Korean Journal of English Language and Linguistics, **Vol 25, June 2025, pp. 856-875**
DOI: 10.15738/kjell.25..202506.856

KOREAN JOURNAL OF ENGLISH LANGUAGE AND LINGUISTICS

ISSN: 1598-1398 / e-ISSN 2586-7474

http://journal.kasell.or.kr

Online Processing of Aspectual Coercion in English and Korean: Comparisons Between L1 Speakers and Korean Learners of English

Jeonghwa Cho (Hongik University) · **Jeong-Ah Shin** (Dongguk University)

Received: June 10, 2024
Revised: April 21, 2025
Accepted: May 13, 2025

Cho, Jeonghwa (First author)
Assistant Professor,
Department of English Language and Literature,
Hongik University
Email: jhcho@hongik.ac.kr

Shin, Jeong-Ah
(Corresponding author)
Professor,
Department of English Language and Literature,
Dongguk University
Email: jashin@dongguk.edu

ABSTRACT

Cho, Jeonghwa and Jeong-Ah Shin. 2025. Online processing of aspectual coercion in English and Korean: Comparisons between L1 speakers and Korean learners of English. *Korean Journal of English Language and Linguistics* 25, 856-875.

It has been argued that the combination of semelfactive verbs and durational modifiers such as in *the baby hiccupped for an hour* causes an aspectual mismatch, and therefore additional processing time is necessary to reanalyze the event as iterative (e.g., Brennan and Pylkkänen 2008, Piñango et al. 1999, 2006, Todorova et al. 2000). This process of reinterpretation is called aspectual coercion. The current study investigates whether this process proceeds in the same manner in Korean and English with Korean and English monolinguals and further tests processing of English aspectual coercion by Korean learners of English. Experiment 1 examines online and offline processing of aspectual coercion in Korean. Results show that aspectually coerced sentences are processed faster than control sentences and are also rated to be more natural. Experiment 2 investigates the same structure in English with Korean learners of English and English native speakers. Both groups did not slow down in processing aspectually coerced sentences compared to control sentences although coerced sentences were rated to be less natural in the offline measure. In summary, the current study shows that aspectual coercion is processed differently in the two languages. However, despite such differences in the L1 and L2, Korean learners of English behave similarly to English native speakers in processing English aspectual coercion both in online and offline measures.

KEYWORDS

self-paced reading, English, Korean, language learning, acceptability judgment

1. Introduction

The aspect of a proposition can undergo changes with a combination of modifiers such as tenses, temporal adverbials, and aspectual auxiliaries (Moens and Steedman 1988). For example, *the baby hiccupped,* an event occurring for a very short amount of time, is often argued to be interpreted as an iterative event when modified by a durative adverbial as in *the baby hiccupped for an hour.* This is because there is an aspectual mismatch between the semelfactive verb that describes an event that lasts for a very short amount of time (i.e., *hiccup*) and the modifier *for an hour.* In order to resolve this mismatch, readers reinterpret the event as occurring several times during the assigned duration, a process that is referred to as aspectual coercion.

During online processing of aspectual mismatch, it is suggested that language users might need additional time to resolve the mismatch if they fully commit to a specific interpretation as soon as they encounter such expressions (immediate complete interpretation hypothesis; Frazier and Rayner 1990). In this scenario, there are two different routes in how the aspectual mismatch may be resolved (Brennan and Pylkkänen 2008). According to the first approach, iterative coercion, semelfactive verbs inherently have punctual meaning. When those semelfactive verbs are combined with durative adverbs such as *for an hour*, the semantic shift occurs either at the compositional stage such that the event gains an iterative interpretation, or at the pragmatic stage where the anomaly of the composition is detected. The second approach, called punctual coercion (Rothstein 2004), applies aspectual coercion in the opposite direction. This proposal states that semelfactive verbs have a repetitive meaning by default but are coerced into an instantaneous one in certain contexts (e.g., *at 3 o'clock, the clown jumped.*).

Alternatively, language users may underspecify certain semantic properties (the immediate partial interpretation hypothesis). According to this approach, the aspect of the verb is undetermined until it is combined with temporal modifiers. For example, the verb *jump* can represent both punctual and durative events when it stands alone. Hence, there will be no additional cost in processing sentences such as *the baby hiccupped for an hour* compared to *the baby hiccupped an hour ago.*

Empirical studies so far have yielded mixed results. Piñango et al. (1999, 2006) report increased reaction times in a lexical decision task after participants listened to sentences that contained aspectual mismatch. Likewise, reading times for such sentences were significantly longer than control sentences in Todorova et al. (2000). A more recent study by Brennan and Pylkkänen (2008) used magnetoencephalography (MEG) as well as a self-paced reading task comparing sentences (1a) and (1b); (1a) contains an aspectual mismatch where the verb *sneeze* is modified with a durative adverb *throughout the day,* while in (1b) the verb is modified with a punctual adverb *after twenty minutes*.

(1) a. Throughout the day the student sneezed in the back of the classroom.
b. After twenty minutes the student sneezed in the back of the classroom.

Consistent with iterative coercion and Piñango et al. (1999, 2006) and Todorova et al. (2000), the participants in the study read sentences such as (1a) longer than their counterparts. They also elicited increased activity in the anterior midline field (AMF), which was previously reported to be related to complement coercion. Conversely, Pickering et al. (2006) did not find any evidence for an increased cost for aspectual coercion in either self-paced reading or eye-tracking experiments.

Then how would second language learners process aspectual coercion? There are two studies that investigated on-line processing of English aspectual coercion by non-native speakers (Chan 2013, Park and Na 2012). Chan

(2013) compared performance of native English speakers with nonnative English speakers with different L1 backgrounds (Chinese, Korean and German) in a self-paced reading task. While clear evidence of a processing cost for aspectual coercion was observed in the native group, none of the nonnative groups showed such an effect. Chinese learners performed in the opposite direction to the prediction; they read aspectual coercion sentences faster than control sentences. Korean learners, on the other hand, showed a trend for aspectual coercion but the difference did not reach significance. German learners read sentences across all conditions at a comparable pace. The author suggests that such varying tendencies across different language groups are due to their L1s. For example, the combination of semelfactive verbs such as *cough* and durational adverbs is more common in Chinese than in English. Hence, the Chinese participants might have drawn their L1 specific aspectual bias into English processing. On the other hand, the author attributes the results of Korean and German participants to a lack of grammatical aspect in their L1s. It should be noted, however, that these claims are based on speculations since it has not been studied how those participants process the same structure in their own language.

In another study (Park and Na 2012), an ERP experiment was conducted with Korean learners of English using materials adopted from Brennan and Pylkkänen (2008). Unlike the native participants in Brennan and Pylkkänen (2008), Korean participants elicited a P600 effect instead of an N400 effect. The authors interpret this result as indicating that the resolution of aspectual mismatch by Korean L2 learners has syntactic rather than semantic nature.

The aforementioned studies suggest some discrepancy between English native speakers and Korean L2 learners of English on processing aspectual coercion. This finding diverges from how the knowledge on English aspect is tested by Korean L2 learners in an offline measure; in Kim (2016), Korean advanced learners exhibited target-like processing and production of English aspectual *–ing*. Similarly, Oh (2015) shows that Korean L2 learners of English performed similarly to English native speakers in an acceptability judgement task, with advanced learners showing a more native-like pattern than intermediate-level learners.

What remains unclear is whether semantic coercion is a distinct phenomenon that exists only in English. That is, it has not been tested whether semantically coerced sentences yield additional processing cost in participants' L1. For Chan's (2013) argument for L1 transfer effect in processing English aspectual coercion to be confirmed, a study of nonnative speakers' L1 is necessary. Thus, this study examines Korean speakers' processing of aspectual coercion in Korean (Experiment 1) and in English (Experiment 2) compared with English speakers' processing of aspectual coercion in English.

Ju (2014) investigated whether Korean semelfactive verbs can be classified as the same verb type as English semelfactive verbs using van Valin's (2005) test for semelfactive verbs. According to van Valin's classification of verbs, semelfactive verbs are [+dynamic], [-stative], [+atelic], and [+punctual]. The six criteria in Table 1 were used to check whether a specific verb have these four semantic properties. If the verb cannot co-occur with certain expressions as stated in the criteria, it is classified as a semelfactive verb.

Table 1 shows that the Korean verbs in question satisfy van Valin's tests and hence can be considered as semelfactive as in English. In particular, the fourth criterion is related to the focus of the current study. Ju (2014) states that the combination of a semelfactive verb and durational modifiers in Korean is acceptable only when the event is interpreted as being repetitive. If this is correct, then it can be hypothesized that Korean aspectual coercion would be processed similarly to English aspectual coercion.

Table 1. van Valin's Test for Semelfactive Verbs for Korean

	Criteria	Example
1	Can predicates occur with the progressive aspect?	A semelfactive verb, *gongeul*$_{ACC}$ *chada* (kick a ball), cannot co-occur with a progressive marker *-go iss-*. e.g., ?* Cheolsuga$_{NOM}$ gongeul$_{ACC}$ chago issda$_{DEC}$ Cheolsu the ball kicking is '?* Cheolsu is kicking the ball.'
2	Does the predicate occur with dynamic adverbs like *vigorously* or *violently*?	The [+dynamic] feature of the semelfactive verb *ttaelida* allows it to occur with a dynamic adverb *himchage.* e.g., *balami$_{NOM}$ changmuneul$_{ACC}$ sechage ttaelyeossda$_{DEC}$ wind the window violently hit '*The wind hit the window violently.'
3	Does the predicate occur readily with slow pace adverbs like *slowly, gradually*?	e.g., ?*geuneun$_{TOP}$ cheoncheonhi kichimhaessda$_{DEC.}$ he slowly coughed '?*He coughed slowly.'
4	Can the predicate occur with phrases of time duration, e.g., *for an hour*?	A semelfactive verb can occur with durational adverbs only in the case of iterative interpretation. e.g., ?*Cheolsuneun$_{TOP}$ han sigan dongan gongeul$_{ACC}$ chassda$_{DEC.}$ Cheolsu for an hour a ball kicked '?*Cheolsu kicked ball for an hour.'
5	Can the verb occur with phrases indicating an endpoint, e.g., *in an hour?*	e.g., ?* byeoli$_{NOM}$ il bun mane kkambaghaessda$_{DEC.}$ star in one minute twinkled '?*Star twinkled in one minute.'
6	Does the verb have a derived adjective representing a terminal state?	Only semelfactive verbs and activity verbs cannot be used as a derived adjective. e.g., *banjjain[1] bulbich '*(the) flashed light

Based on this background, the current study examines 1) whether Korean aspectual mismatch incurs an additional processing cost, and 2) whether Korean learners of English process aspectual mismatch differently from English native speakers as in Chan (2013) and Park and Na (2012) or process it similarly. To this end, a self-paced reading task was first conducted in Korean that compared reading times for semantically coerced sentences and control sentences. An acceptability judgment task followed to measure participants' offline judgment of the sentences. Then the same procedure was conducted in English with English native speakers and Korean learners of English.

2. Experiment 1: Korean

2.1 Method

2.1.1 Participants

Forty-two Korean native speakers (37 females, 7 males; mean age = 22.04, SD = 1.63) participated in the self-paced reading task and the acceptability judgment task. Thirty-six of them spoke Seoul Korean, six spoke Kyongsang dialect, one spoke Jeolla dialect, and one spoke Chungcheong dialect.

[1] *banjjagin* is derived from the semelfactive verb *banjjagida (=flash)*

2.1.2 Materials

Target sentences were adapted from Brennan and Pylkkänen (2008) and translated into Korean. In order to control for subject animacy, sentences with non-animate subjects were removed and replaced with animate subjects. Sentences that used the same semelfactive verbs as preceding sentences were also removed. van Valin's (2005) test for semelfactive verbs was used to ensure all the verbs are classified as semelfactive verbs in Korean. A total of twenty-four pairs of target sentences were used for the study, in addition to twenty-six filler sentences.[2]

As for target sentences, each sentence was manipulated so that the semelfactive verb was always positioned as the fifth word. The verb was preceded by a locational adverbial phrase and a temporal adverbial phrase, each of which consisted of two words. For coerced sentences, durational modifiers such as *achim naenae* (all morning long) were used, while for control sentences, punctual modifiers such as *10si jeonggage* (at 10 o'clock) were used, as in the example below (see Appendix A for a complete list of materials):

(2) a. 오래된 담벼락에 10 시 정각에 부딪친 소년이 많이 다쳤다. [control]
Oraedoen dambyeorage 10si jeonggage buditchin sonyeoni manhi dachyeotda.
Old wall at 10 o'clock bumped boy severely injured.
'A boy who bumped into an old wall at 10 o'clock was severely injured.'

b. 오래된 담벼락에 아침 내내 부딪친 소년이 많이 다쳤다. [coerced]
Oraedoen dambyeorage achim naenae buditchin sonyeoni manhi dachyeotda.
Old wall morning long bumped boy severely injured.
'A boy who bumped into an old wall all morning long was severely injured.'

The target sentences were counterbalanced across two lists such that each participant read either the control or coerced version, and not both, for each pair.

2.1.3 Procedure

A self-paced reading task was conducted using the Ibex web interface (Drummond 2013) and PCIbex (Zehr and Schwartz 2018). Participants were randomly assigned to one of the two presentation lists and tested individually. They first filled in personal information and had a practice session of six sentences. This was to help them to become accustomed to self-paced reading before the experiment began. Then they read each sentence, word by word, for comprehension at their own pace. The sentences were presented in a random order. For each trial, participants saw a series of dashes on a white monitor. The dash was replaced by a word every time they pressed a space bar, and the previous word was hidden by a dash once the next word appeared. A comprehension question (e.g., "Who was injured?" for (2a) and (2b)) appeared on the monitor after the last word of each sentence, and the participants were instructed to select the correct answer for each question. Their reading times and answers were recorded. The experiment lasted approximately twenty minutes.

[2] An example filler sentence is 마을의 노인이 친절하게 도와준 청년의 집에서 경사가 났다 (The young man who was kindly helped by the village elder experienced a joyous event.).

After the self-paced reading task, a post-test was conducted that asked participants to judge the acceptability of each sentence used in the experiment. The same materials were used as in the self-paced reading task, with an equal number for each condition, and were mixed with another twenty-four filler sentences. Participants were instructed to rate the sentences on a scale from 1 to 7 (1: very unnatural, 7: very natural).

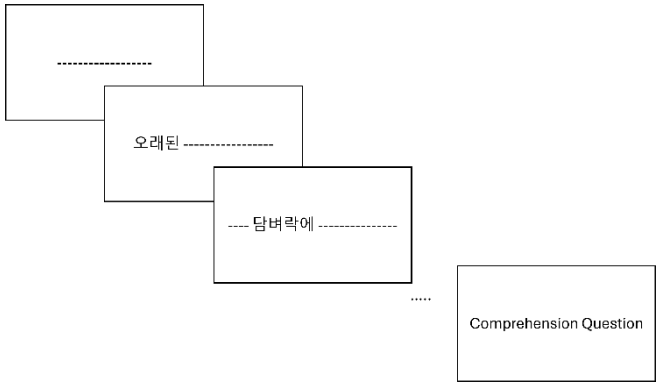

Figure 1. Experiment Procedure

2.1.4 Data analysis

Accuracy rates for comprehension questions were calculated for each participant. As all participants' accuracy rates were above 80% (mean: 96%; 90%-100%), which was the pre-determined removal criteria, no participant was excluded from analysis. For target sentences, the accuracy rates were slightly higher (mean: 99%; 95%-100%).

Reading times (RTs) above 3,000 ms and below 200 ms were considered outliers and removed, which accounted for 5.6% of the whole data set. Responses with a wrong answer for comprehension questions were also removed, which accounted for 0.7% of the whole data set. For data analysis, three regions from each sentence were selected as target regions (Table 2): 1) the critical word where the semelfactive verb appears and the next two words from the critical word, 2) spillover 1 and 3) spillover 2. Then residual RTs for each region were computed to control for word length effect. A generalized mixed-effects linear model was fitted using the lmer function (Bates et al., 2015) at each target region with Type (coerced vs. control) as a fixed factor, and random intercepts for participants. Random slopes and random intercepts for items were not included in the model due to convergence issues. The whole procedure was conducted with the lme4 library in the R program (R Core Team, 2021).

For the acceptability judgment task, a Wilcoxon Mann-Whitney test was conducted to examine differences in ratings for coerced sentences and control sentences.

Table 2. Target Regions for Analysis

	Critical word	**Spillover1**	**Spillover2**	**…**
Coerced/Control	쾅 부딪친	소년이	많이	
	kwang budijhin	sonyeoni$_{TOP}$	manhi	
	bumped	boy	severely	

2.2 Results

2.2.1 Self-paced reading

Figure 2 shows the mean of raw RTs for all words in the target sentences. Raw RTs at the three target regions are summarized in Table 3. The results from the mixed-effects linear regression model (Table 4) showed that the reading times for the control sentences are significantly longer than the coerced sentences at the critical region (β = -0.079, p = 0.002).

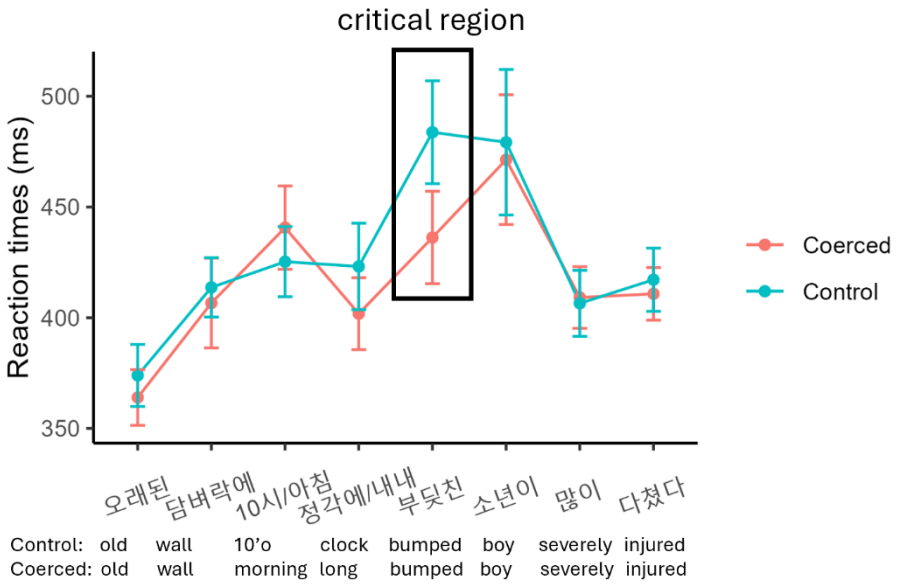

Figure 2. Raw RTs for Each Word in Experiment 1. Error Bars Indicate Standard Errors.

Table 3. By-subject Mean RTs for Coerced and Control Sentences in Experiment 1

	Critical word	Spillover 1	Spillover 2
Coerced	436.22 (135.13)	471.39 (187.74)	409.13 (89.21)
Control	483.78 (150.69)	479.24 (213.13)	406.49 (95.54)

Note. SD in parenthesis

Table 4. Results from a Linear Mixed Effects Model at Each Region for Residual RTs in Experiment 1

Word position	Fixed effect	*Estimate*	*SE*	*t*	*p*
Critical word	Intercept	0.038	0.017	2.262	0.029
	Type	-0.079	0.025	-3.130	0.002
Spillover 1	Intercept	0.069	0.024	2.948	0.005
	Type	-0.020	0.024	-0.840	0.401
Spillover 2	Intercept	-0.005	0.012	-0.438	0.664
	Type	-0.011	0.018	-0.627	0.531

Note. * p <.05, ** p <.01, *** p < .001

2.2.2 Acceptability judgment task

Table 5 shows mean rates of acceptability for the coerced and the control sentences. The mean rate of acceptability is lower for the control sentences, and the difference was statistically significant in the Wilcoxon Mann-Whitney test ($Z = 3.33$, $p = 0.001$).

Table 5. Mean Rates of Acceptability for Coerced and Control Sentences

	Coerced	Control
Mean	4.65 (1.63)	4.37 (1.64)

Note. SD in parenthesis

3. Experiment 2: English

3.1 Method

3.1.1 Participants

Thirty-six English native speakers (23 females, 13 males; mean age = 32.8 (range: 28-58)) and thirty-seven Korean learners of English (26 females, 11 males; mean age = 19.0 (range: 18-29)) participated in the study. Korean participants were first exposed to English when they were two to nine years old. All participants except four did not have any experience of living in English-speaking countries, which suggests that most of the participants' English education took place in an EFL environment.

Korean participants' L2 English proficiency was assessed with two measures. First, a written pretest was given to participants to test their explicit knowledge of English tense and aspect. The test had 30 sentences with a blank for the participants to fill in with the proper tense of English verbs. The list of the verbs was given in infinitival form with their dictionary definitions. Participants' mean score was 26.82 out of 30 (89.4%). Hence, they were considered to have sufficient knowledge of English tense and aspect (see Appendix C for a sample of the pretest). They also rated their English proficiency in terms of reading, writing, speaking and listening on a Likert-scale between 1 (very bad) and 10 (very good). A summary of the results is shown in Table 6. All participants took part in the self-paced reading task and the acceptability judgment task.

Table 6. Summary of Korean Participants' Background Information

	Age of onset	Residence in English speaking countries (yrs.)	Self-rate	Pretest (30)
Mean (range)	6.89 (2-9)	0.15 (0-3)	5.82 (3.5-7.8)	26.82 (24-30)
SD	1.73	0.56	1.163	2.03

3.1.2 Materials

The English version of the materials from Experiment 1 were used. All sentences started with temporal adverbials that consisted of three words followed by *the* and an animate noun (3). The sixth word was always a semelfactive verb, after which came locative adverbials. Below is an example of a control sentence and a

semantically coerced sentence. As in Experiment 1, the contrast between the two conditions was brought about by different types of temporal adverbs, i.e., *at ten o'clock* versus *all morning long*. A full list is presented in Appendix B. A total of twenty-four pairs of target sentences and twenty-four filler sentences were used (e.g., The student took the exam that turned out to be too easy).

(3) a. At ten o'clock, the boy bumped into the cramped store wall. [control]
b. All morning long, the boy bumped into the cramped store wall. [coerced][3]

3.1.3 Procedure

The procedure was the same as in Experiment 1.

3.1.4 Data analysis

Accuracy rates for comprehension questions were calculated for each participant. As all participants' accuracy rates were above 80 % (mean: 93 %; range: 84 % - 100 %), no participant was excluded from analysis. The mean accuracy rate for the native participants was 95.3% (range: 84 %-100 %) and the mean accuracy rate for the nonnative participants was 92.7% (84 % - 99 %).

Reading times (RTs) above 3,000ms and below 200ms were considered as outliers and removed, which accounted for 3.14% of the whole data set. Responses with wrong answers for comprehension questions were also removed, which accounted for 8.75% of the whole data set. As in Experiment 1, three regions from each sentence were selected as test regions (Table 7): 1) critical word, 2) spillover 1, and 3) spillover 2. Then residual RTs for each region were calculated to control for word length effect. A linear mixed effects model (Bates et al., 2015) was used for each target region for residual RTs, with Type (coerced vs. control) and Group (English speakers vs. Korean speakers) as fixed factors, and subjects and items as random factors. The most complex random effects structure that converged included a random slope for Type for subject, and a random intercepts for subject and item. Binary variables were effect-coded (coerced = -0.5, control = 0.5; English speakers = -0.5, Korean speakers = 0.5). The whole procedure was conducted with the lme4 library in the R program (version 3.4.0).

Table 7. Target Regions for Analysis

	Critical word	**Spillover 1**	**Spillover 2**	**…**
Coerced/Control	bumped	into	the	

[3] Note that the sentence structures of the stimuli are different between Experiment 1 and Experiment 2. This is due to the different canonical word order in English versus Korean; since Korean is a head-final language, keeping the same sentence structure as the English stimuli leads to the critical region being placed at the end of the sentence in Korean stimuli. This creates a confound with the wrap-up effect, which naturally occurs at sentence-final positions. Also, it is difficult to investigate any potential spillover effects. We therefore used a relative clause structure for Korean stimuli, such that the critical region is placed in the middle of the sentence.

3.2 Results

3.2.1 Self-paced reading

Figure 3 shows mean RTs for all words in the coerced and the control sentences by the two groups and Table 8 shows mean RTs at the three target regions. According to the linear regression mixed effects model, neither the main effect of Type nor the interaction between Type and Group reached statistical significance at all three regions (*p*s > 0.414). The main effect of Group was significant at Critical word (β = 0.150, p < 0.001) and Spillover 1 (β = 0.085, p < 0.001), as the reaction times by English speakers were significantly faster than those of Korean speakers across sentence types.

An additional statistical analysis was conducted for the two groups separately, with Type as a fixed factor and items and subjects as random factors (lmer(RRT~Type+(1+Type|subject)+(1|item), data=data). No significant difference was observed between coerced and control sentences in either group (all p > 0.151).

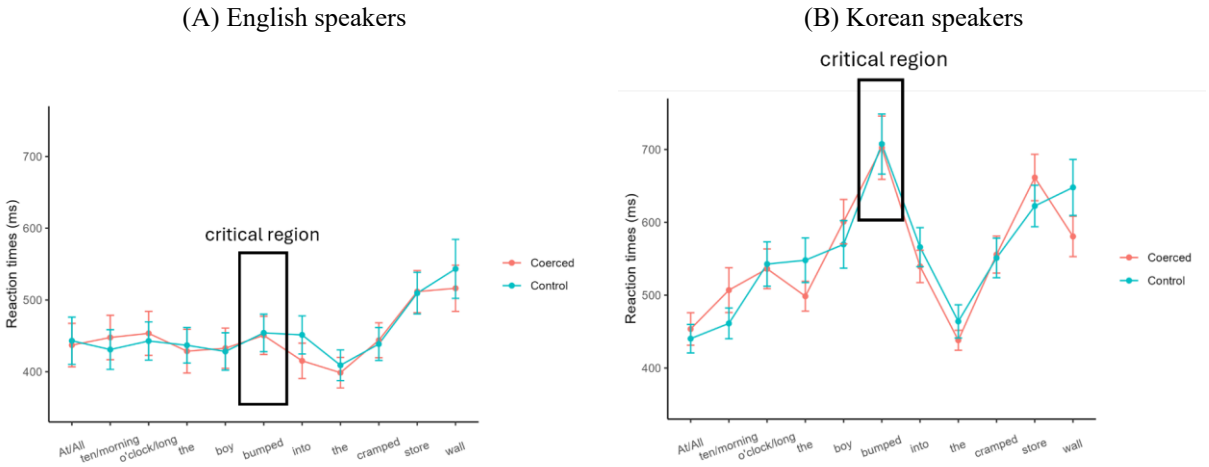

Figure 3. Raw RTs for Each Word in Experiment 2 by English Speakers (A) and Korean speakers (B). Error Bars Indicate Standard Errors.

Table 8. By-subject Mean RTs for English and Korean Participants for Coerced and Control Sentences

	English speakers		
	Critical word	Spillover1	Spillover2
Coerced	450.70 (155.45)	455.25 (147.83)	398.69 (127.66)
Control	454.14 (154.69)	451.33 (157.11)	409.05 (128.23)
	Korean speakers		
	Critical word	Spillover1	Spillover2
Coerced	702.33 (264.10)	539.53 (135.16)	438.15 (82.82)
Control	707.48 (250.38)	565.91 (162.79)	464.04 (138.69)

Note. SD in parenthesis

Table 9. Results from a linear mixed effects model at each region for residual RTs in Experiment 2

Word position	Fixed effect	*Estimate*	*SE*	*t*	*p*
Critical word	Intercept	0.045	0.018	2.550	0.014
	Type	-0.013	0.022	-0.590	0.557
	Group	0.150	0.029	5.184	<0.001
	Type × Group	0.035	0.043	0.822	0.414
Spillover 1	Intercept	0.089	0.016	5.716	<0.001
	Type	-0.025	0.020	-1.249	0.215
	Group	0.085	0.021	4.031	<0.001
	Type × Group	0.001	0.037	0.030	0.976
Spillover 2	Intercept	-0.030	0.015	-1.960	0.055
	Type	-0.023	0.018	-1.290	0.205
	Group	-0.028	0.022	-1.260	0.211
	Type × Group	-0.019	0.034	-0.562	0.576

Note. * p <.05, ** p <.01, *** p < .001

3.2.2 Acceptability judgment task

The mean rate of acceptability was lower for coerced sentences than for control sentences for both English and Korean speakers (Table 10). The Wilcoxon Mann-Whitney test validated the significance of the differential rates in both groups (Native: Z = -5.94, p < 0.001; Nonnative: Z = -6.14, p < 0.001).

Table 10. Mean Rates of Acceptability for Coerced and Control Sentences

Native speakers		**Nonnative speakers**	
Coerced	Control	Coerced	Control
4.28 (1.88)	4.94 (1.70)	4.25 (1.60)	5.43 (1.25)

Note. SD in parenthesis

4. Discussion

This study examined the processing of aspectual coercion in Korean and English with a self-paced reading task and an acceptability judgment task. In the Korean experiment (Experiment 1), coerced sentences did not yield any additional processing costs among Korean native participants. Also, Korean participants rated control sentences significantly lower than coerced sentences in the acceptability judgment task. On the other hand, in the English experiment (Experiment 2), neither the English native speakers nor Korean learners of English showed a significant difference in reading times between coerced sentences and control sentences in the self-paced reading task. However, in the offline judgment task, both groups rated coerced sentences to be less natural than control sentences.

The null result for English aspectual coercion in the self-paced reading task is incongruent with previous studies that support the iterative coercion approach, which argues that the reanalysis of verb meaning from punctual to iterative causes an additional reading time (Brennan and Pylkkänen 2008, Piñango et al. 1999, Todorova et al. 2000). Rather, the results of this study are in accord with Pickering et al. (2006), which also failed to show any processing difficulty for aspectual coercion.

The results of this study and Pickering et al. (2006) indicate that English speakers may not fully encode semantic information when reading sentences, especially when their main reading goal is comprehension. This

supports the immediate partial interpretation hypothesis over the immediate complete interpretation hypothesis (Frazier and Rayner 1990). The immediate complete interpretation hypothesis posits that readers fully commit to meaning as they read sentences. On the other hand, according to the immediate partial interpretation hypothesis, readers delay some aspects of meaning unless this results in a failure to assign a semantic value to a word or a phrase, or in maintaining multiple incompatible values for a word or a phrase. The partial or incomplete commitment is most likely to occur when the given expression can have more than one interpretation. For instance, for a sentence "John hit the wall," readers may assign an agent role to *John* but the value for [+/-intentional] remains undecided until additional information is provided. This is also in line with the good enough processing hypothesis (e.g., Christianson 2016, Ferreira et al. 2002, Ferreira and Patson 2007), according to which readers do not fully engage with, or underspecify, details of the language input, leading to misinterpretations in certain cases. The results for aspectual coercion in Pickering et al. (2006) and this study are compatible with such account. The similar reading times for coerced sentences and control sentences indicate that readers may have underspecified aspectual properties: knowing that semelfactive verbs have two options for interpretation, i.e., instantaneous and iterative, they would leave their options open rather than interpret the verbs as instantaneous by default. As a result, in the current study where the verbs followed the adverbial phrases, it seems to be the case that the readers decided between the two options for the semelfactive verb in a way that better matched the previously read adverbial phrase.

Then why might have other studies (i.e., Brennan and Pylkkänen 2008, Piñango et al. 1999, 2006, Todorova et al. 2000) yielded different results? One of the possibilities is the nature of the secondary task involved in those studies. In contrast to Pickering et al. (2006) and this study where participants answered simple comprehension questions after reading the materials, the tasks in the three other studies were designed to induce participants to focus on the plausibility of the materials. In Todorova et al. (2000) and Brennan and Pylkkänen (2008), participants were explicitly instructed to judge whether each sentence made sense. Todorova et al. (2000) employed a self-paced, makes-sense judgment task, in which participants were to evaluate whether a text region "made sense" as they read sentences word for word at their own pace. Brennan and Pylkkänen (2008) asked participants to rate sentences on their acceptability immediately after reading each sentence. In Piñango et al. (1999, 2006), participants performed a lexical decision task while listening to sentences. Those tasks would have prompted participants to fully compute aspectual properties of the materials compared to when they were only given comprehension questions. This also explains why participants in the current study showed a strong preference for control sentences over coerced sentences in the following acceptability judgment. While they showed a trend for incomplete commitment in online processing, their performance differed when they were instructed to explicitly focus on the aspectual mismatch in the offline measure.

On the other hand, the Korean experiment showed the opposite results in both online and offline measures, as coerced sentences were processed faster and rated to be more natural compared to control sentences. To our knowledge, this is the first study that to test the online processing of aspectual coercion in Korean. These findings suggest that the combination of semelfactive verbs and durative adverbs in Korean is considered more acceptable, and this offline judgement is reflected in the online processing. Therefore, unlike in English, Korean speakers may fully interpret the semantic features of the semelfactive verbs when reading sentences, indicating some cross-linguistic differences in processing aspectual coercion and how differences in the acceptability ratings are manifested in online reading times. Although these results contradict our initial predictions, one potential explanation is that Korean semelfactive verbs are used to convey iterative meaning more frequently than not, leading Korean speakers to default to the iterative interpretation of these verbs as suggested in the punctual coercion approach (Rothstein 2004). If this is the case, then it suggests a parallel between Korean and

Chinese in how semelfactive verbs are interpreted (Chan 2013). Of course, it is possible that the difference in the offline acceptability ratings between coerced versus control sentences reflect other factors than aspectual coercion itself. Therefore, further research may be necessary to confirm this hypothesis.

The second goal of this study was to investigate whether Korean learners of English behave similarly in processing aspectual coercion in English. Comparing their performance with that of native speakers, the two groups exhibited a similar pattern of processing aspectual coercion in both online and offline tasks, except for the relatively slow reading speed of nonnative participants. In other words, despite the apparent differences in how aspectual coercion is processed in Korean and English, there is no evidence of negative L1 transfer among the Korean participants in the study, as suggested in Chan (2013). The high score of those participants in the pretest (mean score: 26.82/30; range: 24-30) indicates that they have fairly good knowledge of English tense and aspect. Therefore, the current results show that not only are they able to identify the correct tense and aspect in the L2 when explicitly asked in a test but also are able to use the information during L2 online language processing without relying on their L1. This is in line with previous studies that show that advanced learners can successfully process semantic features of their L2 (Gabriele 2008, Kim 2016, Oh 2015). For instance, Gabriele (2008) shows that Japanese learners of English at an advanced level were able to use morphosyntactic cues to determine whether a verb phrase could encode telicity. Kim (2016) and Oh (2015) demonstrate target-like processing and production of the English aspectual system by Korean advanced learners. The results in the current study expand this literature by showing a possibility of Korean learners' successful acquisition and use of the English aspectual system, at least for those with a similar linguistic background as the current participants.

5. Conclusion

The current study investigated how aspectual coercion is processed in Korean and in English. In Korean, coerced sentences were processed faster and rated more natural whereas in English, the online task yielded null results in contrast the offline task where coerced sentences were rated less natural. These results indicate that on a broad scale, processing aspectual coercion in Korean follows the punctual coercion approach while English follows the immediate partial interpretation approach. English native speakers and Korean learners of English behaved similarly in both online and offline measures in the English experiment, indicating that L2 learners are able to acquire and use the L2 aspectual system in a native-like way despite the L1-L2 differences. Given the cross-linguistic differences in processing aspectual coercion in English and Korean found in the current study, it would be beneficial to incorporate explicit instruction on aspectual differences when teaching English as a second language. A few limitations of this study should be noted that warrant caution in directly comparing the Korean and English results. First, the sentence structures of the Korean and English materials were different owing to the different word order of the two languages. Second, the position of the semelfactive verbs (region 5 in Korean and region 6 in English) in the Korean and English tasks were different. Additionally, the 1:1 ratio of experimental sentences and filler sentences may not have been sufficient to distract participants' attention from the experimental manipulation; thus, the results should be interpreted with care. Finally, future studies with other languages are desirable in order to draw more robust conclusions on L1 transfer effects in processing aspectual coercion.

References

Bates, D., M. Machler, B. Bolker and S. Walker. 2015. Fitting linear mixed-effects models Using lme4. *Journal of Statistical Software* 67(1), 1-48.

Brennan, J. and L. Pylkkänen. 2008. Processing events: Behavioral and neuromagnetic correlates of aspectual coercion. *Brain and Language* 106(2), 132-143.

Chan, H. L. 2013. Aspectual coercion in non-native speakers of English. In *Proceedings of the Annual Meeting of the Cognitive Science Society*, 35.

Christianson, K. 2016. When language comprehension goes wrong for the right reasons: Good-enough, underspecified, or shallow language processing. *Quarterly Journal of Experimental Psychology* 69(5), 817-828.

Drummond, A. D. 2013. Ibexfarm. https://spellout.net/ibexfarm/

Ferreira, F., K. G. Bailey and V. Ferraro. 2002. Good-enough representations in language comprehension. *Current Directions in Psychological Science* 11(1), 11-15.

Ferreira, F. and N. D. Patson. 2007. The 'good enough' approach to language comprehension. *Language and Linguistics Compass* 1/1-2,71-83.

Frazier, R. and K. Rayner. 1990. Taking on semantic commitments: Processing multiple meanings vs. multiple senses. *Journal of Memory and Language* 29(2), 181-200.

Gabriele, A. 2008. Calculating telicity in native and non-native English. In R. Slabakova, J. Rothman, P. Kempchinsky and E. Gavruseva, eds., *Proceedings of the 9th Generative Approaches to Second Language Acquisition Conference*, 37-46. Cascadilla Proceedings Project.

Ju, M. 2014. Semelfactive verbs in English and Korean. *Studies in Modern Grammar* 2014(81), 113-137.

Kim, H. J. 2016. Acquiring the semantics of aspectual -ing in L2: Evidence from Production and Processing. In D. Stringer, J. Garrett, B. Halloran and S. Mossman, eds., *Proceedings of the 13th Generative Approaches to Second Language Acquisition Conference*, 72-79. Cascadilla Proceedings Project.

Moens, M. and M. Steedman. 1988. Temporal ontology and temporal reference. *Computational Linguistics* 14(2), 15-28.

Oh, E. J. 2015. The acquisition and interpretation of English telicity by Korean speakers. *English Language and Linguistics* 21, 79-101.

Park, M. and Y. Na. 2012. An ERP study of semantic coercion: The brain responses to the semantic coercion construction by Korean learners of English. *Studies in Generative Grammar* 22(1), 157-183.

Pickering, M. J., B. McElree, S. Frisson, L. Chen and M. J. Traxler. (2006). Underspecification and aspectual coercion. *Discourse Processes* 42(2), 131-155.

Piñango, M. M., A. Winnick, R. Ullah and E. Zurif. 2006. Time-course of semantic composition: The case of aspectual coercion. *Journal of Psycholinguistic Research* 35(3), 233-244.

Piñango, M. M., E. Zurif and R. Jackendoff. 1999. Real-Time processing implications of enriched composition at the syntax-semantics interface. *Journal of Psycholinguistic Research* 28(4), 395-414.

R Core Team. 2021. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/.

Rothstein, S. 2004. The syntactic forms of predication. In S. Rothstein, ed., *Predicates and Their Subjects*, 100-129. Springer.

Todorova, M., K. Straub, W. Badecker and R. Frank. 2000. Aspectual coercion and the online computation of sentential aspect. In *Proceedings of the Cognitive Science Society* 22.

van Valin Jr., R.D. 2005. *Exploring the Syntax-Semantics Interface.* Cambridge: Cambridge University Press.
Zehr, J. and F. Schwarz. 2018. PennController for Internet Based Experiments (IBEX).

Examples in: English & Korean
Applicable Languages: English & Korean
Applicable Level: Tertiary

Appendix

A. Korean Sentences Used for the Self-paced Reading Task and the Acceptability Task (a: control sentences, b: coerced sentences)

1a. 오래된 담벼락에 10 시 정각에 쾅 부딪친 소년이 많이 다쳤다.
1b. 오래된 담벼락에 아침 내내 쾅 부딪친 소년이 많이 다쳤다.
2a. 어두운 계단에서 오전 7 시에 눈을 깜박거린 소방관은 직장으로 향했다.
2b. 어두운 계단에서 5 분 동안 눈을 깜박거린 소방관은 직장으로 향했다.
3a. 조용한 사무실에서 조금 전에 트림을 한 관리인은 항상 졸았다.
3b. 조용한 사무실에서 아침 내내 트림을 한 관리인은 항상 졸았다.
4a. 어수선한 연구실에서 1 시간 전에 전화를 건 교수는 수업하러 갔다.
4b. 어수선한 연구실에서 10 분 동안 전화를 건 교수는 수업하러 갔다.
5a. 교실 앞에서 10 분 후에 기침을 한 교사는 감기에 걸렸다.
5b. 교실 앞에서 하루 종일 기침을 한 교사는 감기에 걸렸다.
6a. 손님들 앞에서 저녁 9 시에 인사를 한 집주인은 지쳐 잠들었다.
6b. 손님들 앞에서 저녁 내내 인사를 한 집주인은 지쳐 잠들었다.
7a. 거대한 수영장에서 12 시 정각에 다이빙을 한 개는 매우 건강했다.
7b. 거대한 수영장에서 저녁 내내 다이빙을 한 개는 매우 건강했다.
8a. 호수 옆에서 40 분 전에 총을 쏜 탐험가는 매우 용감했다.
8b. 호수 옆에서 40 분 동안 총을 쏜 탐험가는 매우 용감했다.
9a. 창문 밖을 1 시 정각에 흘끗 본 아버지는 아들을 돌아보았다.
9b. 창문 밖을 20 분 동안 흘끗 본 아버지는 아들을 돌아보았다.
10a. 시끄러운 놀이터에서 오후 7 시에 점프를 한 아이는 꽤나 들떠있었다.
10b. 시끄러운 놀이터에서 15 분 동안 점프를 한 아이는 꽤나 들떠있었다.
11a. 트램플린 위에서 2 시 정각에 뛰어오른 곡예사는 실력이 좋았다.
11b. 트램플린 위에서 30 분 동안 뛰어오른 곡예사는 실력이 좋았다.
12a. 교실 뒤에서 20 분 전에 재채기를 한 학생은 공부를 시작했다.
12b. 교실 뒤에서 하루 종일 재채기를 한 학생은 공부를 시작했다.
13a. 좁은 스튜디오에서 12 시 정각 코를 훌쩍인 디자이너는 상을 받았다.
13b. 좁은 스튜디오에서 아침 내내 코를 훌쩍인 디자이너는 상을 받았다.

14a. 무성한 초원에서 5 분 전에 힝힝거린 코끼리는 병에 걸렸다.
14b. 무성한 초원에서 밤 동안 힝힝거린 코끼리는 병에 걸렸다.
15a. 비좁은 거실에서 4 시간 전에 찍찍거린 쥐는 먹이를 찾았다.
15b. 비좁은 거실에서 1 시간 동안 찍찍거린 쥐는 먹이를 찾았다.
16a. 혼잡한 아파트에서 12 시 정각 발을 헛디딘 작가는 소설을 썼다.
16b. 혼잡한 아파트에서 밤 동안 발을 헛디딘 작가는 소설을 썼다.
17a. 강둑 위에서 2 시간 전에 침을 쏜 벌은 독성이 강했다.
17b. 강둑 위에서 2 시간 동안 침을 쏜 벌은 독성이 강했다.
18a. 강의실 뒤에서 30 분 전에 킥킥거린 학생은 장난을 좋아했다.
18b. 강의실 뒤에서 30 분 동안 킥킥거린 학생은 장난을 좋아했다.
19a. 눈덮인 스키장에서 1 시간 전에 넘어진 소녀는 무릎이 까졌다.
19b. 눈덮인 스키장에서 오후 내내 넘어진 소녀는 무릎이 까졌다.
20a. 관중들 앞에서 연설 끝에 윙크를 한 정치가는 인기가 많았다.
20b. 관중들 앞에서 오후 내내 윙크를 한 정치가는 인기가 많았다.
21a. 얕은 연못을 10 초 전에 뛰어넘은 개구리는 색깔이 예뻤다.
21b. 얕은 연못을 2 시간 동안 뛰어넘은 개구리는 색깔이 예뻤다.
22a. 골대를 향해서 5 분 전에 공을 찬 축구선수는 승리를 확신했다.
22b. 골대를 향해서 50 분 동안 공을 찬 축구선수는 승리를 확신했다.
23a. 병원 화장실에서 조금 전에 문을 두드린 환자는 중병에 걸렸다.
23b. 병원 화장실에서 20 분 동안 문을 두드린 환자는 중병에 걸렸다.
24a. 자동차 뒷좌석에서 10 분 전에 딸꾹질을 한 아기는 배가 고팠다.
24b. 자동차 뒷좌석에서 10 분 동안 딸꾹질을 한 아기는 배가 고팠다.

B. English Sentences Used for the Self-paced Reading Task and the Acceptability Task (a: control sentences, b: coerced sentences)

1a. At ten o’clock, the boy bumped into the cramped store wall.
1b. All morning long, the boy bumped into the cramped store wall.
2a. At one o’clock, the firefighter panicked in the dark stairwell.
2b. For five minutes, the firefighter panicked in the dark stairwell.
3a. A minute ago, the officer vomited on the empty sidewalk.
3b. All morning long, the officer vomited on the empty sidewalk.
4a. After an hour, the professor called from the abandoned office.
4b. For ten minutes, the professor called from the abandoned office.
5a. After several minutes, the instructor coughed in front of the class.
5b. All day long, the instructor coughed in front of the class.
6a. At nine o’clock, the host bowed to the guests.
6b. All night long, the host bowed to the guests.
7a. At twelve o’clock, the dog dived in the Olympic-sized pool.

7b. All afternoon long, the dog dived in the Olympic-sized pool.
8a. After a minute, the explorer shot the gun beside the big blue lake.
8b. For several seconds, the explorer shot the gun beside the big blue lake.
9a. At one o'clock, the father glanced out of the small window.
9b. For twenty minutes, the father glanced out of the small window.
10a. At seven o'clock, the kid jumped in the noisy playground.
10b. For thirty minutes, the kid jumped in the noisy playground.
11a. For fifteen minutes, the acrobat hopped on the bouncy trampoline.
11b. Throughout the day, the acrobat hopped on the bouncy trampoline.
12a. At two o'clock, the student sneezed in the back of the classroom.
12b. During the morning, the student sneezed in the back of the classroom.
13a. After twenty minutes, the designer sniffed in the newly painted studio.
13b. All night long, the designer sniffed in the newly painted studio.
14a. At twelve o'clock, the elephant snorted in the grassy savannah.
14b. For an hour, the elephant snorted in the grassy savannah.
15a. After five minutes, the mouse squeaked in the cramped living room.
15b. For four hours, the mouse squeaked in the cramped living room.
16a. After four hours, the writer stumbled in the crowded apartment.
16b. During the night, the writer stumbled in the crowded apartment.
17a. At twelve o'clock, the bee stung passersby over the muddy riverbank.
17b. For two hours, the bee stung passersby over the muddy riverbank.
18a. After thirty minutes, the student giggled in the classroom.
18b. For thirty minutes, the student giggled in the classroom.
19a. After an hour, the girl fell in the snowy field.
19b. Throughout the afternoon, the girl fell in the snowy field.
20a. At the end, the politician winked in front of the audience.
20b. All afternoon long, the politician winked in front of the audience.
21a. After ten seconds, the frog leaped across the shallow pond.
21b. For two hours, the frog leaped across the shallow pond.
22a. After five minutes, the player kicked the ball toward the goalie.
22b. For fifty minutes, the player kicked the ball toward the goalie.
23a. After several minutes, the patient knocked on the door.
23b. For twenty minutes, the patient knocked on the door.
24a. After ten minutes, the toddler burped in the back seat.
24b. For ten minutes, the toddler burped in the back seat.

C. Pretest for Korean Participants

This is simply for research purposes. This has NO influence on your grade in any way.

Name in Korean:
Student number:
Birth year:
Email address (please write clearly):

There are 30 verbs listed below with their dictionary definitions. Using the proper tense of each verb, fill in the blanks accordingly.

CRASH: If something crashes somewhere, it hits something else violently.
GROW: When you grow plants, you put seeds into the ground and take care of them as they develop.
FLY: When something flies, it travels through the air.
TAKE: If you take something, you remove it from its place.
THINK: If you think that something is true, you believe it to be true, but you are not sure.
WALK: When you walk, you move along by putting one foot in front of the other on the ground.
SHOP: When you shop, you go to shops and buy things.
DRINK: When you drink a liquid, you take it into your mouth and swallow it.
PLAY: When children, animals, or perhaps adults play, they spend time doing enjoyable things, such as using toys and taking part in games.
WAIT: When you wait for something or someone, you spend some time doing very little, because you cannot act until that thing happens or that person arrives.
LISTEN: If you listen to someone who is talking or to a sound, you give your attention to them or it.
WATCH: If you watch someone or something, you look at them, usually for a period of time, and pay attention to what is happening.
BRUSH: If you brush something or brush something such as dirt off it, you clean it or tidy it using a brush.
EAT: When you eat something, you put it into your mouth, chew it, and swallow it.
WEAR: When you wear something such as clothes, shoes, or jewellery, you have them on your body or on part of your body.
LIVE: If someone lives in a particular place or with a particular person, their home is in that place or with that person.
SEND: When you send someone something, you arrange for it to be taken and delivered to them, for example by post.
PLANT: When you plant a seed, plant, or young tree, you put it into the ground so that it will grow there.
WASH: If you wash something, you clean it using water and usually a substance such as soap or detergent.
GRADUATE: In the United States, when a student graduates, they complete their studies successfully and leave their school or university.
CROSS: If you cross something such as a room, a road, or an area of land or water, you move or travel to the other side of it.
ARRIVE: When a person or vehicle arrives at a place, they come to it at the end of a journey.
SPEND: If you spend a period of time in a place, you stay there for a period of time.
CREATE: When someone creates a new product or process, they invent it or design it.
CALCULATE: If you calculate a number or amount, you discover it from information that you already have, by using arithmetic, mathematics, or a special machine.
BORROW: If you borrow something that belongs to someone else, you take it or use it for a period of time,

usually with their permission.
SLEEP: Sleep is the natural state of rest in which your eyes are closed, your body is inactive, and your mind does not think.
BOTHER: If something bothers you, or if you bother about it, it worries, annoys, or upsets you.
TEACH: If you teach someone something, you give them instructions so that they know about it or how to do it.

FILL IN THE BLANK

1. Adam's eyes were closed, so Jill ( ) he was asleep. But he wasn't!
2. Should I tell my mother that I ( ) her car into a lamp post last night? It's going to be expensive to repair.
3. Now that my uncle ( ) his own vegetables for the last 5 years, he refuses to buy them from supermarkets.
4. Dad, can I ( ) some money out of your wallet, in case the bank is closed?
5. Jane always ( ) to work, even in the winter.
6. Don't be afraid of airplanes. Remember that they ( ) safely for many kilometers since the Wright brothers invented the first one in 1903.
7. I have been ( ) new recipes for years now. People seem to be enjoying new styles of home cooking methods.
8. Since I ( ) from college, I have been thinking about going abroad to study more.
9. Hey, would it be possible to ( ) some money from you? I'm short on this month's rent.
10. Initially, I wanted to complete my homework but my little brother ( ) me all morning. I could not focus on my homework.
11. I ( ) in Korea since 2009. My favorite place in Korea is Kyeongbokgung.
12. I still find it very difficult to teach students even though I ( ) for 26 years.
13. Don't get any vision correction surgery. He got one about 10 years and now he ( ) glasses.
14. Yesterday, James ( ) an email to Mary to inform her about her new assignment.
15. I ( ) the dishes yesterday, but have not had the time yet to do it today.
16. Well, but my friend Lucy called when I ( ) at the station.
17. Since the birth of my daughter last year, I ( ) for baby things in so many department stores.
18. Last summer, I ( ) three weeks in Bangkok and we went back to Australia.
19. Initially, as a mathematician, I ( ) the ratio between two subject groups surveyed.
20. Since the beginning of this semester, Lily ( ) through almost every class. Her friends were always busy waking her up!
21. This is getting out of control! I ( ) in the line for over 3 hours to get on this roller coaster!
22. For decades, Rome has been considered one of the most popular cities to visit in Europe. When I was there in 2008, I remember ( ) so many cups of Italian espresso.
23. For a year now, Bill ( ) computer games every night after work. His wife is unhappy about it.
24. Last night, Jennifer ( ) the same movie twice. She still couldn't understand the mysteries in the movie.
25. Since Thanksgiving, Julie ( ) many roses in her garden. They are beautiful to watch.
26. Remember to always ( ) your teeth after a meal or you'll end up with cavities.
27. 10 years ago I only ( ) vegetable. I was a vegetarian. Now I'm not.

28. Nowadays, I see so many people ( ) the street with their eyes on smartphones. Some countries have started prohibiting this as a law.
29. Everyone knows that last year's exam was very difficult. But I ( ) from a professor in his class that this year's will be much easier.
30. It was such an honor to be able to speak directly to the president. For two hours, he ( ) to our opinions very attentively and responded.

