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Graphic Organizers: One Strategy for Comprehending Sentences with Coordinating Conjunctions

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Graphic Organizers: One Strategy for Comprehending Sentences

with Coordinating Conjunctions

by

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A Thesis

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Abstract

This study examined whether participants enrolled in a university-based intensive English program in the upper Midwest would better comprehend English sentences containing coordinating conjunctions after rearranging them into fill-in graphic organizers with the assistance of an instruction manual. Participants in the control group were provided with the same sentences but not the fill-in graphic organizers. This study also investigated the experimental and control groups' attitudes toward the comprehension questions and the experimental group's perceptions of the usefulness of fill-in graphic organizers and an instruction manual for understanding questions. The results indicated that, even though the experimental group perceived the comprehension questions to be slightly easier than the control group, the fill-in graphic organizers were less effective than sentences alone for correctly answering comprehension questions. Overall, the experimental group considered the fill-in graphic organizers to be somewhat helpful for comprehending questions and perceived the instruction manual as somewhat helpful for rearranging sentences into graphic displays.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

English as a Second Language (ESL) instructors and students can benefit from research that examines teaching strategies that are user-friendly and effective. In particular, graphic organizers (GOs) are part of one such strategy that may assist with ESL students' reading comprehension (Jiang, 2012; Larkin & Simon, 1987; Robinson, 1998; Robinson & Kiewra, 1995). The potential ability of GOs to help second language (L2) readers is worth investigating, in order to reduce some of the linguistic challenges (and accompanying frustration) that will likely be encountered while reading in a second or third language.

According to Jiang and Grabe, GOs are a "visual representation of information in the text" (2007, p. 34). There are several kinds of GOs, including semantic maps, matrices, tree graphs, Venn diagrams, etc. Importantly, various GOs seem to be designed to perform specific functions. For instance, Jiang and Grabe (2007) recognize two broad categories of GOs, those that represent the discourse structure of text and those that are considered more generic. A semantic web would be one type of GO included in the generic category. This is because semantic webs tend to display a visual set of related characteristics for a word or concept without pointing out text structures, such as cause and effect or classification. This difference between the two categories of GOs appears to be an important distinction that will be explored in the literature review. Furthermore, one study (Jiang, 2012) in this literature review referred to GOs as Discourse Structure Graphic Organizers (DSGOs), even though all of the other studies made use of GOs that represent the discourse structure of text.

Various theories and concepts have been explored to explain how GOs assist with reading comprehension. For instance, schema theory suggests that our minds contain background

knowledge or schemata (Rumelhart, 1980). L1 and L2 readers make use of background knowledge during the process of reading text. Because GOs are designed to have an explicit, spatial design, they appear to help organize and connect background knowledge to new information in text. Robinson (1998) proposed that this is one of the qualities of GOs that supports reading comprehension. Furthermore, GOs are also thought to have the qualities of visual argument and computational efficiency (Larkin & Simon, 1987; Robinson, 1998; Robinson & Kiewra, 1995). These concepts and their relationship to GOs will be explained in more detail within the literature review.

Several L1 and L2 studies have investigated the effects of GOs on reading comprehension (Armbruster, Anderson, & Meyer, 1991; Armbruster, Anderson, & Ostertag, 1987; Jiang, 2012; Mede, 2010; Robinson & Kiewra, 1995; Suzuki, 2006; Suzuki, Sato, & Awazu, 2008; Tang, 1992; Williams et al., 2005). However, the majority of findings come from L1 studies. In addition, the only research to make use of sentences with coordinating conjunctions originated with a 2008 article describing two L2 studies by Suzuki et al. The Suzuki et al. (2008) article concentrated on the microstructure of discourse versus the macrostructure of discourse comprehension (p. 612). All other L1 and L2 studies in the literature review utilized text that ranged from one to several paragraphs. The motivation for my study is the second of two studies in the 2008 research article by Suzuki et al.

The results of study two showed that an instruction manual effectively assisted EFL students in independently rearranging sentences with coordinating conjunctions into spatial representations of those sentences (Suzuki et al., 2008). However, study two did not investigate whether students comprehended the spatial representations of the original sentences.

Additionally, study two did not explore students' attitudes surrounding the test, GOs, and instruction manual.

The current study incorporated the above-mentioned missing aspects from study two. Students enrolled in an intensive English instruction program to improve their English language skills for college readiness were randomly assigned to one of two groups: *No Graphic Organizer* (NGO) or *Graphic Organizer with Manual* (GOM). Participants were tested to be at an intermediate English proficiency level with levels ranging from beginner to advanced.

To begin with, both groups received a written illustration with definitions and examples of English sentences with coordinating conjunctions. However, the GOM group was the only group who received information about rearranging English sentences into GOs. There was a written test, parts one and two. In addition, there were two versions of part one. For example, the version for the NGO group contained the same twelve sentences with coordinating conjunctions as the other group, but there was not any information about GOs. The GOM group was expected to rearrange the sentences into fill-in graphic organizers. The GOM group was provided with an instruction manual containing GO information to refer to during the test. Both groups completed the same twelve comprehension questions for the second part of the test. Lastly, students in the GOM group completed a questionnaire comprised of six open-ended and closed-ended questions about demographics and attitudes toward the comprehension questions, fill-in graphic organizers, and instruction manual. The NGO group completed a questionnaire containing four open-ended and closed-ended questions about demographics and attitudes toward the comprehension questions.

<center>**Chapter 2: Literature Review**</center>

Discourse Structure Awareness and GOs

There are numerous types of graphic organizers (GOs). For instance, depending on the study, GOs are described as "spatial graphic representations" (Suzuki et al., 2008), "matrices" (Williams et al., 2005), "tree graphs" (Tang, 1992), and "frames" (Armbruster et al., 1991; Armbruster et al., 1987). However, Jiang and Grabe (2007) choose to sort all GOs into two main categories based on their functions. One category is more generic and does not appear to represent the discourse structure of text. For instance, semantic maps tend to display a visual collection of related characteristics without referring to the discourse structure of the text. Venn diagrams are another example in this group of GOs. The other category is made up of discourse structure graphic organizers (DSGOs). It is important to note that almost all of the studies listed in the literature review that included GOs did not label them as DSGOs, even if they were designed to represent the discourse structure of the text.

Discourse structure has to do with how texts are organized. Importantly, the ability to understand the structure of a text is thought to help with reading comprehension (Grabe, 2004). There are also not that many discourse structures (comparison-contrast, problem-solution, cause-effect, etc.), and they can be explicitly taught.

A Second Language Study Focused on Text Structure

Carrell's (1985) study did not utilize GOs, but the research is significant because she investigated whether reading is positively affected by explicitly teaching text structure to L2 readers. Twenty-five university students representing several languages and enrolled in an intensive English program participated in the research. Students in both the experimental and

control groups read expository text passages. However, participants in the control group did not

receive training on top-level rhetorical organization, nor were they provided with a strategy for

reading and recalling text. Instead, they focused on grammar and vocabulary exercises, discourse

connectors, etc. Nonetheless, both groups were given pre-tests and post-tests using two types of

discourse structures, comparison and collection of descriptions.

Results showed that explicit teaching of top-level rhetorical organization can benefit ESL

participants' reading comprehension. This was measured in terms of quantity of information

recalled, and the effect was still present three weeks after training (Carrell, 1985, p. 741).

With the idea that text structure or discourse structure awareness seems to be a critical

component for reading comprehension, Jiang (2012) stated that "one way to translate discourse

structures from texts to classroom instruction is through the use of graphic organizers (GOs) *that*

represent the discourse structures of the text" (p. 85).

Schema Theory and GOs

Keeping in mind the above-mentioned information, I will refer only to GOs as DSGOs if

this was the terminology used by the authors. Before discussing other relevant studies, it is

necessary to explain additional characteristics of GOs that might assist with reading

comprehension. To begin with, schema theory proposes that our minds contain background

knowledge or cognitive structures (schemata) of knowledge (Rumelhart, 1980). Three types of

schemata (linguistic, formal, and content) seem to relate to reading comprehension (Li, Wu, &

Wang, 2007). Linguistic schemata play an integral role in decoding and understanding a text

(2007). The ability to understand the grammar of a language is one example of this. Content

schemata are extremely important for comprehension by predicting and removing ambiguities

with the help of background knowledge (2007). Cultural knowledge belongs in this category. Lastly, formal schemata have to do with the organizational and rhetorical structures of written texts (2007). For instance, this type of schemata assists readers in understanding different genres of written texts.

GOs appear to directly relate to schema theory in the sense that GOs are tools that organize and link background knowledge to new information in the text. Additionally, they seem to activate previous knowledge more efficiently than text because of their ability to display information spatially, which aids reading comprehension (Robinson, 1998).

Visual Argument and Computational Efficiency

To understand how GOs assist learners in understanding associations among concepts, visual argument and computational efficiency appear to play integral roles. With visual argument, ideas are conveyed through a spatial arrangement as opposed to written language, and it has been proposed that GOs make use of visual argument during the process of reading (Robinson, 1998; Robinson & Kiewra, 1995). In other words, readers are able to form more explicit and less complicated connections from text, partially due to visual argument. This does seem likely because, with graphic displays, the reader potentially benefits from explicit, efficient spatial arrangements of written words. This could be especially true for L2 readers who require additional learning strategies while reading.

The computational efficiency of GOs may also assist learners in forming connections from text. To begin with, Larkin and Simon (1987) described the concept of computational efficiency by explaining that diagrams can communicate conceptual associations faster and easier than sentences. This has to do with differences in processing one-dimensional and two-

dimensional displays when searching for answers. For instance, with a typical paragraph in linear form, a reader needs to store each important fact while looking for every additional fact. Time and cognitive resources are wasted in the process. In contrast, GOs typically have one fact adjacent to the next fact. Larkin and Simon (1987) expressed that two-dimensional displays aid reading comprehension by allowing facts to be viewed simultaneously. This appears to be a plausible consideration. As two-dimensional displays, GOs seem to act as efficient and supportive tools for L1 and L2 readers.

First Language Studies Utilizing GOs with Grade School Students

Although there have been GO research studies making use of both L1 and L2 learners, the majority of findings come from L1 studies (Armbruster et al., 1987; Armbruster et al., 1991; Robinson & Kiewra, 1995; Williams et al., 2005). In a 1987 study by Armbruster et al., 82 fifth graders were divided into two groups (*structure training* and *traditional training*). The *structure training* group's materials included a definition and description of a problem/solution text structure, problem/solution frames, problem/solution passages from social studies textbooks, and explicit rules for writing summaries of the written text. The *traditional training* group received the same problem/solution passages, but each one of these was followed by five questions. Some of the questions were about information related to the problem/solution structure, while other questions were not directly related.

Findings revealed that the *structure training* group recalled about 50 percent more of the macrostructure ideas from texts that were independently read, the training assisted in essay test performance, and this group of students included significantly more main ideas within their written summaries (Armbruster et al., 1987, p. 343).

In a more recent L1 study with younger participants, Williams et al. (2005) investigated the effects of GOs on second graders' ability to understand compare-contrast expository texts. The authors explained that, even though most research with GOs and expository text did not include students in this young age group, they felt these early years were a critical time to begin developing this skill, especially as it relates to future reading achievement. The authors were also curious to find out if instruction on text structure interfered with content knowledge.

Participants were made up of 128 second graders with ten second-grade teachers instructing the children. There were three randomly assigned conditions: *text structure*, *content only*, and *no instruction* (2005). For the *text structure* condition, 5 matrices were utilized as GOs. Each of the first 4 matrices related to four features that classify animals as vertebrae, while the fifth matrix had to do with an animal's physical features as described in the target paragraph. For the *content only* group, students focused on general information and animal facts instead of text structure. Additionally, these students made use of a different GO, an information web. In both the *text structure* and *content only* groups, students practiced forming sentences orally, and they were also provided with paragraph frames to assist them in writing paragraph summaries for each lesson.

Results indicated that students in the *text structure* group were better able to comprehend compare-contrast texts and to transfer this text structure knowledge to novel compare-contrast texts (Williams et al., 2005, p. 546). However, this ability failed to transfer to other types of text structures, besides compare-contrast. Furthermore, instruction in text structure did not compromise the students' abilities to learn new content (p. 546).

Most L1 studies have shown the beneficial effects of GOs on reading instruction. For instance, Robinson's (1998) review of sixteen studies from 1971 to 1994 indicated that 14 of the 16 studies revealed beneficial effects for GOs versus studying text alone (p. 91). Nonetheless, there are a small number of studies that have resulted in inconclusive or conflicting findings. As an example, Armbruster et al. (1991) analyzed the effectiveness of a particular GO, labeled as a *frame*, with regard to students' performances on content-area reading in textbooks. Participants were 365 fourth and fifth graders. Some students were taught using frames, while others were taught based on textbook instructions in the teacher's edition. Additionally, the study utilized four rounds of treatment throughout the school year.

Findings of recall and recognition measures from all four rounds indicated that frames were more effective as an instructional technique for fifth graders but not for fourth graders. The authors suggested a possible reason for this difference. The passages from fifth-grade textbooks contained more complex structures and substantial content, and these elements made it easier to design frames for the passages taken from fifth-grade books (Armbruster et al., 1991, p. 413).

A First Language Study Using GOs with College Students

In examining past L1 studies, Robinson and Kiewra (1995) reported that much of the prior research with GOs failed to replicate L1 classroom learning, due to short passages that were poorly organized, tests that measured solely factual knowledge, single graphic displays versus multiple displays, and immediate versus delayed testing. Because of these limitations, the authors designed two experiments using chapter-length text and several GO and outline displays. They also allowed participants (college students) time to study and included delayed tests. Lastly, they utilized tests that measured facts, relations, and application.

Results demonstrated that GOs were more effective than either text alone or outlines for learning hierarchical and coordinate relations, application of the knowledge when given new information, and composition of essays using coordinate relations (Robinson & Kiewra, 1995, p. 466). Additionally, this study included the participants' reflections by reporting that students viewed the GOs as more "reader friendly" than outlines (p. 466). Nonetheless, there were a couple of limitations to these experiments. First of all, students were not permitted to have writing instruments while studying. This meant that they could not highlight information, which is something many students do in authentic academic situations. Secondly, the text used in the study was chapter-length. This seems excessive for students in an experimental situation, especially if they would have been L2 readers.

Second Language Studies Incorporating GOs

As previously mentioned, there have not been as many L2 studies with GOs when compared with L1 studies. Tang's (1992) study was one of the first to investigate the effects of GOs on school-age ESL learners. The experiment included a partially complete tree graph, expository text, and one type of knowledge structure, classification. The study was designed to examine the comprehension and immediate recall of seventh grade ESL students. There were two groups of participants, 22 students in the graphic group and 23 students in the nongraphic group. The groups were exposed to the same information for an equal amount of time, except that the nongraphic group did not receive the tree graph. Findings from pre-test and immediate post-test scores revealed that 18 students in the graphic group improved in the amount of information recalled, but this was true for only 12 students in the nongraphic group (Tang, 1992, p. 187). Results from knowledge structure scores were much more impressive. Specifically, 13

students from the graphic group showed improvement with knowledge structure, while none of the students from the nongraphic group showed improvement in this area (p. 188).

Lastly, students from the graphic group were interviewed after the post-test, and the majority of participants felt that using a graphic for a text passage assisted in comprehension. For instance, students maintained that the graphic made the information less confusing, helped with recall by allowing them to remember where the information was placed in the diagram, and aided memory because the main points were summarized (p. 190).

Suzuki (2006) investigated EFL students' strategy use when constructing GO (spatial) versus summary (prose sentence) displays during or after reading an English text. A think-aloud protocol was included in this study, which is one way it seemed more complex than some of the other L2 studies. Because GOs appear to have the (previously-mentioned) quality of computational efficiency, Suzuki claimed that students producing GOs would rely on more cognitive resources related to reading comprehension strategies than students who constructed summaries. In effect, GO displays would help readers to see explicit relationships among concepts, resulting in improved comprehension (2006).

Ten senior high school students participated. One group was asked to construct GOs during or after reading a text, while the other group was asked to write summaries under the same conditions. The data collection method employed was think-aloud protocol analysis, and all of the participants chose to speak Japanese (their L1) for this analysis. Students were given the text, instructions, and a blank piece of paper for constructing GOs or summaries. There was no time limit, they were allowed to use a dictionary, and students were audiotaped during the session. One day later, students were given a delayed-recall test, in which they were required to

write down everything they remembered about the text. It might be worth noting that all of the students had prior experience in constructing GOs before participating in the study (2006). This did not appear to be the case with previously-mentioned L1 and L2 studies.

Results demonstrated that students in the GO group utilized more general comprehension strategies and fewer local linguistic strategies (questioning specific linguistic units) than students in the summary group (Suzuki, 2006, p. 189). Suzuki explained that these results are significant because students who construct GOs have the capacity to use greater resources for general comprehension strategies, which leads to a deeper level of understanding (p. 191). Finally, there were not any significant differences between groups with regard to the delayed free-recall test. Designing this type of test as a measure of students' comprehension could be one limitation of the study. The task of writing everything that is remembered on a blank piece of paper, one day later, seems challenging for many students.

Jiang's (2012) study is rare in the sense that the GOs utilized for the study are labeled as DSGOs. Even though all of the studies described up to this point have investigated discourse structure awareness, none of them has used the term—DSGOs. Jiang analyzed whether a 16-week DSGO instruction program significantly improved the discourse comprehension and reading ability of 340 college-level EFL students at a university in China. Additionally, delayed instructional effects and students' education levels were examined.

There were three classes in the experimental group and three classes in the control group. DSGO instruction was included in the curriculum for the DSGO experimental classes. For instance, the instructor for experimental classes began each session by discussing the structure of the text. Following this, these classes worked on partially completed DSGOs related to the text

and then participated in post-DSGO activities. Specifically, students in the DSGO group spent 75% of their time on traditional classroom activities and 25% of their time on DSGO activities. In contrast, students in the control group engaged in traditional classroom activities at all times (Jiang, 2012, p. 91). Additionally, two different types of pre-tests, post-tests, and delayed post-tests were conducted with the experimental group. One type of test contained the reading comprehension part of unpublished TOEFL forms, and the other type was a DSGO completion test. Each of the DSGO completion tests contained a reading passage and partially completed DSGOs that made use of cause-effect, problem-solution, description, and compare-contrast text structures.

Findings indicated that there was a significant instructional effect on students' discourse comprehension, which was shown in both types of tests immediately following the treatment, but this effect was present only with the DSGO completion test after seven weeks. It was further established that participants' education levels did not impact the effectiveness of DSGO instruction (p. 94). However, it might be worth noting that the participants were enrolled as either first or third semester students, so their education levels were somewhat similar. Moreover, because students actively participated by working on partially completed DSGO tasks, Jiang (2012) suggested that this may have resulted in a deeper level of learning (p. 99). The possibility of encouraging a deeper level of understanding through active participation is what motivated the choice of fill-in graphic organizers for my study.

A Second Language Study that Explores Learners' Attitudes

Research in both L1 and L2 studies have demonstrated that GOs can benefit students' reading comprehension. However, it is equally important to examine how learners feel about

using this type of strategy. Strategies considered effective in theory but not embraced by learners in everyday practice might not be worthwhile. With this in mind, Mede's (2010) study explored whether GO instruction affected students' attitudes toward EFL reading and whether GO instruction assisted students in applying a GO strategy while reading.

Participants were 54 intermediate students enrolled in an English course at a private university in Istanbul, Turkey. They were given a questionnaire to assess their ability to apply GOs in a text, and this was followed by a focus group interview about attitudes toward EFL reading. Next, students received four weeks of explicit training on four different GOs: semantic map, compare/contrast matrix, series of events chart, and storyboard. In addition to comprehension activities, training included think-aloud sessions modeled by the teacher and student think-aloud group sessions with respect to the GOs. Lastly, students completed a questionnaire (the same format used prior to training) and participated in a focus group interview at the end of training.

Findings revealed that, following GO instruction, students' attitudes toward EFL reading were positively affected as shown in this statement: *"Now, I really feel like a good reader. I have started having fun while reading and I am eager to read about different topics"* (Mede, 2010, p. 324). In regard to students' willingness to apply a GO strategy, results from means and standard deviation analyses revealed that students applied this strategy more frequently after GO instruction (p. 324). At least one limitation to these findings is that data collection was not based on the results of students' actual GO application during tasks. Instead, data collection consisted of students' responses to questionnaires and interviews, before and after GO training.

Motivation for Current Study

  This final study is the impetus for my specific research questions, originating from an

article describing two 2008 studies by Suzuki et al. After reviewing several L1 and L2 studies

that made use of text, ranging from at least one paragraph to much longer samples, the Suzuki et

al. (2008) article appears to be the only one that examined the effectiveness of GOs on sentences

with coordinating conjunctions. Incorporating a spatial display for use with sentences containing

coordinating conjunctions seems valuable for L2 readers. For example, English sentences that

include coordinating conjunctions can be quite long with multiple pieces of information. The

potential length of these sentences and the accompanying conjunctions that identify alternative,

additional, and contrasting relationships within a sentence may be difficult for L2 readers to

comprehend (Suzuki et al., 2008, p. 594). GOs could provide assistance by displaying these

types of sentences in a less complicated and more efficient way. As previously mentioned, the

Suzuki et al. (2008) article focused on the microstructure of discourse versus the macrostructure

of discourse comprehension (p. 612).

  Two studies were described within the Suzuki et al. (2008) article. In the first study,

experiment one of two, participants were 56 undergraduate EFL students from a university in

Japan. One of the findings revealed that spatial graphic displays were more effective than linear

sentential displays for understanding sentences containing coordinating conjunctions (Suzuki et

al., 2008, p. 600).

  The second (2008) study by Suzuki et al. is more relevant for my research. The authors

examined whether a one-page instruction manual would assist students in rearranging sentences

with coordinating conjunctions into spatial representations. There were 62 first-year

undergraduate EFL students from a Japanese university. Before being divided into two groups, "participants were given a general English grammar and vocabulary test, and a *t* test was conducted on it (out of 30); however, it did not yield a significant difference in test scores between the two groups (t (60) = 0.69, p = 0.24)" (Suzuki et al., 2008, p. 605).

Two groups (*with* and *without instruction*) received an illustration (written in Japanese) with explanations about coordinating conjunctions and examples of sentences containing conjunctions and the spatial rearrangement of those sentences. Both groups were then given 10 minutes to complete a rearranging test that included five English sentences with coordinating conjunctions. Participants received written instructions (in English) to rearrange the sentences into spatial displays using the blank space on the page. The *with-instruction* group received an instruction manual (written in Japanese) to use during the rearranging test.

The results of study two showed that the instruction manual effectively assisted EFL students in independently rearranging sentences with coordinating conjunctions into spatial representations of those sentences. Additionally, the authors reasoned that these findings, in which one group of students utilized an instruction manual for no more than ten minutes during the rearranging test, indicate that prolonged, specialized training is not required (Suzuki et al., 2008, p. 609).

Finally, although results from the Suzuki et al. (2008) study two demonstrated that an instruction manual helped students to rearrange English sentences with coordinating conjunctions into spatial displays, the study failed to analyze whether students were better able to comprehend the spatial representations of those rearranged sentences. This is one of the issues that will be explored with the current study. Secondly, in contrast to study two, the current study

will examine students' attitudes about the comprehension questions, instruction manual, and fill-in graphic organizers.

Chapter 3: Methodology

Research Questions

Research question one: How will students' comprehension of sentences with coordinating conjunctions be affected when provided with both an instruction manual and fill-in graphic organizers?

Research question two: How effective will the modified and simplified instruction manual (in reference to Suzuki et al., 2008) be for students while rearranging sentences?

Research question three: How will participants' attitudes about the comprehension questions differ, individually and by group assignment?

Research question four: How will students feel about the inclusion of an instruction manual and fill-in graphic organizers?

Participants

This study was conducted with eight students enrolled in an intensive English instruction program to improve their English language skills for college readiness at a university in the upper Midwest. Participants represented a variety of first languages, including: Korean (4), Chinese (2), Mongolian (1), and French (1). They were randomly assigned to one of two groups: *No Graphic Organizer* (NGO) or *Graphic Organizer with Manual* (GOM). The program teaches students with English proficiency levels ranging from beginner to advanced. Participants had been tested to be at an intermediate level. Students assessed at this level tend to understand several hundred English words from the New General Service List and a few hundred words from the Academic Word List. In terms of English writing skills, students have the capacity to write simple essays, consisting of a few paragraphs. The source of this information originates

with the Intensive English program where students studied. A formal citation has been left out, in order to protect participants' confidentiality.

Materials

Test—part one, sentences with coordinating conjunctions. There were 12 English sentences with one coordinating conjunction per sentence. Because there were four different coordinating conjunctions, each of the conjunctions was employed within three sentences. The coordinating conjunctions were selected from Google Books Ngram Viewer (Michel et al., 2010) based on the most widely used coordinating conjunctions contained in books from 2008: **and** (2.36%), **for** (.65%), **or** (.37%), and **but** (.22%).

The sentences for this test were modified from CNN Student News articles aimed at intermediate to advanced English speakers (Azuz, 2018). There were two versions of this written test, one for the *No Graphic Organizer* (NGO) group (see Appendix E) and the other one for the *Graphic Organizer with Manual* (GOM) group (see Appendix F).

The test utilized a different graphic display design than what was used in the Suzuki et al. (2008) study two. In particular, the authors of study two included their graphic display design within the illustration and instruction manual, but students were required to construct their own spatial displays (based on the authors' design) on a blank portion of their test pages. In contrast, the current study included a graphic organizer that incorporates "fill-in rectangles" for the illustration, instruction manual, and test. This type of GO seems easier to comprehend, and the design also seems more representative of displays that might be used in a classroom setting.

Test—part two, comprehension questions. Twelve comprehension questions appeared after the sentences for the NGO group (see Appendix E) and after the sentences and GOs for the

GOM group (see Appendix F and Figure 1). These questions referred to each of the 12 sentences with coordinating conjunctions.

Part One: Please rearrange the following 12 English sentences so that two phrases or clauses are displayed one below the other in a parallel formation and are centered around the coordinating conjunction. A Graphic Organizer Manual has been provided to assist you.

9. The proposed new rules do not target menthol flavored electronic cigarettes or tobacco flavors of this product.

| The proposed new rules do not target | or | menthol flavored electronic cigarettes |
| | | tobacco flavors of this product |
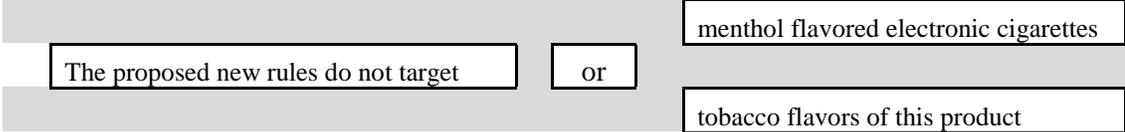
Part Two: Choose the best answer for each question. You are allowed to refer to the previous sentences.

Question 9: What is one central idea of sentence (9)?
   a. Proposed rules do not focus on tobacco flavors of electronic cigarettes.
   b. Proposed rules focus on menthol flavors of regular cigarettes.
   c. Proposed rules do not focus on menthol flavors of regular cigarettes.
   d. Proposed rules focus on tobacco flavors of electronic cigarettes.

Figure 1. A sample sentence from the test to be rearranged and the GO correctly rearranged.

Figure 1 shows that for part one of the test, students in the GOM group need to rearrange each sentence into a fill-in graphic display. For part two of the test, students are able to refer back to each rearranged sentence when answering comprehension questions.

Illustration. There were two written versions of the illustration page. This is the page that contains definitions of coordinating conjunctions and two examples of sentences with coordinating conjunctions. The version of the illustration page used with the GOM group also provided information about graphic organizers (see Appendix A). Unlike the Suzuki et al. (2008) study, in which the illustration was written in Japanese (the students' L1), this illustration was written in English.

Instruction manual. The one-page instruction manual for the GOM group was modified and simplified from the one used in the Suzuki et al. (2008) study two (see Appendix B). Unlike the Suzuki et al. (2008) study with instructions provided in Japanese, these instructions were written in English. Additionally, the sample sentence for the GOM group included one coordinating conjunction, while the sample sentence in the Suzuki et al. (2008) study contained two coordinating conjunctions.

Survey. A short questionnaire consisted of a combination of six open-ended and closed-ended questions for the GOM group. It included demographic information and attitudes about the comprehension questions, instruction manual, and fill-in graphic organizers (see Appendix C). The questionnaire for the NGO group contained a combination of four open-ended and closed-ended questions. It included demographic information and attitudes about the comprehension questions (see Appendix D).

Procedure

Participants were randomly selected for one of two treatment conditions: *Graphic Organizer with Manual* (GOM) and *No Graphic Organizer* (NGO). There were four students in each group.

Illustration. To begin with, students were provided with a one-page illustration of sentences with coordinating conjunctions (see Appendix A). Even though the NGO group received the same definitions and two examples of sentences with coordinating conjunctions, they were not given any information about graphic organizers. The GOM group received definitions about coordinating conjunctions, two examples of sentences with coordinating

conjunctions, and the graphic organizers for those sentences. Participants were given 5 minutes to read the information (similar to Suzuki et al. (2008) study two).

Tests—parts one and two. The NGO group received the same sentences with coordinating conjunctions as the other group, but they did not receive any information having to do with graphic organizers (see Appendices E and F). For the GOM group, instructions (similar to the Suzuki et al. (2008) study two) located at the top of the page containing the sentences stated, "Please rearrange the following 12 English sentences so that two phrases or clauses are displayed one below the other in a parallel formation and are centered around the coordinating conjunction. A Graphic Organizer Manual has been provided to assist you." An example from the test with one sentence correctly rearranged appears in Figure 1.

The NGO group was allowed 24 minutes to complete the test (parts one and two) that consisted of 12 sentences with coordinating conjunctions and 12 comprehension questions at the end (one minute per task, similar to Suzuki et al. (2008) study two). The comprehension questions were the same for all students. NGO participants began with part one of the test by reading all 12 sentences. They then responded to 12 comprehension questions in part two of the test.

The test for the GOM group also included a fill-in graphic organizer after each sentence as shown in Figure 1. The GOM group was allowed 36 minutes (one minute per task) to complete the test (parts one and two) that contained 12 sentences, 12 fill-in graphic organizers, and 12 comprehension questions at the end. GOM participants began with part one of the test by reading a sentence and then rearranging the sentence into a fill-in graphic organizer. After

rearranging all twelve sentences, participants responded to 12 comprehension questions in part two of the test.

Instruction manual. Additionally, the GOM group was the only group to be provided with an instruction manual to refer to while completing the test (see Appendix B).

Survey. Lastly, participants were asked to fill out a short questionnaire that included demographic information and attitudes about the comprehension questions, instruction manual, and fill-in graphic organizers (see Appendices C and D).

Chapter 4: Results

Test—part one, sentences with coordinating conjunctions. Before conducting an analysis of means and standard deviations for correct answers, the GOM group's spatial rearrangement of sentences were analyzed and scored using a similar format to the Suzuki et al. (2008) study two (p. 607). Participants were assigned 0, 1, 2, or 3 points as follows:

0 points: Participants displayed wrong or irrelevant information (words, phrases, clauses) one below the other, or relevant informational items were placed not one below the other but in other forms.

1 point: Either of the informational items that were to be placed one below the other in a parallel formation was not correct.

2 points: Words, phrases, or clauses—all of which were not informational items connected by a coordinating conjunction—were displayed at the wrong location. However, informational items connected by a coordinating conjunction were correctly displayed one below the other in a parallel formation.

3 points: The information items connected by a coordinating conjunction were correctly displayed one below the other in a parallel formation; both of these information items were correct; and words, phrases, or clauses other than these informational items were correctly displayed.

Here is an example from a participant's test, in which he or she received 3 points:

		will focus on non-violent drug related crimes
The prison reform bill	but	
		won't consider murder convictions

Out of 36 possible points (12 fill-in graphic organizers) for the GOM group, the number correct for each participant is listed in Table 1. These scores will be discussed later in relation to scores on the comprehension test and responses to survey questions. The mean for number of correct answers by the GOM group is 22.75. The standard deviation is 9.18.

Table 1

Number of Correct Responses by Participants in GOM Group

GOM Group Participant	Number Correct
1	21
2	9
3	27
4	34
Mean	22.75
Standard Deviation	9.18

Test—part two, comprehension questions. There were 12 multiple-choice questions listed after the sentences for the NGO group and after the sentences and fill-in graphic organizers for the GOM group. Each question was worth one point. The means and standard deviations for the number of correct answers to the comprehension questions were analyzed for both groups and appear in Table 2.

Table 2

Means and Deviations for the Number of Correct Responses for both Participant Groups

Comprehension Test	GOM Group	NGO Group
Mean	5	6.75
Standard Deviation	1.87	1.48

Survey. Responses to the questions regarding attitudes toward the comprehension

questions (part two) were compared between the GOM and NGO groups in Figure 2. Participants

could select from four choices: *easy to answer*, *somewhat easy to answer*, *somewhat difficult to*

answer, and *difficult to answer*.
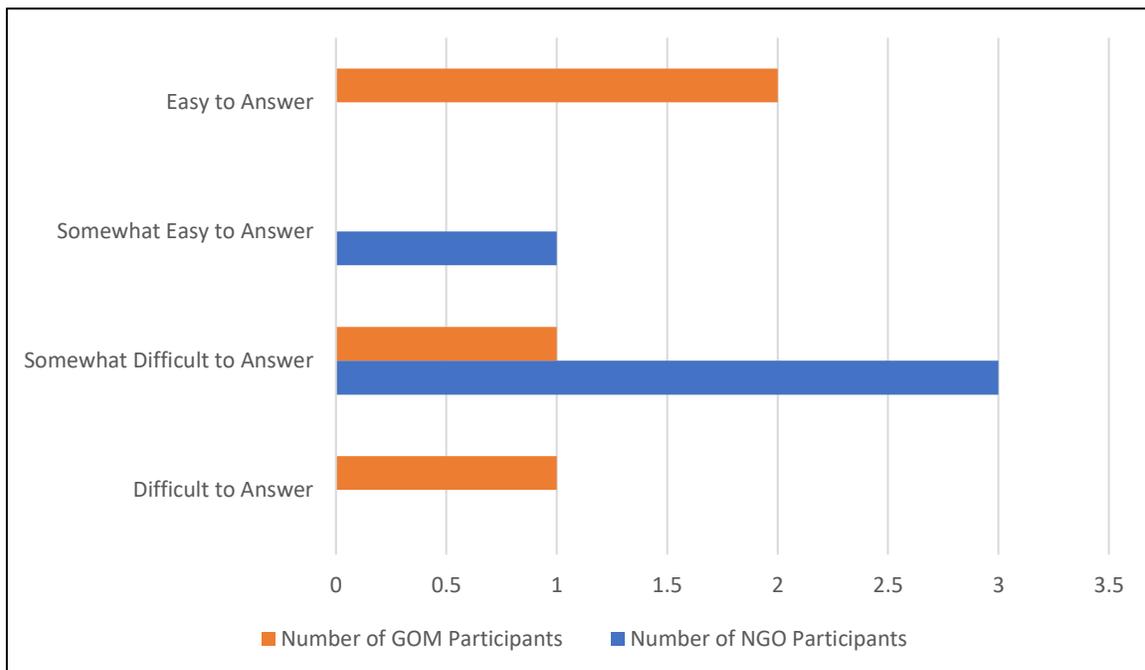
Figure 2. Comparison of attitudes toward comprehension questions response between GOM and
NGO groups.

Additionally, answers were quantified by rating them on a scale of 3 to 0 with *easy to answer* worth 3 points and *difficult to answer* worth 0 points. For the GOM group, the mean score for attitudes toward comprehension questions was 1.75. The standard deviation was 1.30. For the NGO group, the mean score for attitudes toward comprehension questions was 1.25, and the standard deviation was .43.

Individual responses were also compared between each group. For the GOM group, attitudinal responses to comprehension questions were compared with scores on the test (parts one and two) in Table 3.

Table 3

Attitudinal Responses to Comprehension Questions compared with Scores on the Test for the GOM Group

GOM Participant	Score on Part One	Score on Part Two	Attitude Toward Questions
1	21	2	3
2	9	5	0
3	27	6	3
4	34	7	1
Total	36	12	3

For the NGO group, attitudinal responses to comprehension questions were compared with each participant's score on part two of the test in Table 4.

Table 4

Attitudinal Responses to Comprehension Questions compared with Scores on Part Two of the Test for the NGO Group

NGO Participant	Score on Part Two	Attitude Toward Questions
5	5	1
6	6	2
7	7	1
8	9	1
Total	12	3

In addition, three out of four GOM participants felt that the fill-in graphic organizers were *somewhat helpful* for answering comprehension questions, and the other participant felt that the graphic organizers were *not helpful*. The GOM survey listed three choices: *very helpful*, *somewhat helpful*, and *not helpful*. Similarly, three out of four GOM participants felt that the instruction manual was *somewhat helpful* for rearranging sentences into fill-in graphic organizers, while one participant did not respond to the survey question. The GOM survey listed three choices: *very helpful*, *somewhat helpful*, and *not helpful*.

Research question one: How will students' comprehension of sentences with coordinating conjunctions be affected when provided with both an instruction manual and fill-in graphic organizers?

In reference to research question one, it was predicted that the instruction manual and fill-in graphic organizers would be helpful when answering comprehension questions on part two of

the test. However, results revealed that students in the GOM group scored lower than the NGO group on comprehension questions. Means and standard deviations for the correct answers to the comprehension questions appear in Table 1. Students in the NGO group who did not have access to fill-in graphic organizers and an instruction manual performed better than students in the GOM group who had access to these materials.

It might be noteworthy in my study that GOM participant #4 listed in Table 3 performed well on the rearranging task, part one of the test. This participant received a score of 34 out of 36 possible points or 94.4%. However, the participant scored only 7 out of 12 possible points on the comprehension questions (part two). Even though it was the highest score in the GOM group, it was not the highest score when compared with participants in the NGO group. Consequently, GOM participant #4 showed a considerable understanding of rearranging sentences into graphic displays, but this did not necessarily transfer to the comprehension questions.

Additionally, GOM participant #1 shown in Table 3 scored the lowest (2 out of 12) of all participants from both groups on the comprehension questions. Yet, this participant had access to fill-in graphic organizers and an instruction manual. To add to this, GOM participant #1 received a low score (21 out of 36) on part one of the test, but this was not the lowest score. In this case, participant #1 displayed the poorest understanding of the comprehension questions but was ranked only second to last in the GOM group for understanding how to rearrange fill-in graphic displays.

Furthermore, NGO participant #8 listed in Table 4 earned the highest score of 9 out of 12 on the comprehension questions but did not have access to fill-in graphic organizers or the instruction manual.

Research question two: How effective will the modified and simplified instruction

manual (in reference to Suzuki et al., 2008) be for students while rearranging sentences?

It was predicted that the instruction manual would be effective for students while

rearranging sentences with the one caveat that it was not written in students' first language,

which will be explained later. In reality, the instruction manual, modified and simplified from the

one in the Suzuki et al. (2008) study two, was not shown to be highly effective for most GOM

participants in the process of rearranging sentences into fill-in graphic organizers. Table 3

demonstrates that GOM participant #4 received the highest score of 34 out of 36 points.

However, the other three participants received scores of 27, 21, and 9 (out of 36 points) for the

fill-in graphic organizer tasks.

Research question three: How will participants' attitudes about the comprehension

questions differ, individually and by group assignment?

With research question three, it was predicted that the GOM group would perceive the

comprehension questions as easier than students in the NGO group. Figure 2 demonstrates GOM

participants' attitudes toward the questions. Although two out of four participants thought that

the questions were easy to answer, the other two participants revealed that the questions were

either somewhat difficult or difficult to answer.

Figure 2 also shows that three out of four NGO participants responded that the

comprehension questions were somewhat difficult to answer, and one participant thought that the

questions were somewhat easy to answer.

Research question four: How will students feel about the inclusion of an instruction

manual and fill-in graphic organizers?

Finally, it was predicted that students in the GOM group would appreciate access to both an instruction manual and GOs when rearranging English sentences into fill-in graphic organizers and answering comprehension questions.

Three out of four GOM participants responded that the fill-in graphic organizers were somewhat helpful for answering comprehension questions, while one GOM participant responded that fill-in graphic organizers were not helpful in answering questions.

In addition, three out of four GOM participants thought that the instruction manual was somewhat helpful for rearranging sentences into fill-in graphic organizers. One GOM participant did not respond to the question.

Ultimately, some of the findings in this study did not conform to this researcher's expectations, especially with regard to the first two research questions involving the benefits of graphic organizers in answering comprehension questions and the inclusion of an instruction manual for rearranging sentences into graphic displays. Survey results of attitudinal responses to the comprehension questions, graphic organizers, and instruction manual were somewhat expected. Possible explanations for research findings are described below.

Chapter 5: Discussion, Limitations, Implications, and Conclusion

In reference to research question one, it was predicted that the instruction manual and fill-in graphic organizers would be helpful when answering comprehension questions on part two of the test. The instruction manual is designed to be a supportive resource for rearranging sentences into fill-in graphic organizers. Consequently, it was thought that the GOM group's access to an instruction manual containing information about rearranging sentences into fill-in graphic displays would aid comprehension. As discussed in the introduction, GOs are thought to have the beneficial qualities of visual argument and computational efficiency. These qualities should allow students to efficiently visualize explicit connections from sentential information located before and after the coordinating conjunctions.

Because the instruction manual was written in English, it may have indirectly affected English language learners' comprehension of the questions on part two of the test. For instance, if there was any confusion surrounding the English instructions on how to rearrange sentences into graphic displays, this could have negatively impacted the final rearranged sentences. This confusion might have reduced the number of correct answers to the comprehension questions, which were based on information in the sentences.

In the Suzuki et al. (2008) study two, one group of participants was provided with an instruction manual that explained how to rearrange English sentences containing coordinating conjunctions into spatial displays. The group with the instruction manual performed better (Suzuki et al., 2008, p. 609). However, all of the participants shared the same first language— Japanese—and the instruction manual was written in Japanese.

Additionally, the groups were allowed ten minutes to read and rearrange the five sentences. This gave participants one minute to complete each task (Suzuki et al., 2008, p. 604). In this study, participants were also allowed one minute to perform each task, but the GOM group had access to an instruction manual written in English.

Another possible factor has to do with the amount of time allowed to utilize the instruction manual. Researchers in the Suzuki et al. (2008) study proposed that participants did not require additional, specialized training sessions for rearranging sentences into spatial displays (p. 609). Instead, it seemed that it was necessary only for participants to make use of the instruction manual during the rearranging tasks. This study followed the same guideline. An important distinction is that Suzuki et al. (2008) study two did not test students' levels of comprehension after rearranging sentences into graphic displays. It is plausible that testing the students' comprehension levels would have altered the researchers' conclusions about the amount of training necessary for understanding rearranged sentences.

With research question two, it was expected that the instruction manual would be effective for students while rearranging sentences. Results demonstrated that one out of four participants in the GOM group received a high score (34 out of 36) on the rearranging tasks. As previously mentioned, the instruction manual for this study is written in students' L2, while the instruction manual in the Suzuki et al. (2008) study two was written in students' L1. Japanese was the first language of all of the students in the Suzuki et al. (2008) study, while students in this study had a variety of first languages. The range of first languages included Korean, Chinese, Mongolian, and French. It would have been difficult to translate the instruction manual

into every language for this study. It is possible that this factor negatively impacted students' comprehension in the GOM group, thereby altering the predictions for other research questions.

Research question three predicted that the GOM group would perceive the comprehension questions as easier than students in the NGO group. Even though the instruction manual required students in the GOM group to have one more page of information to read and understand, it was anticipated that the manual would ultimately assist them in viewing explicit connections from the original sentences with coordinating conjunctions. It was also thought that the NGO group would perceive the questions as more difficult than the other group, due to the lack of helpful resources in the forms of an instruction manual and GOs. Based on the responses of both groups, it appears that the GOM group viewed the questions as slightly easier than the NGO group. Nonetheless, this perception did not translate into higher scores on the comprehension test. This discrepancy is somewhat puzzling to this researcher. There does not seem to be an explanation for why the GOM group's attitude, overall, did not match their performance.

With regard to differences in individuals' attitudes toward comprehension questions, I did not know what to expect. Survey responses demonstrated that each individual's perception of the difficulty of comprehension questions did not necessarily correspond to his or her score. For example, one participant from the GOM group received a low score on part two of the test with comprehension questions but perceived the questions as easy to answer. A different participant in the NGO group earned a high score on the test but viewed the questions as somewhat difficult to answer.

In contrast, other participants' views about the level of difficulty for comprehension questions appeared to correspond well to their scores on the test. It seems likely that some participants might view the comprehension questions as being difficult but still perform well. However, it is problematic to explain why someone would view the comprehension questions as easy but perform poorly on the test. It is possible that a participant in that scenario did not answer honestly or did not give much thought to his or her response.

Finally, with research question four, it was predicted that students in the GOM group would appreciate access to both an instruction manual and GOs when rearranging English sentences into fill-in graphic organizers and answering comprehension questions. As previously mentioned, this is because these resources are designed to help students make sense of potentially confusing sentences that are not written in their first languages.

The results indicated that three out of four GOM participants felt that the instruction manual was *somewhat helpful* versus *very helpful* or *not helpful*. Again, the fact that the instruction manual was written in English may have negatively impacted participants' attitudes toward the instruction manual and, ultimately, the fill-in graphic organizers and comprehension questions. The instruction manual, which was meant as a helpful guide, could have been a barrier to test performance.

In addition, the test in this study utilized a different graphic display design than what was used in Suzuki et al. (2008) study two. Even though the authors of study two included their graphic display design within the illustration and instruction manual, students were required to construct their own spatial displays (based on the authors' design) on a blank portion of their test pages. In contrast, the current study included a graphic organizer that incorporates "fill-in

rectangles" for the illustration, instruction manual, and test. As mentioned earlier, this type of GO seems easier to comprehend, and the design also seems more representative of displays that might be used in a classroom setting. Based on the results of this study, this design did not seem to assist English language learners with rearranging sentences into graphic displays.

Limitations

One obvious limitation of this research has to do with the small number of participants included in the study. The sentences and questions used in this study were designed for English language learners with a specific reading level. Due to unforeseen circumstances, the actual number of participants available was lower than expected. There were eight participants, four in each group. Because of the small number of participants, the results are not generalizable to other populations of English language learners.

Secondly, when compared to Suzuki et al. (2008) study two, this study did not have the advantage of participants who all shared the same first language. Instead, there were students with a variety of first languages: Korean, Chinese, Mongolian, and French. This may have played a role in how effective the instruction manual was for rearranging fill-in graphic organizers and then answering comprehension questions. As previously mentioned, participants in Suzuki et al. (2008) study two received instruction manuals written in their first language (Japanese). Because the instruction manual was shown to be effective with 10 minutes of study time (the time allowed for referencing the manual while performing the tasks), the authors suggested that rearranging sentences into graphic displays could be learned without specialized or lengthy training (Suzuki et al., 2008, p. 609).

Similar to Suzuki et al. (2008) study two, GOM participants in this study were not given additional time to study the instruction manual. The manual was referenced while performing the rearranging tasks. However, because the instruction manual was written in English, it is possible that participants may have required extra time to read and study the information. As previously mentioned, three out of four GOM participants responded that the instruction manual was somewhat helpful, and one participant did not respond to the question.

Furthermore, the GOM group was allowed 36 minutes (one minute per task) to complete the test, while the NGO group was given 24 minutes (one minute per task) for the test. Even though the GOM group received additional time to rearrange sentences into graphic displays, the NGO group ultimately earned higher comprehension scores. In future studies, the total time for all tasks could be equal across the experimental and control groups.

A third possible limitation has to do with the design of the graphic organizers used for the GOM group (see Figure 1). Two phrases or clauses are displayed one below the other in parallel formation, but the coordinating conjunction is situated slightly to the left of the phrases or clauses. This format is similar to the design utilized with the Suzuki et al. (2008) study. Nevertheless, a graphic organizer configuration in which the coordinating conjunction is located directly between both phrases or clauses may be less confusing to some participants. The graphic organizer design used in this study may have contributed to lower scores on both parts of the test.

An additional limitation for the GOM group could be the order in which questions were answered on parts one and two of the test. For instance, participants in this study were instructed to read the sentence containing a coordinating conjunction and then rearrange the sentence into a fill-in graphic display. After completing all sentences and graphic displays (part one),

participants answered comprehension questions related to the sentences (part two). In contrast, if GOM participants would have completed the sentence, the graphic display, and the related comprehension question before proceeding to the next sentence, they could have been more focused and efficient in managing their attention to each of the tasks.

Finally, the sentences that were modified for this study were appropriate for intermediate to advanced students, but some of the vocabulary words contained in each of the sentences might have been too complex for students at the intermediate proficiency level.

For instance, students assessed at this level tend to understand several hundred English words from the New General Service List and a few hundred words from the Academic Word List. In terms of English writing skills, students have the capacity to write simple essays, consisting of a few paragraphs. As previously mentioned, the source of this information originates with the Intensive English program where students studied. A formal citation has been left out, in order to protect participants' confidentiality.

The 12 sentences included in the test for this study were analyzed by the Compleat Lexical Tutor Vocab Profiler Classic (Cobb, 2019). Results showed that 71.1% of the vocabulary came from K1 words (the first 1000 most frequent written English words), 11.01% were from K2 words (the second 1000 most frequent written English words), 4.13% were AWL words (Academic Word List that contains over 500 of the most frequently utilized English words in academic texts), and 13.76% were Off-List words (words that are not found in the other lists analyzed by Vocab Profiler Classic).

Based on this analysis, participants with lower scores may have been negatively affected by some of the words contained in the test sentences. More specifically, reading comprehension

could have been impacted by the number of unknown vocabulary words. Nation (2006) proposed that, in order to successfully comprehend reading material, students need to understand about 95% of words in a written text with instructional support and 98% of words in a written text without support (p. 78). As discussed above, results from my study revealed that approximately 82.1% of the vocabulary words included in the test sentences originated from K1 and K2 words.

Implications

  Implications for research. To begin with, it could be beneficial to design a similar study that incorporates comprehension questions but also utilizes a group of participants who share a common first language. For example, in Suzuki et al. (2008) study one (experiment one), participants answered comprehension questions. However, they were provided with sentences or spatial displays (depending on their assigned group) and were not asked to rearrange sentences into spatial displays. In Suzuki et al. (2008) study two, participants rearranged sentences into spatial displays but were not required to answer comprehension questions. In addition, the instruction manual was written in the students' first language, which was Japanese for all participants. If the instruction manual in this study had been written in every student's first language, there might have been a positive impact on the GOM group's scores for parts one and two of the test, thereby causing the outcome to look completely different from the results of this study. Specifically, the graphic organizers could have been shown to be beneficial for sentences containing coordinating conjunctions without the barrier of translating the instruction manual.

  On the other hand, many ESL classrooms consist of students with at least a few different first languages. If future studies showed a measurable benefit to incorporating an instruction manual in participants' first language, it might be argued that the task of translating instruction

manuals into every represented language to explain how to rearrange English sentences into graphic displays is not a practical and/or efficient option for classroom instructors. In particular, it might take more time and effort to translate instruction manuals for students than the supposed benefit of graphic organizers.

Secondly, the GOM group in this study had the opportunity to rearrange English sentences with the help of fill-in graphic organizers. This was followed by responding to a series of comprehension questions. A future research study could incorporate graphic displays that do not make use of comprehension questions or involve rearranging the original sentences. Instead, the tasks could be focused on integrating graphic displays to assist in learning how to write original English sentences using proper syntax versus an exercise that requires participants to merely copy words from a sentential format to a spatial format. The process would be much more targeted on writing skills and creativity instead of reading skills. Unlike this study, it would require participants to apply their knowledge of syntax with the assistance of graphic organizers to new writing situations. Creativity could be measured by the ability of participants to write vivid and descriptive information in sentence form. The targeted information would be coded by more than one researcher for interrater reliability.

Last of all, the Suzuki et al. (2008) article consisting of two studies seems to be the only one that examined the effectiveness of spatial displays involving the microstructure of discourse. Unlike this study, Suzuki et al. (2008) study one and two confirmed that graphic displays are advantageous resources for English language learners engaged in those specific research activities. There is an opportunity to follow up with research studies that expand on the impact of graphic displays on the microstructure of discourse. For instance, Suzuki et al. (2008) and this

study targeted coordinating conjunctions. Future studies could examine the use of graphic

organizers with different verb tenses or with types of sentences, such as imperative and

declarative sentences in English.

      Implications for teaching. This study has not demonstrated that the utilization of

graphic organizers is an effective strategy for understanding sentences containing coordinating

conjunctions. Even taking into account the Suzuki et al. (2008) study with positive results, more

evidence is needed to support the use of graphic organizers for comprehending coordinating

conjunctions in English language learner classrooms. If several future research studies show the

effectiveness of graphic organizers on the microstructure of discourse, English language

instructors could include them in classroom exercises to alleviate some of the stress and

frustration that comes with learning the intricacies of a second or third language.

Conclusion

      This study examined the effectiveness of graphic organizers and an instruction manual to

better comprehend 12 English sentences containing coordinating conjunctions after being

rearranged into fill-in graphic displays. Participants consisted of eight English language learners

enrolled in an intensive English instruction program at a university in the upper Midwest. It was

predicted that participants in the GOM group would achieve higher scores than the NGO group

on 12 comprehension questions. This was because GOM participants had access to resources that

could ultimately assist them in viewing explicit connections from the original sentences with

coordinating conjunctions. The NGO group was provided with the original sentences but did not

have access to potentially helpful resources. In reality, the NGO group scored higher overall than

the GOM group on the comprehension questions. It was suggested earlier that this outcome may

have been due to the instruction manual being written in English instead of in the participants' first languages.

This study also investigated the experimental and control groups' attitudes toward the comprehension questions and the experimental group's perceptions of the usefulness of fill-in graphic organizers and an instruction manual for understanding questions. The results indicated that, even though the experimental group perceived the comprehension questions to be slightly easier than the control group, the fill-in graphic organizers were less effective than sentences alone for correctly answering comprehension questions. Overall, the experimental group considered the fill-in graphic organizers to be somewhat helpful for comprehending questions and perceived the instruction manual as somewhat helpful for rearranging sentences into graphic displays. Again, the fact that the instruction manual was written in English may have affected the general outcome of these survey questions.

Lastly, this study utilized a small group of participants with a variety of first languages. Future studies could incorporate a larger group of participants for opportunities to generalize the results. It might also be worthwhile to include only participants with the same first language background. Additionally, future researchers could consider using graphic displays for experimental activities that are more suited to creative, academic writing skills.

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    &share=&direct_url=t1%3B%2Cand%3B%2Cc0%3B.t1%3B%2Cfor%3B%2Cc0%3B.t

    1%3B%2Cor%3B%2Cc0%3B.t1%3B%2Cbut%3B%2Cc0%3B.t1%3B%2Cyet%3B%2C

    c0%3B.t1%3B%2Cso%3B%2Cc0#t1%3B%2Cand%3B%2Cc0%3B.t1%3B%2Cfor%3B

    %2Cc0%3B.t1%3B%2Cor%3B%2Cc0%3B.t1%3B%2Cbut%3B%2Cc0%3B.t1%3B%2

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Appendix: An Illustration

A coordinating conjunction is a word that connects other words, phrases, or clauses. Here are examples of coordinating conjunctions: and, or, but, nor, for, yet, and so. In other words, "Coordinating conjunctions connect more than one information item located before and after these conjunctions" (Suzuki et al., 2008, p. 605).

Here are two sentences that contain coordinating conjunctions:

At lunch today, I will eat a hamburger or a chicken sandwich.

My brother will order cheesecake, for it is his favorite dessert.

Here are the sentences after they are rearranged into fill-in graphic organizers:

		a hamburger
At lunch today, I will eat	or	
		a chicken sandwich

	My brother will order cheesecake
for	
	it is his favorite dessert

Appendix B: Instruction Manual

Four Steps to Rearrange a Sentence into a Fill-In Graphic Organizer

"My son likes to play soccer and read adventure stories."

1. Find the words that are located after the coordinating conjunction.

    and **read** adventure stories. (*and* is the conjunction, **read** is the verb)

2. Find the words (in the same word class) located before the coordinating conjunction.

    play soccer and… (**play** is the verb)

3. Arrange the phrases that were found in steps 1 and 2—one below the other in a parallel

    formation. The coordinating conjunction (and) is located before the phrases.

		play soccer
	and	
		read adventure stories

4. Place the rest of the words from the sentence in the correct location.

		play soccer
My son likes to	and	
		read adventure stories

Appendix C: GOM Questionnaire

1. What is your first language?

2. How long have you studied English? _____years and/or _____months

3. Overall, the comprehension questions on this test were:

    a. easy to answer

    b. somewhat easy to answer

    c. somewhat difficult to answer

    d. difficult to answer

4. The fill-in graphic organizers were:

    a. not helpful for answering comprehension questions

    b. somewhat helpful for answering comprehension questions

    c. very helpful for answering comprehension questions

5. The instruction manual was:

    a. very helpful for rearranging sentences into fill-in graphic organizers

    b. somewhat helpful for rearranging sentences into fill-in graphic organizers

    c. not helpful for rearranging sentences into fill-in graphic organizers

6. Please feel free to add any comments about this test:

Appendix **D: NGO Questionnaire**

1. What is your first language?

2. How long have you studied English? ____years and/or ____months

3. Overall, the comprehension questions on this test were:

    a. easy to answer

    b. somewhat easy to answer

    c. somewhat difficult to answer

    d. difficult to answer

4. Please feel free to add any comments about this test:

Appendix E: Test, NGO Group

Sentences and Multiple-Choice Questions

Part One: Please read the following 12 sentences. Each sentence contains one coordinating conjunction.

(1)   The Prison Reform Bill will focus on non-violent drug related crimes but won't consider murder convictions.

(2)   The Bill would attempt to place inmates in prisons that are closer to their homes or to their families.

(3)   The Bill will help decrease the number of people in overcrowded prisons and decrease the costs of detaining criminals.

(4)   The Bill will help sentencing to be less unfair and better prepare inmates to re-enter society.

(5)   Some critics have said the Bill goes too far, for they think communities will be less safe.

(6)   There is a 50 percent increase in smoking electronic cigarettes (vaping) among middle school students or sixth to eighth graders.

(7)   The increase of vaping is higher among high school students, for survey results show an 80 percent increase with this population.

(8)   Health officials are worried that vaping can get kids hooked on nicotine early in life and lead them to try smoking.

(9)   The proposed new rules do not target menthol flavored electronic cigarettes or tobacco flavors of this product.

(10)   Advertisers are trying to appeal to youth, for there are numerous candy flavors.

(11)   Adult smokers do not need cotton candy flavored electronic cigarettes but do need access to some flavors.

(12)   We're talking about the harms of electronic cigarettes but ignoring that they are less harmful than regular cigarettes.

Part Two: Choose the best answer for each question. You are allowed to refer to the previous sentences.

Question 1: What is the main issue of the Prison Reform Bill in sentence (1)?
    a. The Bill will benefit someone found guilty of selling illegal drugs.
    b. The Bill will benefit someone found guilty of killing a family member.
    c. The Bill will not benefit someone found guilty of poisoning a neighbor.
    d. The Bill will not benefit someone found guilty of robbing a bank.

Question 2: What is the main issue of the Bill in sentence (2)?
    a. It is mostly concerned about inmates escaping from prison to go home.
    b. It is mostly concerned about inmates escaping from prison to see family members.
    c. It is mostly concerned about inmates receiving visits from family members.
    d. It is mostly concerned about inmates receiving visits from neighbors.

Question 3: What is one central theme of the Bill in sentence (3)?
    a. It will help by increasing the number of prison staff.
    b. It will help by lowering the number of people in prisons.
    c. It will help by expanding the number of people in prisons.
    d. It will help by decreasing the number of prison staff.

Question 4: What is one main issue of the Bill in sentence (4)?
    a. It will cause inmates to have shorter prison sentences.
    b. It will cause inmates to have longer prison sentences.
    c. It will cause inmates to be less equipped to leave prison.
    d. It will cause inmates to be more equipped to leave prison.

Question 5: What is the possible effect of the Bill in sentence (5)?
    a. Critics think the Bill goes too far.
    b. Critics think the Bill does not go far enough.
    c. Communities will feel more secure.
    d. Communities will feel less secure.

Question 6: What is the main issue of sentence (6)?
    a. Vaping means smoking electronic cigarettes.
    b. Vaping does not mean smoking electronic cigarettes.
    c. More middle school students are vaping.
    d. Fewer middle school students are vaping.

Question 7: What is the central idea of sentence (7)?
   a. High school students should be vaping as often as middle school students.
   b. High school students' rate of vaping has grown more than the rate by middle school students.
   c. High school students should be vaping more often than middle school students.
   d. High school students' rate of vaping has not grown as much as the rate by middle school students.

Question 8: What is one main issue of sentence (8)?
   a. Kids could be vaping later in life.
   b. Kids could get addicted to nicotine later in life.
   c. Kids could be vaping while young.
   d. Kids could get addicted to nicotine while young.

Question 9: What is one central idea of sentence (9)?
   a. Proposed rules do not focus on tobacco flavors of electronic cigarettes.
   b. Proposed rules focus on menthol flavors of regular cigarettes.
   c. Proposed rules do not focus on menthol flavors of regular cigarettes.
   d. Proposed rules focus on tobacco flavors of electronic cigarettes.

Question 10: What is the possible harmful effect mentioned in sentence (10)?
   a. There are many candy flavored electronic cigarettes.
   b. There are not enough candy flavored electronic cigarettes.
   c. There are many kids who want to use electronic cigarettes.
   d. There are mostly adults who want to use electronic cigarettes.

Question 11: What is the main idea of sentence (11)?
   a. Adult smokers should not have cotton candy flavors with electronic cigarettes.
   b. Youth smokers should not have cotton candy flavors with electronic cigarettes.
   c. Some flavors of electronic cigarettes should be available to youth smokers.
   d. Some flavors of electronic cigarettes should be available to adult smokers.

Question 12: What is the central theme of sentence (12)?
   a. Electronic cigarettes are less safe than regular cigarettes.
   b. Electronic cigarettes are unhealthy with respect to adults.
   c. Electronic cigarettes are more safe than regular cigarettes.
   d. Electronic cigarettes are unhealthy with respect to youth.

Appendix F: Test, GOM Group

Sentences, Graphic Organizers, and Multiple-Choice Questions

Part One: Please rearrange the following 12 English sentences so that two phrases or clauses are displayed one below the other in a parallel formation and are centered around the coordinating conjunction. A Graphic Organizer Manual has been provided to assist you.

(1) The Prison Reform Bill will focus on non-violent drug related crimes but won't consider murder convictions.

(2) The Bill would attempt to place inmates in prisons that are closer to their homes or to their families.

(3) The Bill will help decrease the number of people in overcrowded prisons and decrease the costs of detaining criminals.

(4) The Bill will help sentencing to be less unfair and better prepare inmates to re-enter society.

(5) Some critics have said the Bill goes too far, for they think communities will be less safe.

(6) There is a 50 percent increase in smoking electronic cigarettes (vaping) among middle school students or sixth to eighth graders.

(7) The increase of vaping is higher among high school students, for survey results show an 80 percent increase with this population.

(8) Health officials are worried that vaping can get kids hooked on nicotine early in life and lead them to try smoking.

(9) The proposed new rules do not target menthol flavored electronic cigarettes or tobacco flavors of this product.

(10) Advertisers are trying to appeal to youth, for there are numerous candy flavors.

(11) Adult smokers do not need cotton candy flavored electronic cigarettes but do need access to some flavors.

(12) We're talking about the harms of electronic cigarettes but ignoring that they are less harmful than regular cigarettes.

Part Two: Choose the best answer for each question. You are allowed to refer to the previous sentences and the rearranged graphic organizer sentences.

Question 1: What is the main issue of the Prison Reform Bill in sentence (1)?
   a. The Bill will benefit someone found guilty of selling illegal drugs.
   b. The Bill will benefit someone found guilty of killing a family member.
   c. The Bill will not benefit someone found guilty of poisoning a neighbor.
   d. The Bill will not benefit someone found guilty of robbing a bank.

Question 2: What is the main issue of the Bill in sentence (2)?
   a. It is mostly concerned about inmates escaping from prison to go home.
   b. It is mostly concerned about inmates escaping from prison to see family members.
   c. It is mostly concerned about inmates receiving visits from family members.
   d. It is mostly concerned about inmates receiving visits from neighbors.

Question 3: What is one central theme of the Bill in sentence (3)?
   a. It will help by increasing the number of prison staff.
   b. It will help by lowering the number of people in prisons.
   c. It will help by expanding the number of people in prisons.
   d. It will help by decreasing the number of prison staff.

Question 4: What is one main issue of the Bill in sentence (4)?
   a. It will cause inmates to have shorter prison sentences.
   b. It will cause inmates to have longer prison sentences.
   c. It will cause inmates to be less equipped to leave prison.
   d. It will cause inmates to be more equipped to leave prison.

Question 5: What is the possible effect of the Bill in sentence (5)?
   a. Critics think the Bill goes too far.
   b. Critics think the Bill does not go far enough.
   c. Communities will feel more secure.
   d. Communities will feel less secure.
   e.

Question 6: What is the main issue of sentence (6)?
   a. Vaping means smoking electronic cigarettes.
   b. Vaping does not mean smoking electronic cigarettes.
   c. More middle school students are vaping.
   d. Fewer middle school students are vaping.

Question 7: What is the central idea of sentence (7)?
   a. High school students should be vaping as often as middle school students.
   b. High school students' rate of vaping has grown more than the rate by middle school students.
   c. High school students should be vaping more often than middle school students.
   d. High school students' rate of vaping has not grown as much as the rate by middle school students.

Question 8: What is one main issue of sentence (8)?
   a. Kids could be vaping later in life.
   b. Kids could get addicted to nicotine later in life.
   c. Kids could be vaping while young.
   d. Kids could get addicted to nicotine while young.

Question 9: What is one central idea of sentence (9)?
   a. Proposed rules do not focus on tobacco flavors of electronic cigarettes.
   b. Proposed rules focus on menthol flavors of regular cigarettes.
   c. Proposed rules do not focus on menthol flavors of regular cigarettes.
   d. Proposed rules focus on tobacco flavors of electronic cigarettes.

Question 10: What is the possible harmful effect mentioned in sentence (10)?
   a. There are many candy flavored electronic cigarettes.
   b. There are not enough candy flavored electronic cigarettes.
   c. There are many kids who want to use electronic cigarettes.
   d. There are mostly adults who want to use electronic cigarettes.

Question 11: What is the main idea of sentence (11)?
   a. Adult smokers should not have cotton candy flavors with electronic cigarettes.
   b. Youth smokers should not have cotton candy flavors with electronic cigarettes.
   c. Some flavors of electronic cigarettes should be available to youth smokers.
   d. Some flavors of electronic cigarettes should be available to adult smokers.

Question 12: What is the central theme of sentence (12)?
    a. Electronic cigarettes are less safe than regular cigarettes.
    b. Electronic cigarettes are unhealthy with respect to adults.
    c. Electronic cigarettes are more safe than regular cigarettes.
    d. Electronic cigarettes are unhealthy with respect to youth.