, is that the NNS high score essays contained a slightly higher variety of adjectives (i.e. 80 types in 133 tokens) as compared to the 82 types in 144 tokens used in the NNS intermediate score essays.

Tables 5.1 and 5.2 below show a part of the results of the correlation studies. The tables list only the items that showed positive or negative correlations of at least 0.250. The complete results are listed in Appendix A.

Table 5.1: Results of correlation study of linguistic items in NNS essays

	Adj.	Participles	Adv.	That	Prep. P.	Of
To-inf.				-0.271		
That			0.516			
Prep. P.	0.483	-0.362	-0.250			
Of	-0.262					
Wh-Cl			0.675	0.324	-0.272	0.286

Table 5.2: Results of correlation study of linguistic items in NS essays

	Adj.	Participles	Adv.
Adv.		0.362	
That	0.256	-0.252	-0.330
Prep. P.			-0.360
Of	0.279		0.298

In the NNS corpora, the use of adjectives and prepositional phrases show a high relationship, which allows an interpretation that the combination of these two linguistic features is a common elaboration pattern. The use of prepositional phrases shows a moderate negative correlation with the use of wh-clauses. The use of wh- clauses also shows negative correlation with the use of the modifier *of*. The use of that- clauses, on the other hand, shows a moderate negative correlation with to-infinitives. These negative relationships could indicate a contrast between clausal versus phrasal elaboration patterns. The writers may have tendencies to choose one type of elaboration over the other. The attributive use of adjectives also shows a moderate negative correlation with the use of the modifier *of*. Again, the relationship of these two items may indicate writers' preferences between premodification versus postmodification.

The results of the correlation study of the NS essays are harder to interpret. No specific choices of elaboration patterns can be inferred from the relationships.

As the final portion of the analysis, a set of linear regression and multiple regression analyses was conducted to examine whether any of the target linguistic features could make a prediction for the essay score. Table 6 below lists the results of linear regression analysis for the NNS data that were found statistically significant. None of the results of the NS portion of the analysis reached a statistically significant level.

Table 6: Results of linear regression analysis for NNS data

Predictor variable	r^2	Adjusted r^2	F	p
Prepositional Phrase	0.147	0.116*	4.82	0.037
Wh- Clause	0.193	0.164*	6.68	0.015
Adjective	0.198	0.169*	6.92	0.014

*P<0.05

The results indicate that Wh- Clause and Adjective are two stronger predictor variables of the three. As the next step, a multiple regression analysis was conducted to find out whether the overall prediction would improve. Table 7 below shows the results.

Table 7: Results of multiple regression analysis for NNS data

	t-ratio	R^2	Adjusted R^2	F	p
<u>Step 1</u>					
Wh- Clause	2.20*				
Adjective	2.25*				
		0.320	0.269**	6.34	0.006
<u>Step 2</u>					
Prepositional Phrase	0.76				
Wh- Clause	1.97				
Adjective	1.65				
		0.335	0.258*	4.36	0.013

*p<0.05
**p<0.01

The t-ratios of Step 1 indicate that both of the variables individually contributed to R^2, and the combination of these two variables improved the prediction of variance in the essay scores to 26.9%. The t-ratios of

Step 2, on the other hand, indicate that none of these three variables individually contributed to R^2, and when Prepositional Phrase variable was added to the equation, the prediction power slightly decreased to 25.8%. Thus the combination of the two variables in Step 1 was found to be the strongest model.

5. Conclusion

The sample sizes of this study were very small, and no strong claims nor generalizations could be made from the results. Nevertheless, there were some noticeable tendencies observed in the NNS corpora which are worth interpretations. Also, the fact that the tendencies stated above in the previous section and summarized below in this section were found only in the NNS corpora allows an interpretation that they may, to some extent, characterize different stages of inter-language development.

First of all, the low score essays were clearly reductive, compared with the high and the intermediate score essays. The numbers of linguistic items used for noun modification were very low except that the percentage of the use of that- and wh- relative clauses was higher than the other two sub-groups. Most noticeably, the percentage of an attributive use of adjectives was very low (48.15% of the entire adjectives in the corpora). The low proficiency level writers used adjectives more often in a predicative function, which showed a strong contrast against the high use of adjectives in an attributive function found especially in the intermediate score essays (91.1%). The percentage dropped to 74.3% for the high score essays. As was pointed out in the previous section, a higher use of wh- relative clauses found in the NNS essays at all three levels may indicate an influence of formal writing instruction.

In a comparison of the NNS high and intermediate score essays, the high score essays showed (1) greater length indicated by the number of tokens per essay and (2) higher linguistic complexity indicated by a higher type/token ratio and higher numbers of the first set of lexical items examined (Tables 2 and 3). When it comes to the average length of each sentence and the numbers of the target linguistic items used for modification, however, the intermediate score essays showed slightly larger quantity (Tables 2 and 4). One possible interpretation is that the intermediate proficiency level writers elaborate more within each sentence than the high proficiency level writers.

The slightly larger total number and the slightly fewer variety of adjectives found in the intermediate score essays indicate that the writers at the level used the same adjectives more repeatedly than those at the higher score level. The higher percentage of the modifier *of* and the lower percentage of adjectives in the high score essay indicates a preference for phrasal postmodification of nouns in the sub-group.

As was discussed in the previous section, the NNS correlation studies indicated tendencies of preferences of phrasal versus clausal modification, and premodification versus postmodification. Since this portion of analysis was conducted on the NNS essays as a whole group, these tendencies found in the correlation studies may also reflect individual writers' stylistic choices.

The interpretation of the results of the regression analyses is not simple. The easiest to interpret is the results that involve Adjective variable. Judging from the results of the other parts of this study, it is understandable that Adjective is a strong predictor variable. Its use was very low in the low score essays and high in the other two sub-groups. It is also understandable that Prepositional Phrase as a single variable is a fairly strong predictor variable because its use is favored in the high score essays. The results that involve the Wh- Clauses, however, may have been slightly skewed because of its prevalent use in all levels of essays and the small number of low score essays.

L2 writing involves a number of complex linguistic, cognitive, social and cultural factors which include the writer's level of linguistic competence, L1 background, L1 writing skills, preference in topic types, and former educational background. This study focused on the analysis of linguistic features of L2 writing for examining patterns of elaborations. It used small corpora, and the next step is to replicate the study with larger corpora. As has been analyzed extensively in the field of contrastive rhetoric (Kaplan 1966, Connor 1996), elaboration patterns may also be influenced by other factors stated above, such as L1 background because the writer may transfer her knowledge of L1 rhetorical tradition to her L2 writing. The future research should include analyzable sizes of different L1 sub-groups so that a possible L1 influence could also be examined.

Appendix A

The results of correlation studies of NNS and NS essays

NNS Essays

	Adj.	Participle	Adv.	That	To-inf.	Prep. P.	Of	Wh- Clause
Adj.								
Participle	-0.171							
Adv.	0.166	0.218						
That	0.126	-0.028	0.516					
To-inf.	0.024	-0.065	-0.207	-0.271				
Prep. P.	0.483	-0.362	-0.250	0.004	-0.103			
Of	-0.262	-0.095	-0.140	-0.241	-0.104	-0.099		
Wh-Clause	0.222	0.072	0.675	0.324	-0.272	0.286	-0.106	

NS Essays

	Adj.	Participle	Adv.	That	To-inf.	Prep. P.	Of	Wh- Clause
Adj.								
Participle	0.026							
Adv.	0.174	0.362						
That	0.256	-0.252	-0.330					
To-inf.	-0.054	0.133	-0.046	-0.075				
Prep. P.	0.223	-0.121	-0.360	0.135	-0.053			
Of	0.279	0.075	0.298	-0.212	0.206	0.053		
Wh- Clause	0.149	0.195	0.022	-0.078	0.164	0.017	-0.063	

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