
Feature Article

Using Rhetorical Structure Theory for Contrastive Purposes: A Pilot Study

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This pilot study explores the effectiveness of Rhetorical Structure Theory (RST) for contrastive purposes. Two English texts, one written by a native speaker of Japanese and one by a native English speaker, were broken into elementary discourse units and annotated within the RST framework. The frequency of relations was then tabulated and compared to reveal different features in a Japanese EFL learner's English writing and an L1 English speaker's writing. Therefore, this study has a methodological result: it shows to what extent this approach is feasible and effective at investigating and assessing these kinds of issues.

この予備研究は、Rhetorical Structure Theory (RST, 修辞構造論)が対比研究にいかにかに効果的かを探るものだ。日本人が書いた英文と、英語が母語である話者が書いた英文の2つを、RSTの枠組みの中で、基礎的な談話単位に分けて注釈をつけた。そして一覧表にして比較することで、英語を外国語として学ぶ日本人の英作文と、英語ネイティブの英作文における特徴的な違いを明らかにした。この研究は方法論的な結果を出した。本アプローチが、こういった問題を調査し評価するのにいかに現実的で効果的かを明らかにしたのだ。

Contrastive studies of Japanese writers' written texts have employed a variety of analytical techniques to investigate both linguistic and rhetorical features in their attempts to explain why Japanese English writing is often not as coherent as texts written by native English speakers (NES; Brown, 2012; Connor, 2005; Harder & Harder, 1982; Hinds, 1976; Nishihara, 1990). Several studies conducted have been more objective in applying quantitative approaches, such as error analysis

at the micro-level, i.e., linguistic features to identify phenomena that differ from that of NESs (Achiba & Kuromiya, 1983; Bryant, 1984; Hinkel, 2001; Hirose, 2014; Hirose & Sasaki, 1994; Ito, 2004; Moriya, 1997). Other studies, however, have applied more subjective approaches that have focused on rhetorical and organizational patterns (Easton, 1982; Haenouchi & Ichinose, 2010; Hirose, 2003; Miyake, 2007; Nishigaki & Leishman, 2001; Takagaki, 2003). Together, these studies make up a field of research that has offered substantial contributions to our understanding of Japanese and English discourse as well as L2 writing in general. Unfortunately, despite the insight these studies have provided, we have still been left with many unanswered questions. This pilot study has thus adopted Rhetorical Structure Theory (RST; Mann & Thompson, 1988) as its analytical framework to explore whether it is suitable for contrastive purposes and can shed light on some of these unanswered questions.

It has been made abundantly clear that Japanese English writing is consistently perceived as illogical and ambiguous or perhaps more accurately, incoherent, relative to that of NESs writing (Achiba & Kuromiya, 1983; Atkinson, 2012; Connor, 2005; Davies, 1998; Easton, 1982; Harder & Harder, 1982; Hinds, 1976, 1980, 1983a, 1983b, 1987, 1990; Kunihiro, 1976; Nishigaki & Leishman, 2001; Nishihara, 1990; Oi, 1986; Oi & Kamimura, 1998; O’Riordan, 1999), but no study thus far has been extensive enough to offer more than suggestions as to why this might be the case. The majority of such studies have relied heavily on discourse analysis, often not adopting precautions in research design to assure the replicability of the study, such as inter-rater reliability. The lack of rigor has resulted in discrepancies across the literature, with some studies suggesting that Japanese L2 learners apply traditional Japanese organizational patterns (e.g., *ki-shō-ten-ketsu*) and inductive approaches to their English writing (Achiba & Kuromiya, 1983; Easton, 1982; Haenouchi & Ichinose, 2010; Iwamoto, 2006; Nishigaki & Leishman, 2001), which could account for the apparent incoherence of their English writing. Others, however, have found that such patterns are not typical of Japanese writing and that standard conventions and rhetorical/organizational patterns of English can also be commonplace in Japanese, particularly in academic writing (Kobayashi, 1984; Kubota, 1997;

Matsunaga, 1999; Miyake, 2007). Findings such as these latter ones then make it difficult to generalize Japanese writing as illogical and would therefore not reliably account for why their English writing would appear to be so.

Other studies have focused their investigations at the micro-level and have looked at cohesive devices in an attempt to quantify differences between Japanese English writing and NESs' writing (Connor, 1984; Hinkel, 2001; Narita, Sato, & Sugiura, 2004; Nishigaki & Leishman, 1998, 2001; Nishigaki, Chujo, Leishman, & Hasegawa, 2007; Oi, 1986). Though these studies have shown a tendency for over-explicit linkage between adjacent sentences with the use of connectors, lack of variety in transition usage, and weaknesses in ellipsis and synonym substitution among Japanese English writing, they still have not satisfactorily pinpointed exactly what causes Japanese English writing to feel less coherent than writing by NESs. One reason for this deficit is the fact that many of these studies did not expand beyond the micro-level connections (Hinkel, 2001; Nishigaki & Leishman, 1998, 2001; Oi, 1986). However, those studies that have been based on the idea that cohesion at the micro-level may help in the formation of coherence at the macro-level (Nishigaki, Chujo, McGoldrick-Leishman, & Hasegawa, 2007) are rooted in an erroneous premise, as coherence does not necessarily depend on cohesive devices (Carrell, 1982). Though cohesive devices may linguistically signal a writer's decision of expressing a connection between two ideas, they do not necessarily connect them (Maynard, 1998). As a result, relying on the analysis of cohesive devices is not the best approach to understanding the structure of a text, which means they cannot accurately account for why Japanese English writing is regarded as more illogical and ambiguous.

What is needed, therefore, is research that combines quantifiable measurements with interpretive observations of anomalies at both the macro- and micro-levels. These anomalies must be considered in tandem with one another and not as separate entities in order to account for what is plausibly causing Japanese English writing to be experienced as illogical and ambiguous beyond inaccurate generalizations of Japanese rhetoric and errors in cohesion. Accordingly, this type of rhetorical analysis demands a different type of

approach that can look at both local and global features and offer quantifiable data to substantiate its results. This paper, therefore, adopts the RST framework for contrastive purposes and applies it to a pilot study between a Japanese EFL learner's English text and a NES's text to show how it can be used to meet this need. Before proceeding to the study, however, it is first necessary to provide a thorough overview of RST so that its usefulness in contrastive research can be made apparent.

The Rhetorical Structure Theory

RST, developed by Mann and Thompson (1988), is a descriptive linguistic approach that analyzes the organization of discourse. Unlike other theories of text structure (e.g., Grosz & Sidner, 1986), RST eliminates the necessity of linguistic devices as indicators of relations and, alternatively, offers a systematic way for texts to be annotated by modeling the rhetorical structure of a text into a hierarchical discourse tree, or RST tree, in which relations between spans of texts are identified. These spans of texts are usually made up of smaller units called the minimal building blocks of discourse, or Elementary Discourse Units (EDUs).

The coherence structure of the texts is described in terms of RST (Mann & Thompson, 1988). The EDUs in this analysis are clauses, except for intraclausal constituents and restrictive relative clauses, or independent fragments that function as complete utterances. The functional relations between the propositions in a text are defined in terms of semantic constraints on the constituent units and the analyst's plausibility judgments about the writer's purpose in producing those units. The unit that is most central to the writer's purposes is called the *nucleus* (*N*); less central supporting or expanding units are called *satellites* (*S*). The relations apply recursively to yield a hierarchical structure. RST trees combine subject matter relations (relating states of affairs) and presentational relations (relating illocutions or text parts) in a single representation. This conflation of content structure and intentional structure allows the analyst to choose the contextually most salient relation, that is, the one that maximizes the relevance of a unit to the local or global discourse purpose at hand.

Though the concept of nuclearity is rather novel, the classification in which rhetorical relations occur appears to be comparable to that of other discourse structure theories. According to Mann and Thompson (1988), rhetorical relations can either be asymmetric (N-S) or symmetric (multi-nuclear). However, as has been pointed out, while these classifications were expressed in semantic and syntactic terms, RST's N-S notion is concerned with the purposes of the writer and the effect they intend to bring about, which is more in line with the function of rhetoric (Mann & Thompson, 1988; Matthiessen & Thompson, 1988). Therefore, RST provides a way by which to describe the coherence of a text beyond linguistically observable phenomenon, but by the deliberate choices made by the writer who was seeking to bring about a specific reaction in the reader. In fact, one of the four constraints in which rhetorical relations may be defined revolves around achieving this effect (Figure 1), which is achieved through "a mixture of propositional and intentional language" (Knott, 1996, p. 39).

An asymmetric relationship is made up of two spans of text: the N and the S. The N acts as the more important span as it is essential to the writer's goal and purpose and is independent from the other span, whereas the S is less important and serves to support the N; it cannot act independently (Figure 2). Asymmetric relationships can be further subdivided into two categories: Presentational Relations (their effect is to increase some inclination in the reader, such as the reader's belief in the N, the reader's desire to perform the action in N) and Subject Matter Relations (their effect is that the reader recognizes the relation between two spans of texts).

Unlike asymmetric relations, symmetric relations can be made up of two

RST Constraints
1. Constraints on the nucleus
2. Constraints on the satellite
3. Constraints on the combination of the nucleus and satellite
4. Effect (achieved on the reader)

Figure 1. List of RST relation constraints as identified by Taboada and Mann (2006).

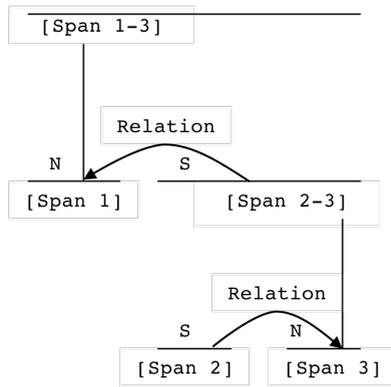


Figure 2. An example of an RST tree demonstrating the asymmetric relationship.

or more spans, each of which is of equal importance to the writer's intention. In other words, each node in a symmetric relation is an N. An example of a symmetric relation is given in Figure 3.

Texts are structured through the relationships between these two components, i.e., the N and S. EDUs serve as either N or S and act as spans of text within the RST tree. A span may be made up of a single EDU or more. The way by which one EDU is connected to another is by addition of either one of the 25 asymmetric relations or one of the seven symmetric relations (Table 1), which can only be marked by following four constraints: completeness, connectedness, uniqueness, and adjacency.

Completeness refers to the fact that an RST tree must cover the entire text. In other words, annotation is very holistic in nature; it takes the entire text

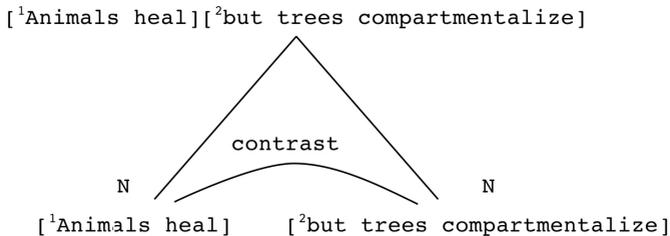


Figure 3. RST tree representing a contrast relation (one of the seven types of symmetric relations).

Table 1

List of RST Relations Divided by the Asymmetric and Symmetric Relations Categories

Asymmetric Categories		Symmetric Categories	
Subject Matter Relations		Presentational Relations	Multinuclear Relations
Circumstance			
Condition			
Elaboration		Antithesis	
Evaluation	Cause Cluster	Background	Conjunction
Interpretation	NV Cause	Concession	Contrast
Means	NV Result	Enablement	Disjunction
Otherwise Purpose	V Cause	Evidence	Joint
Restatement	V Result	Justify	List
Solutionhood		Motivation	MN RS
Summary		Preparation	Sequence
Unconditional			
Unless			

Notes. NV = non-volitional; V = volitional; MN RS = multinuclear restatement

into account, and a portion of a text cannot be considered separate from the rest. *Connectedness* regards how the sub-trees within the tree that represents the entire texts are connected to one another. They must act as a related unit to another until the minimalist unit is identified. In a well-structured text, no tree can function on its own outside the hierarchy of the entire text. In other words, every EDU should be linked to every other EDU within the confines of the RST relations, and therefore, the structure of a text should be represented only as a single tree unit. *Uniqueness* refers to the concept of how each set of spans must be made up of different segments. For example, in Figure 2, [Span 1-3] is made up of EDU 1, EDU 2, and EDU 3. That span is then broken down

into two smaller spans in the hierarchy of the RST tree: [Span 1] (EDU 1) is the N, and [Span 2-3] (EDU 2 and EDU 3) is the S of [Span 1]. It would not be possible, however, for the two separate spans on the same level to be made up of the same segments, e.g., [Span 1] [Span 2-3] and a third span [Span 3], since segment 3 already occupies [Span 2-3] at that level of the tree. This is to what *uniqueness* refers. And, finally, *adjacency* denotes the limitation of spans. In RST, only adjacent spans can be connected to one another to form larger spans. So, for example, referring again back to Figure 2, [Span 1] is connected to [Span 3] only by incorporating [Span 2] to create [Span 1-3]. According to RST principles, there cannot be a [Span 1&3], as one span cannot cross over another without connecting with it.

To sum up, when annotating an entire text within the RST framework, the analyst seeks an annotation that includes every part of that text in a connected whole (Taboada & Mann, 2006). The whole text is broken into EDUs, and the way by which one unit is connected to another is by addition of one of 32 predefined RST relations, which are defined in terms of four fields: 1) Constraints on the nucleus; 2) Constraints on the satellite; 3) Constraints on the combination of the nucleus and satellite; and 4) Effect (achieved on the text receiver) (Taboada & Mann, 2006).

One of the greatest advantages of RST is that it “points to a tight relation between relations and coherence in text, thus constituting a way of explaining coherence” (Taboada & Mann, 2006, p. 428). In other words, RST can effectively describe coherence at both the micro- and macro-level and quantify those relations, thereby providing the analyst with a way to see the inner workings of a text and how those inner workings connect to form its greater whole. Consequently, RST is well suited for the purposes and objectives of contrastive studies that seek to understand why Japanese English writing is generally regarded as illogical and ambiguous beyond grammatical correctness and idiomaticity. Accordingly, this pilot study attempts to answer the following research questions:

- Is RST an effective analytical framework for contrastive purposes?
- Can it effectively combine qualitative observations and quantitative data

to bring about a better understanding as to why Japanese English writing is often seen as “illogical” and “ambiguous”?

Method

Two English texts (one written by a first-year native-English speaker (NES) college student and one written by a first-year Japanese EFL learner (JEFL) college student) were randomly selected from the *International Corpus Network of Asian Learners of English* (ICNALE; Ishikawa, 2015), by the authors. ICNALE is “a collection of controlled essays and speeches by learners of English in 10 countries and areas in Asia” (Ishikawa, 2015, Description section). In other words, the essays were created under a set of strict parameters, i.e., they were not just randomly selected essays from various students. Therefore, though participants who contributed their writing and oral recordings to the ICNALE database were volunteers, they were expected to follow a number of protocols to ensure the data collected was authentic and reliable. For the purposes of this study, the authors chose data only from ICNALE-Written as opposed to the ICNALE-Spoken (a collection of monologue transcripts) corpus, since this study is concerned solely with learners’ written product and not their oral production. Furthermore, the authors limited their search to texts written by NESs and JEFLs.

Second-language English-speaking participants who volunteer to submit their writing to ICNALE-Written are expected to (i) complete a questionnaire to measure their language-learning motivation and (ii) take a vocabulary test created by ICNALE that consists of 50 questions in order to assess the participants’ current vocabulary repertoire. NESs are exempt from these first two steps. Once participants have completed these two tasks, they are asked to write two 200-300 word essays in English based on the following topics. The instructions and prompts are only given in English.

Do you agree or disagree with the following statements? Use reasons and specific details to support your answer.

1. It is important for college students to have a part-time job.
2. Smoking should be completely banned at all restaurants in the country.

Because of the way these prompts are worded, the authors noticed a great

deal of the texts did not have a direct thesis (topic sentence, see below). Instead, many began with “I agree with this statement,” or “I do not agree with this.” Thus, before selecting the texts to be analyzed, the authors set a couple of parameters: 1) Each text must have a direct thesis in the form of an explicitly stated topic sentence, e.g., “I think it is important for students to have a part-time job;” 2) The text that was compared in each corpus must be based on the same topic, either topic one or topic two. Based on these criteria, the authors selected a 226-word essay on part-time jobs written by a NES (Appendix A) and a 213-word essay on the same topic written by a JEFL (Appendix B). These were the first two essays we came across that fulfilled our parameters.

The selected essays were broken into EDUs and annotated based on their rhetorical relations in accordance to the RST framework producing a structural analysis of each text using UAM Corpus Tool (O’Donnell, 2009). It is a highly versatile annotating software that allows the user to tag data according to a specified annotation scheme, in the case of this study, the RST scheme, and create RST tree structures (Figures 4 and 5). Based on this analysis, the authors identified the relations and frequency of EDU use in each text and compared them to one another.

Results & discussion

Within the Japanese EFL learner’s text, 12 relations were identified with the total number (asymmetric and symmetric) of relations of 21 (Table 2). Within the native English speaker’s text, only six types of relations were identified with a total frequency of 15 (Table 3).

These results offer some interesting insights. First, the JEFL’s text has more than double the relation types with a frequency rate 1.4 times greater than the relations found in the NES’s text. This may account for why the JEFL’s text appears overly complex and cumbersome. These numbers could also suggest a possible distinction between how the JEFL and NES approached the writing task.

In the JEFL’s text, the frequency at which the rhetorical relations occurred ($N = 21$) was only 20% more than that of the number of sentences in the text

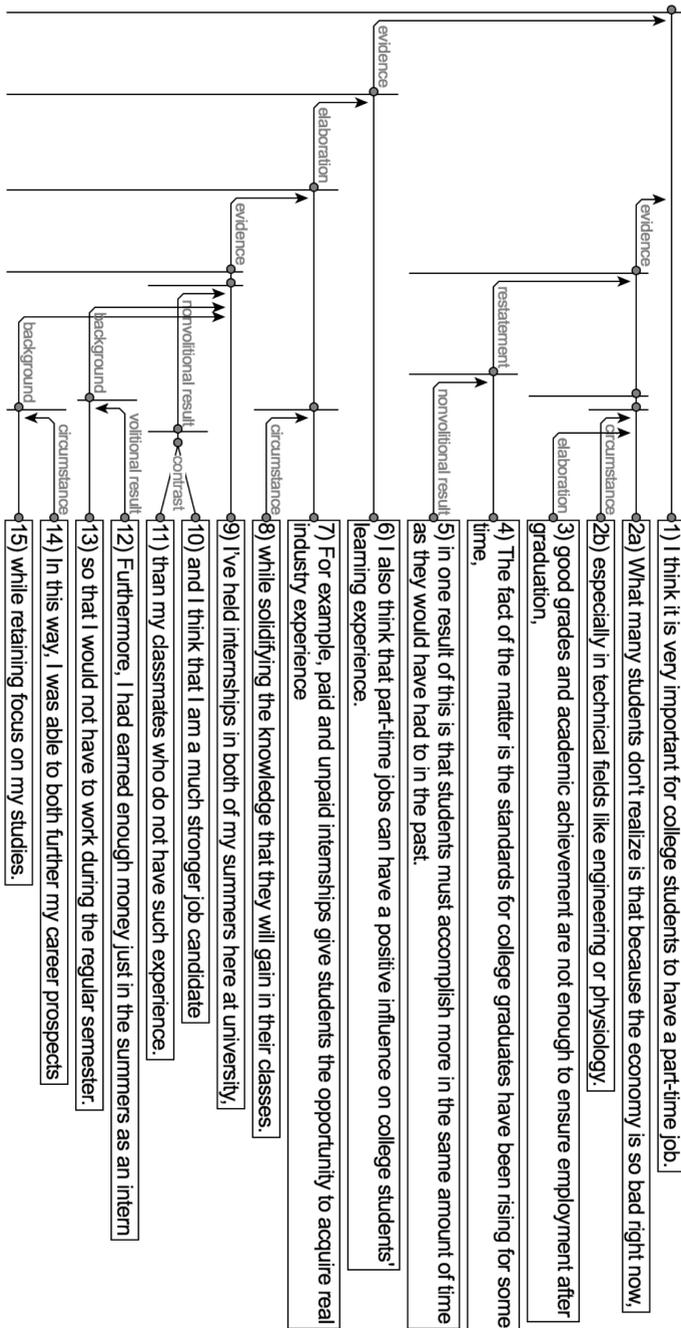


Figure 4. NES's RST analysis.

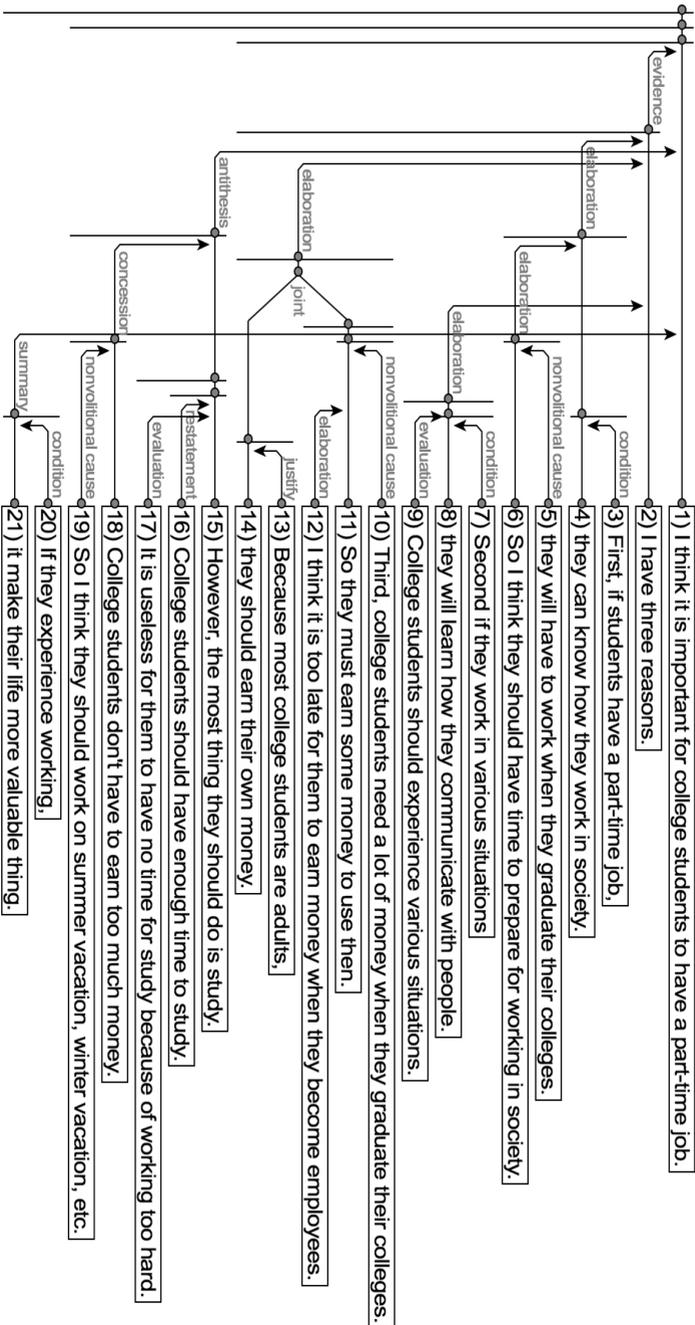


Figure 5. JEFLL's RST analysis.

Table 2
JEFL's Text

Presentational Relations	Asymmetric Categories		Symmetric Categories	
		Subject Matter Relations		Multinuclear Relations
Evidence	1	Circumstance	1	Joint (1)
Restatement	1	Elaboration	5	
Summary	1	Cause Cluster Non-volitional Cause	3	
Concession	1	Evaluation	2	
Antithesis	1	Solutionhood	1	
Justify	1	Condition	3	
Total Number of Relations: 20 (1)				

Table 3
NES's Text

Presentational Relations	Asymmetric Categories		Symmetric Categories	
		Subject Matter Relations		Multinuclear Relations
Evidence	3	Circumstance	2	Contrast 1
Background	2	Elaboration	2	
Restatement	1	Cause Cluster Non-volitional Result	2	
		Volitional Result	2	
Total Number of Relations: 15				

($N = 17$), while in the NES's text the frequency of rhetorical relations ($N = 15$) was nearly double that of the number of sentences in the text ($N = 8$). So, while the NES writer formed more complex sentences that were made up of EDUs and connected by a limited variety of RST relations, sentences in the JEFL writer's text were relatively simple and acted as EDUs on their own. Furthermore, the JEFL writer relied heavily on a large variety of RST relations to connect these non-complex clauses. Thus, the complexity of the text rested in the number of

relations used rather than the ideas and how they were connected. This could account for why the JEFL's text feels less cohesive and more choppy than the NES's text. It may also suggest that the JEFL approached the writing task at the sentence level (each sentence was a task in and of itself), while the NES completed the entire essay as a single task by observing how connecting ideas at the micro-level helps to build the overall hierarchy of the text structure. The following examples exemplify this.

Example 1 – NES Text

What many students don't realize is that because the economy is so bad right now, good grades and academic achievements are not enough to ensure employment after graduation, especially in technical fields like engineering or physiology.

Example 2 – JEFL Text

However, the most thing they should do is study. College students should have enough time to study. It is useless for them to have no time for study because of working too hard. College students don't have to earn too much money.

The NES text (Example 1) is a single sentence made up of three EDUs. The ideas are connected within the single sentence. The JEFL text (Example 2) is also made up of three EDUs; however, the text consists of three separate, shorter sentences with each sentence connected to its adjacent through an RST relation giving the feeling of a choppy and less cohesive whole.

Additionally, the Joint (two units that do not hold any rhetorical relation within the hierarchy of the text; Figure 5, Units 10-12 and Units 13-14) present in the JEFL's text further interrupts the cohesion and further supports the authors' belief that the JEFL approached the writing task at the sentence level.

In addition to the number and frequency of rhetorical relations, the types of rhetorical relations also reveal a number of differences between the two texts. For example, the NES's text had a higher proportion of argumentative relations through the use of evidence and background compared to that of the JEFL's text, while the JEFL writer relied heavily on elaboration. Argumentative relations such as evidence and background are effective at not only building upon ideas but moving them forward (Mann & Thompson, 1987). Elaboration relations, however, while useful for providing clear, specific, and adequate detail

on previous ideas, do not actually construct ideation themselves. Consequently, when overused they may have a negative effect on the development of a text. Another issue with the use of elaboration relations in the JEFL text is that they were often used in an attempt to create support or evidence for the author's position, like an evidence relation. For example, the author writes in Segment 12: "So they must earn some money then." Followed by the elaboration relation: "I think it is too late for them to earn money when they are employees." It seems, however, that the JEFL writer was in fact attempting to create support for his position in Segment 12 through what the author believed to be "evidence."

Another interesting point to note is the fact that though both the JEFL and NES writers utilized relations from the causal cluster, all three found in the JEFL text were non-volitional (see Segment 4 and 5; 10 and 11; 18 and 19 in Figure 5), while two non-volitional (see Segment 4 & 5; 9, 10, & 11 in Figure 4) and two volitional relations appeared in the NES text (see Segment 12 & 13 in Figure 4); assigning an agent to an action through several condition relations. Also, though two causal relations are found in the JEFL text, they are both non-volitional. The NES on the other hand used non-volitional and volitional causes equally.

It is also worth noting the heavy reliance on subject matter relations by the JEFL writer, in particular elaboration (discussed previously), while the NES used both presentational and subject matter relationships at an equal rate. This was somewhat of an interesting find, as subject matter relations are concerned with ideation and/or content as opposed to presentational relations, which are used to bring about a change in the reader, such as a positive regard, belief, or acceptance of the nucleus (Vis, Spooren, & Sanders, 2010). In other words, presentational relations are more rhetorical in nature, while subject matter relations are more informational. This could suggest the JEFL writer was overly concerned about *what* was being said and not *how* to say it. It also shows a lack of reader awareness, which is an important step in the metacognitive development of writing and can only occur when the "physical task of writing becomes automatic" (Carvalho, 2002, p. 271). Thus, effective writing is about making choices that have consequences, not only on what is being said but also how it is being said. It is a process of inquiry into form, function, style, grammar,

organization, and rhetoric. Ignoring any one of these elements in one's writing can result in a less-than-ideal text (Park, 2015).

Conclusions

Unlike previous studies, this pilot study looked at and compared the features of a JEFL and a NES both at the micro- and macro-levels. However, whether the differences observed here are only due to individual writer's characteristics (e.g., IQ level, basic writing ability) or correlate with native versus foreign language has to await further large-scale investigation. Future research needs to apply RST to a greater number of texts to bring about statistically significant results and verify whether or not the features identified re-occur regularly in each respective corpus. Thus, what is of most worth from this study is not the findings themselves (as it is impossible to make any conclusions from such a small collection of data), but the methodological result. Yet, because the approach used in this study clearly identifies a difference in the quality of the two texts (the NES's text being experienced as more coherent) beyond the level of grammatical correctness or idiomaticity, we feel that this method may be of value for contrastive purposes. Therefore, if applied in a more comprehensive study, the results seem to suggest that this method may help to contribute to charting new territories in the fields of L2 writing and contrastive rhetoric.

Notes

1. The term used to describe the structure and development of Japanese prose.

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Appendix A – NES’s Text

I think it is very important for college students to have part-time jobs. What many students don't realize is that because the economy is so bad right now, good grades and academic achievements are not enough to ensure employment after graduation, especially in technical fields like engineering or physiology. The fact of the matter is the standards for college graduates have been rising for some time, in [sic] one result of this is that students must accomplish more in the same amount of time as they would have had to in the past. I also think that part-time jobs can have a positive influence on college students' learning experience. For example, paid and unpaid internships give students the opportunity to acquire real industry experience while solidifying the knowledge that they will gain in their classes. I've held internships in both of my summers here at university, and I think that I am a much stronger job candidate than my classmates who do not have such experience. Furthermore, I had earned enough money just in the summers as an intern so that I would not have to work during the regular semester. In this way, I was able to both further my career prospects while retaining focus on my studies.

Appendix B – JEFL’s Text

I think it is important for college students to have a part-time job. I have three reasons. First, if students have a part-time job, they can know how they work in society. they will have to work when they graduate their colleges. So I think they should have time to prepare for work in society. Second if they work in various situations they will learn how they communicate with people. College students should experience various situations. Third, college students need a lot of money when they graduate their colleges. So they must earn some money to use then. I think it is too late for them to earn money when they become employees [sic]. Because most college students are adults, they should earn their own money. However, the most thing they should do is study. College students should have enough time to study. It is useless for them to have no time for study because of working too hard. College students don't have to earn too much money. So I think they should work on summer vacation, winter vacation, etc. If they experience working, it make their life more valuable thing.