

Shared Identities: Our Interweaving Threads

Sentence combining for Japanese university students

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This study investigates how sentence-combining exercises affect Japanese university students' writing. Beginning and intermediate-level students' writing samples were collected before and after they practiced sentence-combining exercises. Comparison with control groups having no sentence-combining exercises indicate that such exercises raise students' awareness in using writing conventions such as embedding, parallel structures, and internal punctuation. Although the effects of sentence-combining may vary according to students' proficiency levels, grammatical features emphasized by such exercises almost invariably encourage most students to pay attention to those features. If these syntactically mature features are emphasized by sentence-combining exercises, students may be able to take a more methodological approach toward syntactic maturity. Within the constraints of an EFL environment, sentence combining offers the kind of step-by-step support that students need.

文結合を用いた文レベルの文法指導が初級、中級レベルの日本人大学生に対して行われ、その効果が検証された。学生の作文が学期の初めと終わりに集められ、文結合の練習をしていない統制群との比較を行った結果、実験群の学生の方が従属節詞を用いた埋め込み文や並列構造、文内句読点の使用への意識が高まることが確認された。学生の英語力レベルによってその効果に違いは見られるが、文結合練習で焦点となる文法項目に対して学生はほぼ例外なく意識を向けるようになることから、文法発達を目安となる文法項目に焦点をあてた文結合練習を行うことにより、学生の文法発達を加速させられる事が示唆された。このような発達もしくは習得の加速こそEFL環境にある日本人学生にとっては必要であり、文結合を用いた指導はライティングの文法面を強化する有効な指導方法といえる。

Sentence combining is a pedagogical technique bringing together a set of kernel sentences to produce syntactically complex or semantically detailed sentences. Writing syntactically complex sentences will not necessarily improve writing quality (Crowhurst, 1983), but research shows that good writers seem to have a good control of producing syntactically complex sentences (de Beaugrande, 1985; Hunt, 1965 cited in Weaver, 1996; Mellon, 1985). Therefore, sentence combining seems to be both an effective and efficient means to enhance such control.



Hunt (1965) showed how written sentence structure changes among English native speaking students between the 4th and 12th grades. Starting from writing single clauses and then conjoining them, the students begin to use relative clauses and various embedding techniques. Over time, they reduce relative clauses to restrictive phrases, and finally begin to use nonrestrictive modifiers typically at 9th to 10th grade. Mellon (1985) showed that T-unit length for students up to high school, and clause length, for adults are good indicators of syntactic maturity; longer T-units or longer clauses suggests more maturity in syntax. He presented the results of analyzing T-unit length and clause length among college freshmen essays, editorials, and academic papers (see Table 1). Whether longer sentences generates more mature content is in itself open to debate, but content without form is simply not possible; the data presented by Hunt and Mellon offers an overall direction that L2 learners should be aiming at regarding syntactic maturity in writing.

Table 1. Mellon's four-tier sample data

	Number of writers	Total words	Words per T-unit	Words per clause
Academic	3	3966	26.4	12.6
Editorial Opinion	4	4076	19.2	11.4
Good Freshman	12	5749	15.8	9.0
Poor Freshman	12	4207	14.2	7.6

Sentence-combining exercises became widespread in the 1970s, but in the 1980s they were criticized as being formalistic and behavioristic—emphasizing form rather than content and building automatized skills rather than cultivating students' competence. As a result, research interest towards sentence combining subsided in the late 1980s in the field of L1 writing, whereas sentence combining has continued to be applied in remedial education, in special education, and in ESL classes (Connors, 2000). Nevertheless, according to recent educational reports published in both the U.K. and U.S.A., sentence combining is still regarded as an effective pedagogical method for teaching grammar to L1 students (Andrews et al., 2004; Graham & Perin, 2007), and in another case, Myers attempts to give a theoretical basis to the effectiveness of sentence combining (2003). In Japan, sentence-combining exercises are occasionally used when junior high and high school students learn specific grammatical features, such as pronouns and relative clauses. Sentence combining, however, is not so widely used for the purpose of enhancing syntactic maturity among university students. This study investigates the effects of sentence combining on beginner and high beginner level university students in Study 1 and on low intermediate and intermediate level university students in Study 2 in order to:

1. Show that sentence combining is an effective and efficient pedagogical technique that directs Japanese students toward syntactic maturity regardless of the students' English proficiency.
2. Propose that sentence combining should be more widely practiced among Japanese university students.

Study 1

Methods

Participants

Participants were 61 Japanese university students, 56 male and five female students, who were freshmen at a private university in Kyoto City. They met once or twice a week over a 15-week semester in a compulsory English reading class taught by the researcher. According to the on-campus English placement test that the students took on their first day on campus, the students' overall English proficiency ranged from beginner to the high-beginner level.

Data collection

A series of sentence-combining (SC) exercises from "Sentence-combining Workbook" (Altman, Caro, Metge-Egan, & Roberts, 2006) were given to two experimental classes as homework. The exercises focused on the use of coordinators, subordinators, other linking words, and parallel structures. The students were asked to type up each set of exercises as one paragraph according to the format given by the researcher. One of the two experimental classes, the SC+ class, received 10 sets of exercises, and the other class, the SC++ class, received 18 sets of exercises in 15 weeks. A control class, the SC- class, received no SC exercises but was given implicit and explicit instructions on grammar through a textbook that was focused on by the SC exercises. The SC+ class and the SC- class was once-a-week using the same reading textbook, whereas the SC++ class was twice a week using another reading textbook. However, both textbooks were targeting high beginner to low intermediate

level readers. According to the on-campus English placement test, the students of the SC++ class were at a slightly lower English proficiency level than the students in the other two classes.

In order to measure the effects of the SC exercises, the students' writings were collected. They were twice asked to write their opinion to the same question – once at the beginning of the term and again at the end of the term. They had 20-25 minutes in class to respond to the question, and they were not allowed to use a dictionary. The prompt was taken from the TOEFL writing exercises in *Criterion*, an online writing evaluation service provided by ETS. Opinion writing, which is usually either argumentative or expository in nature, was selected because this writing genre usually requires expressing complex ideas. Requiring the use of syntactically complex and semantically detailed sentences served the purpose of the sentence-combining exercises. There were approximately 30 students in each class, but the number of those students who completed most of their homework and who also submitted their writings both at the beginning and at the end of the term came to 20 for the SC- class, 21 for the SC+ class, and 14 for the SC++ class.

Data analysis

The number of words per sentence, per T-unit, and per embedded clause in the students' writings was counted. Comparison of these three variables within each class was made using dependent *t*-tests, and comparison among the three classes were made using ANOVA. The rate of parallel structures and internal punctuation appearing in one sentence was also calculated. In addition, the number and variation

of coordinators, subordinators, and other linking words was counted and compared within each class and among the three classes.

Results

The results of analyzing the average number of words per sentence, per T-unit, and per embedded clause are shown in Table 2. The differences between the pre- and post-writings are shown in parentheses. In the post-writings, only the SC++ class wrote longer sentences, longer T-units, and longer clauses than their pre-writings; the SC+ class wrote longer sentences but shorter T-units and clauses, and the SC- class wrote longer T-units and clauses but shorter sentences. The size of the increase was largest in the SC++ class in sentence length, T-unit length, and clause length. Any difference, however, within each class or among the three classes was not statistically significant.

The results of analyzing the rate of parallel structures and internal punctuation are shown in Table 2. These did not show any significant difference within each class (see Table 3). Significant differences among the three classes were seen in the rate of parallel structures for pre-writings ($F(2,52)=3.47$, $P<.05$, $\omega=.29$) and for post writings ($F(2,52)=6.45$, $p<.01$, $\omega=.41$) with the SC++ class writing significantly less parallel structures, and the SC+ class writing significantly more than the other two classes in both the pre- and post-writings.

The results of counting the total number of coordinators, subordinators, and other linking words in the students' writings are shown in Table 4. All three classes wrote

Table 2. Study 1: Sentence length, T-unit length, and clause length

		Words per sentence	Words per T-unit	Words per clause
SC- (n=20)	pre	10.84	9.51	8.88
	post	10.76 (-0.7%)	9.95 (+4.6%)	9.41 (+6.0%)
SC+ (n=21)	pre	12.15	11.41	9.14
	post	12.98 (+6.8%)	10.88 (-4.6%)	8.63 (-5.5%)
SC++ (n=14)	pre	11.17	9.99	9.30
	post	12.09 (+8.2%)	10.78 (+7.9%)	10.50 (+12.9%)

Table 3. Study 1: Rate of parallel structures and internal punctuation

		Parallel structures per sentence	Internal punctuations per sentence
SC- (n=20)	pre	.30	.33
	post	.33 (+10.0%)	.32 (-0.01%)
SC+ (n=21)	pre	.37	.56
	post	.51 (+37.8%)	.60 (+7.1%)
SC++ (n=14)	pre	.11	.42
	post	.13 (+18.2%)	.39 (+7.1%)

Table 4. Study 1: Number of coordinators, subordinators, and other linking words

SC- (n=26)				SC+ (n=21)				SC++ (n=14)			
pre		post		pre		post		Pre		post	
but	19	but	9	but	14	but	11	but	11	<u>because</u>	6
and	10	and	8	<u>because</u>	10	<u>because</u>	7	and	10	<i>for example</i>	6
<i>for example</i>	7	<i>for example</i>	5	and	5	and	5	so	6	but	5
<u>because</u>	6	so	5	so	2	<i>for example</i>	5	<i>for example</i>	4	and	4
so	4	<u>because</u>	4	<i>also</i>	1	<i>however</i>	3	<u>if</u>	4	<i>however,</i>	3
<i>however</i>	3	<i>however</i>	3	<i>for example</i>	1	<u>although</u>	2	<u>because</u>	3	<u>although</u>	2
<u>although</u>	1	<u>if</u>	3	<u>if</u>	1	so	2	<i>however</i>	1	<u>if</u>	1
<u>if</u>	1	<u>before</u>	1	<i>in addition</i>	1	<i>also</i>	1	<i>then</i>	1	so	1
		<i>for instance</i>	1	or	1	<u>since</u>	1			<u>though</u>	1
		<i>therefore</i>	1	<i>then</i>	1	<i>thus</i>	1			<u>when</u>	1
		<u>though</u>	1	<u>though</u>	1	<u>when</u>	1				
		<u>while</u>	1								

Note: Subordinators are undrlined; other linking words are in italics.

with fewer coordinators and with a wider variety of subordinators in their post writings. As for the three most used coordinators, subordinators, and other linking words, the SC- class and the SC+ class showed the same order in their pre- and post writings, but the SC++ class showed a different order indicating a shift toward less coordinators and an increase in subordinators and linking words.

Study 2

Methods

Participants

Participants were 39 Japanese university students, 31 male and 8 female, who were freshmen at a private university in Kyoto City. They met twice a week over a 15-week semester in a compulsory English reading class taught by the researcher. According to the English placement test that the students took on their first day on campus, the students' overall English proficiency ranged from the low intermediate to the intermediate level.

Data collection

A series of sentence-combining (SC) exercises from “Sentence-combining Workbook” (Altman et al., 2006) were given to one experimental class, the SC+ class, as homework as in Study 1. The exercises focused on the use of coordinators, subordinators, other linking words, and parallel structures. The students were asked to type each set of exercises as one paragraph according to the format given by the researcher. The experiment class received 15 sets of exercises in 15 weeks. A control class, the SC- class, received no SC exercises but was given implicit and explicit instructions on grammar through reading a textbook. The two classes used different reading textbooks; however, both textbooks were targeting intermediate level readers. According to the on-campus English placement test, the students of the experimental class had a slightly lower English proficiency than the students in the control class.

In order to measure the effects of the SC exercises, two types of students’ writings were collected. The first sample collected students’ opinions on a certain prompt as in Study 1; the students were asked to write their opinions on the same prompt twice—at the beginning of the term and at the end of the term. The other sample was a rewriting activity, where the students were asked to rewrite a passage consisting of simple sentences. It was also administered at the beginning of the term and at the end of the term. The passage used was by Hunt (1970, cited in Weaver, 1996, p. 126) and will be referred to as the Aluminum writing. For both of these writings, students had 20-25 minutes in class to respond, and they were not allowed to use a dictionary. There were approximately 30 students in each class, but

the number of those students who completed most of the homework along with submitting a pair of opinion writing exercises was 16 for the SC- class, 18 for the SC+ class, and those students who completed most of the homework along with submitting a pair of Aluminum writings was 17 for the SC- class and 20 for the SC+ class.

Data analysis

The number of words per sentence, per T-unit, and per clause, and the rate of parallel structures and internal punctuation were counted as in Study 1 as indicators of syntactic maturity. The average length of sentences, T-units, and clauses, and the number of parallel structures and internal punctuation were compared within each class by dependent *t*-tests and between classes by independent *t*-tests, and variables correlating with sentence length were also measured. Additionally, the number of coordinators, subordinators, and other linking words were counted and compared within each class and between the classes.

Results

The results of analyzing the average number of words per sentence, per T-unit, and per embedded clause for opinion writing are shown in Table 5. In the post-writings, both the SC-class and the SC+ class wrote longer sentences, longer T-units, and longer clauses than in their pre-writings. The SC-class, however, did not write significantly longer sentences, T-units, nor clauses in their post writings compared to their pre-writings. Conversely, the SC+ class wrote significantly longer sentences in their post-writings ($M=10.44$, $SE=.72$)

than in their pre-writings ($M=7.89$, $SE=.46$, $t(17)=-4.25$, $p<.01$) with a difference representing a large-sized effect $r=.72$, and significantly longer T-units in their post-writings ($M=8.51$, $SE=.45$) than in their pre-writings ($M=7.34$, $SE=.44$, $t(17)=-2.70$, $p<.05$) with a difference representing a large-sized effect $r=.55$. There was no statistical difference between the two classes in sentence length, T-unit length, or clause length, either in their pre- or post-writings.

There was significant relationship between sentence length and T-unit length in both classes in the pre- and post-writings, and significant relationship between sentence length and clause length in both classes in the pre- and post-writings, except for the SC+ class post-writings (see Table 6).

The results of analyzing the average number of words per sentence, per T-unit, and per embedded clause for the Aluminum writing are shown in Table 7. The SC- class did not write significantly shorter or longer sentences, T-units, or clauses. The SC+ class did not write significantly shorter or longer T-units or clauses, but they wrote significantly longer sentences in their post-writings ($M=9.95$, $SE=.85$) than in their pre-writings ($M=8.40$, $SE=.54$, $t(19)=-2.20$, $p<.05$) with a difference representing a medium-sized effect $r=.45$. The SC+ class also wrote significantly more parallel structures in their post-writings ($M=.67$, $SE=.09$) than in their pre-writings ($M=.44$, $SE=.06$, $t(19)=-2.43$, $p<.05$) with a difference representing a medium-sized effect $r=.49$. There was no statistical difference between the two classes in sentence length, T-unit length, or clause length, either in their pre- or post-writings. However, in the post-writings, the SC+ class wrote significantly more parallel structures ($M=.67$,

Table 5. Study 2: Sentence length, T-unit length, and clause length in opinion writing

		Words per sentence	Words per T-unit	Words per clause
SC- (n=16)	pre	8.31	7.92	6.07
	post	9.00 (+8.3%)	8.59 (+8.5%)	6.20 (+2.1%)
SC+ (n=18)	pre	7.84	7.34	5.23
	post	10.44 (+33.2%)	8.51 (+15.9%)	5.92 (+13.2%)

Note: Significant differences between pre- and post-numbers are in italics.

Table 6. Study 2: Variables correlating with sentence length in opinion writing

		Words per T-unit	Words per clause
SC- (n=16)	pre	.88**	.49*
	post	.95**	.69**
SC+ (n=18)	pre	.81**	.47*
	post	.52**	.34

Note: **Correlation is significant at the .01 level (2-tailed);
*Correlation is significant at the .05 level (2-tailed).

$SE=.09$) than the SC- class did ($M=.42$, $SE=.06$, $t(35)=2.22$, $p<.05$) with a difference representing a medium-sized effect $r=.35$.

Table 7. Study 2: Sentence length, T-unit length, clause length, and the rate of parallel structures in the aluminum writing

		Words per sentence	Words per T-unit	Words per clause	Parallel structures per sentence
SC- (n=17)	pre	8.40	6.17	3.44	.42
	post	8.00 (-4.8%)	6.29 (+1.9%)	3.10 (-9.9%)	.42 (±0%)
SC+ (n=20)	pre	8.40	6.32	3.09	.44
	post	9.95 (+18.5%)	6.01 (-4.9%)	3.83 (+23.9%)	.67 (+52.3%)

Note: Significant differences between pre- and post-numbers are in italics.

There was significant relationship between sentence length and T-unit length in both classes in their pre- and post-writings (see Table 8). In the SC+ class, there was significant relationship between sentence length and clause length in their pre- and post-writings as well; however, significant relationship between sentence length and the rate of parallel structures was seen only in their post-writings.

The results of counting the average number of internal punctuations per sentence in the opinion writings and the Aluminum writings are shown in Table 9. In the opinion writings, there was no statistical difference within each class or between the two classes either in their pre- or post-writings although the SC+ class appears to have used more internal punctuations in their post-writings than in their pre-writings. In the Aluminum writings, however, the SC+ class used significantly more internal punctuations in their post-

Table 8. Study 2: Variables correlating with sentence length in the Aluminum writings

		Words per T-unit	Words per clause	Parallel structures sentence
SC- (n=17)	pre	.74**	.37	.32
	post	.71**	.47	.34
SC+ (n=20)	pre	.65**	.61**	.44
	post	.76**	.53*	.79**

Note: **Correlation is significant at the .01 level (2-tailed);
*Correlation is significant at the .05 level (2-tailed).

writings ($M=.10$, $SE=.04$) compared to their pre-writings ($M=.70$, $SE=.15$, $t(19)=-4.11$, $p<.01$), with a difference representing a large-sized effect $r=.69$, whereas the SC- class used significantly less internal punctuations in their post-writings ($M=.12$, $SE=.04$) than in their pre-writings ($M=.21$, $SE=.04$, $t(16)=2.25$, $p<.05$), with a difference representing a medium-sized effect $r=.49$. As for reference, the average number of internal punctuations per sentence in academic writings and magazine articles are also shown in the lower two rows of Table 9. It must be noted that these are only tentative figures because they are the result of a small scale research done by the researcher, analyzing approximately 720 words of academic writings and of magazine articles by four authors.

Both classes wrote with a wider variety of subordinators and linking words in their post-writings in the opinion writing. The difference between pre- and post-writings in the Aluminum writing was minimal. By adding the data

Table 9. Study 2: Frequency of internal punctuation

	Internal punctuations/sentence			
	Opinion		Aluminum	
	pre	post	pre	post
SC- (n=16; 17)	.35	.39 (+11.4%)	.21	.12 (-42.9%)
SC+ (n=18; 20)	.21	.49 (+133.3%)	.10	.70 (+600%)
Academic	(1.34)			
Magazine article	(1.09)			

Note: Significant differences between pre- and post-numbers are in italics.

from Study 1, however, an overall trend of fewer uses of coordinators and of more uses of subordinators and linking words seem to emerge (see Table 10), and this trend seems to have been accelerated in classes receiving sentence-combining exercises.

Discussion

Study 1 shows that beginner and high-beginner level students receiving sentence-combining exercises do not significantly increase the length of sentences, T-units, or clauses, nor do they increase the rate of parallel structures or internal punctuations used compared to students receiving implicit and explicit grammar instruction. The study, however, may suggest that sentence-combining exercises raise students' consciousness for conjoining and embedding sentences because in their post-writings the SC+ class and the SC++ class wrote longer sentences, whereas the

Table 10. Number of coordinators, subordinators, and other linking words in opinion writing in study 1 and study 2

		Coordinators		Subordinators		Linking Words	
		pre	post	pre	post	pre	Post
Study 1	SC- (n=20)	33	23 (-30%)	8	7 (-12%)	2	10 (+400%)
	SC+ (n=21)	22	18 (-19%)	12	11 (-8%)	3	10 (+233%)
	SC++ (n=14)	27	10 (-63%)	7	10 (+42%)	6	9 (+50%)
Study 2	SC- (n=16)	37	25 (-32%)	26	21 (-19%)	5	11 (+120%)
	SC+ (n=18)	19	16 (-16%)	17	18 (+6%)	3	11 (+267%)

SC- class wrote shorter sentences in spite of writing longer T-units and clauses than in their pre-writings. The trend of students receiving sentence-combining exercises writing with more embedding is partly confirmed because students in the SC++ class wrote with more subordinators and less coordinators. The effects of sentence-combining exercises on the use of parallel structures or internal punctuations remain unclear. These grammar features may have been too difficult, especially for beginner level students to learn. In summary, beginner and high beginner students seem to benefit from sentence-combining exercises in raising their awareness toward embedding clauses by subordinators.

Study 2 shows that low-intermediate and intermediate level students receiving sentence-combining exercises write significantly longer T-units and use significantly more parallel structures and internal punctuations than students receiving implicit or explicit grammar instructions. Although the question of causality on longer T-units remains, the results may suggest that low-intermediate and intermediate level students respond to sentence-combining exercises better than beginner and high-beginner students concerning awareness towards parallel structures and internal punctuations. The study also indicates that using two different types of writings, an opinion writing and passage rewriting, is beneficial to measure what grammatical features the students have learned. Considering the workload of producing both its content and form, opinion writing may not be an accurate means of measuring newly learned grammatical features. Rewriting activities, on the other hand, may allow students to concentrate only on the form they produce and encourage them to try out newly learned forms.

EFL university students need to gain syntactic maturity and learn how to control syntactic complexity in order to become good writers of English, but within the constraint of an EFL environment, they also need an effective and efficient way to do so. Morenberg, et al. (1978) reported that sentence combining accelerated the syntactic maturity of L1 college students. Because this acceleration this process is all the more essential for EFL university students, sentence combining seems to be a promising technique that should be widely practiced.

Future studies may need to measure syntactic complexity through other features, such as the number of clauses per

T-unit, suggested by Hunt (1965) and recently preferred over T-unit length by Beers and Nagy (2007), in order to understand the effects of sentence combining in more detail. It is also necessary to investigate

Do sentence-combining exercises improve writing quality of EFL students? If so, how and why? Finally, expanding Mellon's (1985) chart and presenting specific goals for various grammatical features may enable students and teachers to monitor the effects of sentence combining objectively. Syntactic maturity needs to be reached, but the process of learning needs to be accelerated as well.

Conclusion

This study shows that sentence combining raises awareness among beginning to intermediate level Japanese university students in using embedding, parallel structures, and internal punctuations. Although the effects of sentence combining may vary according to students' proficiency levels, grammatical features emphasized by such exercises almost inevitably encourage most students to pay attention to those features. Students usually come to university with certain knowledge of such features, but those features are rarely internalized enough to be used in writing. If certain features identified as signaling syntactic maturity are emphasized by sentence-combining exercises, students may be able to take a more direct path toward syntactic maturity. Within the constraints of an EFL environment, a direct path provided by sentence combining is of great importance to students.

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