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Coherence in L2 Narrative Paragraphs Through the Lens of Rhetorical Structure Theory

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Article information	
Abstract	Studies on coherence in the paragraphs produced by English language learners have focused on cohesive devices and their correlation with perceptions of writing quality. Inconsistent findings suggest that other measures of coherence might be at play, one of which is coherence relations. This study aimed to explore coherence relations in learners' narrative paragraphs and how these relations were made explicit through connectives and clause integration. Paragraphs rated high and low in coherence were examined using rhetorical structure theory (RST), and the most common relations were discussed in terms of their contribution to narrative development. It was found that CAUSE/RESULT was present consistently among all paragraphs. A disproportionately high frequency of ELABORATION was found in many low-rated paragraphs. CIRCUMSTANCE was much less frequently used and was mostly limited to high-rated paragraphs. Some paragraphs relied on a LIST relation instead of SEQUENCE for paragraph development. The different strategies for signalling these relations revealed some linguistic challenges that learners might face when presenting various relations. The issues highlighted through RST analysis suggest that instruction that focuses on underlying global and local

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	relations, in addition to explicit connectives, may be beneficial for improving coherence in learners' narrative writing.
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1. Introduction

Mastery of narrative writing is one stepping stone for English L2 learners to more advanced forms of writing, such as essays and reports. Research has shown that students that can structure their narratives effectively are better able to tackle more complex writing tasks (Hyland, 2003). The ability to write coherent narrative paragraphs is therefore a fundamental skill that supports overall writing proficiency. However, improving text coherence can be a challenge for L2 learners since it involves not only the use of explicit linguistic markers, but also implicit relationships between ideas or propositions.

Research has investigated coherence in L2 texts with different approaches and aims. Many studies view coherence as an effect of cohesive ties and discourse markers, or as an effect of topic continuity, based on centering theory and topical structure analysis. Studies based on these frameworks provide useful insights into the characteristics of L2 text coherence from different perspectives; however, the correlation between these indices of coherence and writing quality is still inconclusive, with many studies demonstrating that these measures did not mirror the subjective judgement of text coherence by expert raters.

Another less explicit yet indispensable aspect of text coherence is *coherence relations* (also called *rhetorical relations* or *relational propositions*). These are implicit propositions that arise when asserted propositions are interpreted together as a unified discourse and are understood by means of

inference. Example (1) below illustrates that coherence relations exist in any given span of discourse, even when explicit marking of such relations is absent.

(1) Sue went to hospital. She had a terrible headache.

A logical inference is that the terrible headache causes Sue to go to the hospital for a medical consultation. The coherence relation of CAUSE holds between the two asserted propositions, although the possible connective 'because' is not stated.

In order to analyze coherence relations, rhetorical structure theory (RST) has been widely used because it is considered systematic and descriptively adequate. RST offers a structured method for identifying and illustrating functional relationships between different parts of a text, making it useful in many areas, including computational linguistics, cross-linguistic studies, and writing pedagogy (Taboada & Mann, 2006). It can be applied to texts of small and large sizes and lends itself to both quantitative and qualitative analysis (Mann & Thompson, 1988).

Previous research using RST as an analytical framework for coherence in narrative discourses has been limited to spoken narratives and narrative texts produced by native (L1) speakers. Most studies on RST structures of L2 texts have investigated persuasive and opinion paragraphs, focusing on how learners structure and put forward their arguments. Using RST, the present study explores the coherence relations that L2 learners use to construct narrative paragraphs and how they express these relations linguistically via discourse connectives. Understanding these issues should provide insights that help L2 learners and language teachers improve the teaching and learning of narrative writing. The objectives of the present study included: 1) to investigate the frequency and distribution of coherence relations in low-rated and high-rated narrative paragraphs; 2) to investigate the coherence relations used to connect major

paragraph components; and 3) to explore the relationships among different coherence relations and the use of discourse connectives and clause integration.

2. Literature Review

2.1 Rhetorical structure theory (RST)

RST proposes that any two units of discourse[1] have some functional relation, and any relation can be illustrated by one of the five schemas in Figure 1 (Mann & Thompson, 1987, 1988). Some relations (e.g., CIRCUMSTANCE, MOTIVATION, RESULT, and ELABORATION) consist of a *nucleus* (N), which the arrowhead points towards and a *satellite* (S), which the arrow points away from. The nucleus is more central to the writer's purpose of setting forth the nucleus-satellite text spans. Other relations are *multi-nuclear* relations (e.g., CONTRAST, JOINT, and SEQUENCE), consisting of more than one nucleus and no satellite. The two or more nuclei are of equal importance.

Figure 1

Types of RST schemas (Mann & Thompson, 1987, 1988)

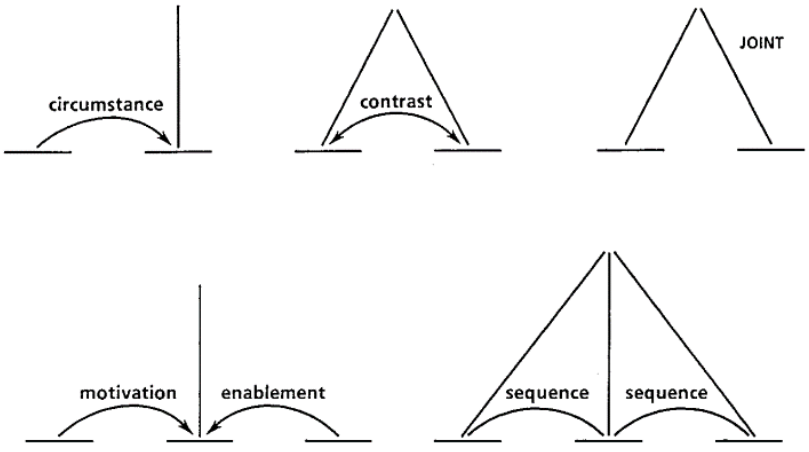


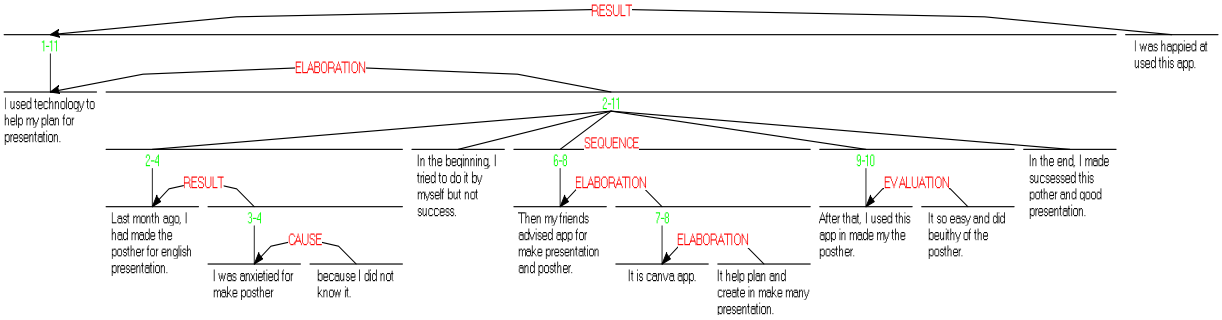
Figure 2 illustrates the RST diagram of a sample text used in this study, constructed using O'Donnell's (2003) RST markup tool. RST diagrams help us to

[1] As discussed in Mann and Thompson (1988), most texts lend themselves to RST analysis, but some specialised discourses such as laws, contracts, or poetry may not have RST structures.

see more clearly the coherence relations that hold between spans of text at different levels, each contributing rhetorically to the effect of the text as a whole.

Figure 2

RST diagram of a sample text



At the topmost level of Figure 2, a RESULT relation holds between the Span [1 – 11], the nucleus, and the Unit [12], the satellite. Lower in the structure are ELABORATION and SEQUENCE. SEQUENCE is a multinuclear relation connecting five text spans of equal prominence. Apart from the more *global* relations, several *local* relations hold between minimal units, including CAUSE, ELABORATION, and EVALUATION.

2.2 Coherence Relations

Coherence relations (or relations) are the relationships between two text units or spans. Every relation is defined as consisting of four fields: 1) *constraints on the nucleus*; 2) *constraints on the satellite*; 3) *constraints on the combination of nucleus and satellite*; and 4) *the effect*. The effect field is the writer's intention in using the relation in addressing the reader, e.g., to increase the reader's desire to perform an action. RST analysts make possibility judgements based on these four criteria when assigning a relation to a schema that connects two text spans. A list of the RST relations used in the present study is shown in Table 1. These relations were taken from the full list compiled by Mann (2005).

Table 1

RST relations used in the present study

Nucleus-satellite		**Multinuclear**
Subject matter	***Presentational***	
ELABORATION	ANTITHESIS/CONCESSION	SEQUENCE
CIRCUMSTANCE	BACKGROUND	CONTRAST
CAUSE/RESULT	EVIDENCE	LIST
PURPOSE	JUSTIFY	
CONDITION	PREPARATION	
EVALUATION		
RESTATEMENT		
SUMMARY		
MEANS		

In the present study, CAUSE and RESULT are grouped together as they express the same relational proposition showing a causal link between two events. ANTITHESIS and CONCESSION are grouped together as they have a similar *effect* of increasing the reader's positive regard for the nucleus. The LIST relation used in this study covers *LIST*, *CONJUNCTION*, and *JOINT* in Mann (2005), all of which are additive, multinuclear relations.

2.3 Studies on RST and Coherence Relations

Coherence relations have been investigated in order to analyze and explain how information is conveyed in different types of texts. Ibáñez et al. (2019), for example, explored coherence relations in school textbooks across different subject areas and found that they share some principal relations i.e., CONJUNCTION, CONCEPT, and DESCRIPTION. CONCEPT and DESCRIPTION were argued to play a key role in communication of knowledge. CONJUNCTION, the most frequently found relation, was suggested as being fundamental to discourse development regardless of genre. This is supported by Wolf and Gibson's (2005) study of news articles, in which SIMILARITY (≈ CONJUNCTION) and ELABORATION (≈ CONCEPT) were the most common. This similarity in relation frequencies might be attributed to the

informative nature of textbooks and news articles. Gruber and Huemer (2008) analyzed a corpus of Austrian university students' term papers and found twice as many descriptive relations as argumentative relations in the introduction and discussion sections. Approximately 70% of the descriptive relations were ELABORATION, suggesting the role of ELABORATION in academic writing. However, its overwhelming proportion could mean that ELABORATION is underspecified and needs to be further examined or made more specific. In argumentative texts, contrastive relations, such as ANTITHESIS and CONCESSION, have been argued to serve prominent functions in the discourse structure (Green, 2023).

Some recent studies have applied RST in order to analyse English texts produced by L2 learners. Comparing argumentative speech and the argumentative writing of advanced Chinese learners of English, Wang et al. (2020) found that mode of delivery could have resulted in different RST tree structures, including the position of the discourse central unit, which holds central rhetorical importance, and the types of relations found at top levels of RST structures. Further, Schiftner-Tengg (2021) analyzed the argumentative texts of upper-intermediate German learners of English and found similar patterns of RST structures and relations. Notably, EVIDENCE was among the most common relations for argumentative essays, and EVALUATION and SUMMARY were usually found at the end, serving as a conclusion. Additionally, Hanel and Kosseim (2023) investigated the frequency of relations in the argumentative essays of learners across different CEFR levels and the results showed a decrease in the use of some relations, such as EXPLANATION, as the proficiency level increased, which was attributed to a strategy low-proficiency learners employ to compensate for their limited lexical resources. ELABORATION was the most common relation regardless of the proficiency level, and this result aligns with previous studies of other text types. Kawase (2024), for example, showed that learners may transfer writing conventions from their L1, resulting in inappropriate use of certain relations in L2 writing. Specifically, they found excessive use of CONCESSION and inappropriate use of JUSTIFY and EVIDENCE

in the discussion section of the research articles written in English by Japanese writers. These features were also observed in articles written in L1 Japanese.

Studies on coherence in L2 written narratives from the perspective of RST are limited compared to other text types. Shokouhi and Shirali (2011) investigated the use of coherence relations in the written narratives of a picture story and found very homogeneous rhetorical patterns among the texts. This is probably because the task was highly controlled with a predetermined storyline. Given this limitation, the question remains as to what relations could prevail in learners' written narratives when constructing their own stories. This more open-ended task presents learners with two layers of challenges—story development and text development—which the present study aims to explore.

3. Methods

3.1 Data Collection

The data for the present study consisted of 30 narrative paragraphs written by Thai learners of English that were first-year university students. The data were collected from the writing task of an achievement exam paper administered at the end of a compulsory basic English course. In the task, test-takers were instructed to write a narrative paragraph of 180–220 words on one of the two given prompts: 1) *Write about a time that you used technology to help you plan something* and 2) *Write about a time that you had to suddenly change your plans because of an unexpected situation*.

Each paragraph was graded by two trained raters, who had experience grading similar writing assignments. The scoring rubric was provided as course material, so it was available to the students, instructors, and raters from the beginning of the course.

The rubric for the task consisted of three dimensions: content, organization, and language, each worth 5 points. From the pool of paragraphs that received

similar scores in Language, we randomly selected 15 paragraphs whose combined content and organization scores (averaged across two raters) were in the top quartile (8.5 – 10 out of 10) and another 15 paragraphs with content and organization scores in the lower quartile (5.5 – 6.5 out of 10). The content score indicated the degree of task achievement i.e., the presence of components contributing to the development of a narrative paragraph. The organization score was based on the logical connection between ideas and the use of transition devices. We took these criteria as representing global and local levels of coherence. From this, we included paragraphs rated as highly coherent (high-rated) and those rated as less coherent (low-rated).

3.2 Data Annotation

We followed the annotation guidelines for rhetorical structure outlined by Stede et al. (2017) in segmenting the texts into elementary discourse units (EDUs) and assigning coherence relations. Some minor adjustments were made, as described below, in order to make the annotation process appropriate to the "noisy" data produced by L2 learners and to the purpose of the study.

3.2.1 Text segmentation

Due to the prevalence of grammatical and lexical errors in the data, manual coding was employed. Each paragraph was segmented into clauses as EDUs. These were labelled S1, S2, S3, and so on. Clausal subjects and complements, as well as integrated relative clauses, were considered part of the embedding clause and not as separate units. Two verb phrases conjoined by 'and' were considered together as one unit following Wolf and Gibson (2005). We acknowledged that using clauses as the unit of analysis was less sensitive to smaller units of meaning, such as non-finite clauses, which research has shown to be the default means that L1 writers use to express certain relations (Green, 2017; Hoek et al., 2017). However, since all of the paragraphs included in the study were rated as low-intermediate on language use, most of them contained rather simple sentences with few non-finite clauses. Taking clauses as the unit of analysis also allowed for

investigation of clause integration and discourse connectives, which was one aim of this study.

3.2.2 Assignment of coherence relations

The assignment of coherence relations can be done using the local or holistic approach (Vis et al., 2010). The holistic approach was adopted for this study for two main reasons. First, the texts we looked at included lexical and grammatical inaccuracies that could have led to misunderstanding if interpreted only locally. Second, it was an aim of this study to investigate coherence relations used in different paragraph components. Therefore, to begin assigning relations, adjacent discourse segments were grouped according to their main functions in the paragraphs, namely the introduction, body, and conclusion. This grouping resulted in an overarching hierarchical structure with three[2] text spans. Then, coherence relations between the text spans were assigned based on the taxonomy in Table 1. Each text span consisting of more than one EDUs was then broken down into smaller spans and the coherence relations between them was assigned. This continued until minimal units (EDUs or single clauses) were reached.

When deciding on a relation, the researchers considered 1) constraints on the nucleus, 2) constraints on the satellite, 3) constraints on the combination of nucleus and satellite, 4) the intended effect on the reader, and 5) whether a prototypical connective suggesting the relation could be inserted (see Stede et al., 2017 for suggested prototypical connectives). The connectives present in the text were taken as a cue that helps disambiguate possible relations and were taken into consideration only after the first four criteria had been applied.

Following the suggestions made by Spooren and Degand (2010) regarding the reliability of coherence relations annotation, we employed the *two-coders-discuss* strategy, where the assignment of coherence relations was done

[2] Not all of the paragraphs contained all three spans since some components were absent, i.e., no introduction, no conclusion, or neither.

independently by the two researchers and the results were then compared and discussed. Spooren and Degand (2010) point out that the benefit of this method is that coders have a chance to clarify the reasoning behind their interpretation to each other, thus increasing the coding quality. This is particularly suitable for the coding of coherence relations, where context is central to coding decisions and more than one possible analysis is common. Mann and Thompson (1987) noted that coding inconsistencies may result from analytical errors, simultaneous analyses, and text structure ambiguity. After the discussion in the present study, any analytical errors were corrected, and one of the simultaneous analyses was mutually chosen as a preferred analysis following a consideration and discussion of the *effect* field, i.e., the writer's probable intention, and any text structure ambiguity was coded as *ambiguous* and was left unconnected to the rest of the RST structure.

3.2.3 Coding of connective use and structural integration

Apart from coherence relations, each pair of text spans was coded for 1) whether the relation between the text spans was explicated using discourse connectives and 2) whether the text spans were combined via structural integration. Following The Penn Discourse Treebank 2.0 Annotation Manual (Prasad et al., 2007), we classified the connectives into three classes based on their grammatical categories: subordinators e.g., *because*, *when*, *since*; coordinators e.g., *and*, *or*, *so*; and adverbials (including adverb phrases and prepositional phrases), e.g., *as a result*, *after that*, and *moreover*.

The framework by Pelsmaekers et al. (1998) was adapted and used to categorise connective use and structural integration (Table 2). In their original framework, coordinators had overlapping functions between integration and explication. For coding reliability, in the present study coordinators were considered as having only the function of explicating coherence relations. Pelsmaekers et al. (1998) argued that the two combinations of integration and explication shown in Table 2 in boldfaced text are the optimal choices for

expressing coherence relations. The integration-explication combination is the most explicit choice for expressing coherence relations since it contains a disambiguating discourse connective and makes clear the hierarchical (nucleus-satellite or multinuclear) relationship between the text spans.

Table 2

Strategies for expressing coherence relations by means of integration and explication

Least explicit (unsignaled)

Integration	Explication	Example
No integration	No explication	I finished my tasks. I decided to study for the exam.
Weak integration (punctuation)	No explication	I finished my tasks, I decided to study for the exam.
No integration	Explication (coordinator & subordinator)	After I finished my tasks. I decided to study for the exam.
No integration	**Explication (adverbial)**	**I finished my tasks. Then, I decided to study for the exam.**
Integration	**Explication**	**After I finished my tasks, I decided to study for the exam.**

Most explicit (signaled)

3.3 Data analysis

Data analysis was carried out primarily qualitatively, focusing on common coherence relation patterns based on the RST structural diagrams. In order to support these qualitative findings, the frequency distributions for different coherence relations and their average occurrences per text were calculated to determine the prototypical relations that characterized the narrative paragraphs. The degrees of explication and clause integration among the prototypical relations were reported using basic descriptive statistics in order to complement the qualitative analysis.

4. Results and Discussion

In this section, we first report the frequencies of the relations found in the data and discuss the contribution that the major relations made to the development of narrative paragraphs. Second, we look at the relations used to connect different paragraph components. Third, we examine the strategies used to signal different relations.

4.1 Coherence relations in L2 narrative paragraphs

The results showed that, on average, each paragraph contained 212.77 words (SD = 31.42) and 20.43 coherence relations (SD = 4.68). In total, 577 relations were identified in this study, along with 36 ambiguous instances. These relations encompassed 17 distinct types. Table 3 provides an overall depiction of the coherence relations.

The narratives investigated in the present study relied mainly on CAUSE/RESULT, SEQUENCE, ELABORATION, LIST, and CIRCUMSTANCE, which together accounted for over 80% of the total relations. Each of these relations appeared, on average, at least once per paragraph. This indicates that these relations were the prototypical relations in the written narratives. The other 12 relations accounted for less than 3% each, and they did not consistently appear in most of the paragraphs, indicating that they might reflect individual stylistics or be contingent on the content of the stories.

Table 3

Coherence relations, frequency, and average occurrence per paragraph

Type of Relation	Frequency (%)	Average occurrence per paragraph
CAUSE/RESULT	132 (22.88)	4.4
SEQUENCE	115 (19.93)	3.83
ELABORATION	112 (19.41)	3.73
LIST	75 (13.00)	2.50
CIRCUMSTANCE	53 (9.19)	1.77

Type of Relation	Frequency (%)	Average occurrence per paragraph
BACKGROUND	17 (2.95)	0.57
ANTI-THESIS/CONCESSION	16 (2.77)	0.53
EVALUATION	16 (2.77)	0.53
SUMMARY	7 (1.21)	0.23
CONTRAST	7 (1.21)	0.23
RESTATEMENT	7 (1.21)	0.23
PREPARATION	6 (1.04)	0.20
CONDITION	6 (1.04)	0.20
PURPOSE	3 (0.52)	0.10
EVIDENCE	2 (0.35)	0.07
JUSTIFY	2 (0.35)	0.07
MEANS	1 (0.17)	0.03
Sum	**577 (100)**	

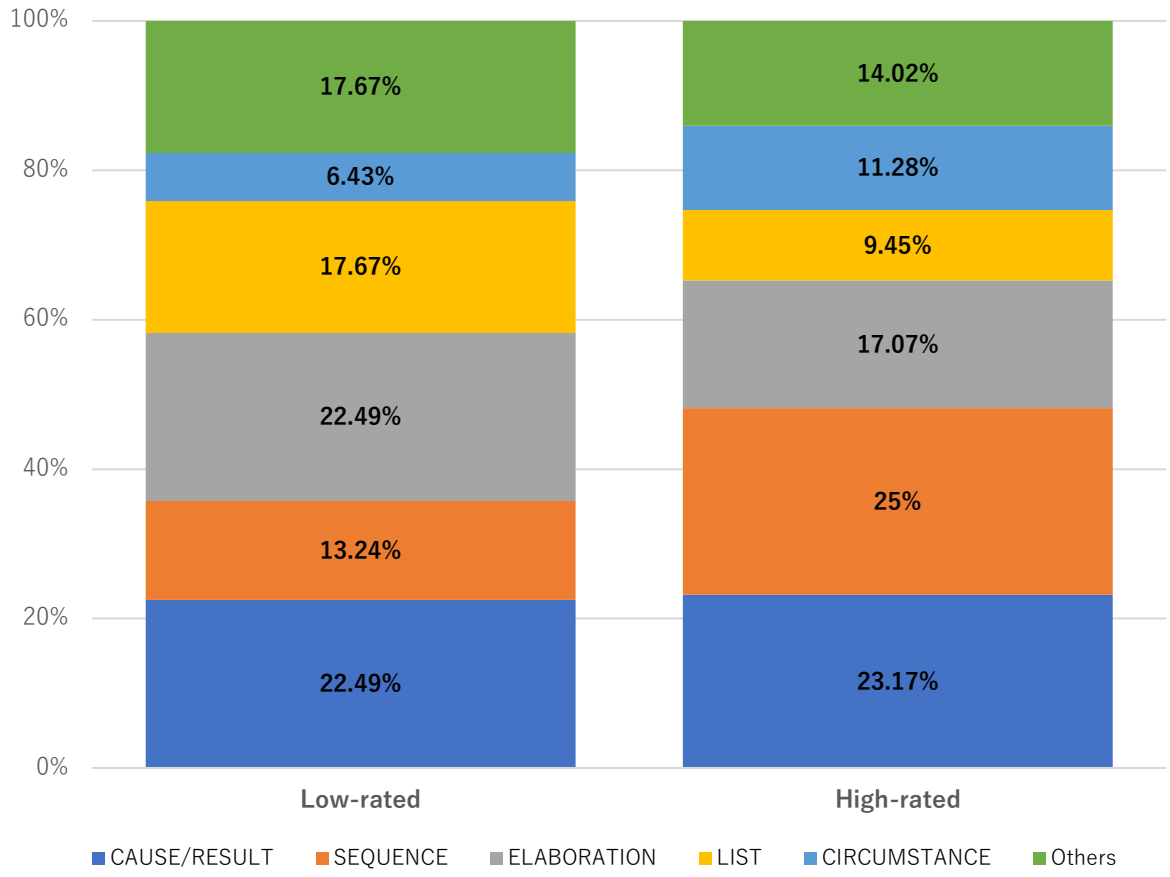
Note: Ambiguous relations are not included in the table.

Considering the potential association between the coherence ratings and relation types, the frequency distributions of the coherence relations among the high-rated and low-rated paragraphs were calculated and are shown in Figure 3.

In high-rated paragraphs, CAUSE/RESULT and SEQUENCE were used approximately equally, accounting for about 50% of the total relations, while in the low-rated paragraphs the most common relations seemed to be CAUSE/RESULT and ELABORATION. We now discuss the prototypical relations found in the paragraphs and their potential effects on the coherence of narrative texts.

Figure 3

Distributions of coherence relations in the low- and high-rated paragraphs



4.1.1 CAUSE/RESULT as the backbone of narrative

CAUSE/RESULT was a common relation found in both the low- and high-rated paragraphs. The relation presupposes temporal sequence and requires that an action or event be present either in the nucleus or the satellite or both. In Labov's (1972) terms, the presence of CAUSE/RESULT entails a temporal relationship that gives rise to *narrative clauses*, which are central to the development of a story. Clauses [b] and [c] in Example (2), from Labov (1972, p. 361), are *narrative clauses*, which are temporally ordered, forming a narrative.

(2) [a] I know a boy named Harry.
[b] Another boy threw a bottle at him right in the head
[c] and he had to get seven stitches

Apart from *narrative clauses*, a narrative may contain *free clauses*, such as [a] in Example (2). A free clause has no temporal juncture, and its proposition is not part of the narrative sequence; therefore, its position is more flexible within the story.

According to Labov (1972), narrative is defined as a "method of recapitulating past experience by matching a verbal sequence of clauses to the sequence of events which (it is inferred) actually occurred" (pp. 359–360). This is similar to Abbot's (2008) view that the existence of an event is the minimum requirement for any narrative. Some go even further to argue that causality is a defining feature of narrative (Bal, 1997; Richardson, 1997, as cited in Abbott, 2008). The high frequencies of CAUSE/RESULT in both low-rated and high-rated paragraphs in the present study could be taken as evidence that the learners had achieved the minimum requirement for constructing narrative texts.

Series of *narrative clauses* were used for conflict presentation and resolution. Examples (3) and (4) show how learners used CAUSE/RESULT to present and resolve a conflict in the story. Each discourse unit is labelled with a number in square brackets.

(3) [8] She said shakely[3], "I am so sorry for you but your mom got into an accident" [9] My heart dropped. [10] The time stopped ticking. [11] I have no hesitation to cancle my plan and book an airport flight as soon as possible. *(Text 22)*

(4) [21] but after encoutered that experience, [22] It suddenly changed my whole plans. [23] I became a detemine person that had passion to accomplish all goals in my life. *(Text 23)*

[3] All of the examples are presented as they appeared in the dataset. Since the data consist of writing by English L2 learners with low-intermediate proficiency, some ungrammatical structures and misspelled words were present.

In (3), [8–10] is the cause for the change of plan mentioned in [11], which is then developed further in the story. In (4), [23] is the result of the writer's experiencing and dealing with the situations mentioned earlier in the story.

Even though CAUSE/RESULT plays an important role in narrative development, it could be observed that the temporality implicit in some instances of CAUSE/RESULT was less salient than in others, especially where the reverse natural order of consequence-cause held. Some texts with many instances of CAUSE/RESULT may still lack narrativity, such as in Example (5).

(5) [16] I love to take a planner for planning a life every day. [17] it helps me to do more activities and checklist the activities I need to do in the day. [18] it can make me well plan. (Text 11)

In (5), Units [17] and [18] show the reasons for the writer's positive view on keeping a planner, but they do not seem to contribute much to the temporal development of the story. The varying effects of CAUSE/RESULT suggest that the presence of such a relation may not always characterize highly coherent narrative texts. A finer distinction between the order of spans (i.e., *cause—consequence* or *consequence—cause*) needs to be further examined.

4.1.2 (Over)use of ELABORATION

ELABORATION was another relation common in both the low- and high-rated texts. Referring to the dichotomy of narrative structure (Hopper, 1979), i.e., foreground and background, ELABORATION can be seen as providing background information, which serves a secondary role to the major events in the storyline. This secondary role of ELABORATION is also discussed in Labov's (1972) concept of *free clauses* (as exemplified in Example 2 above), which can be added to any part of the narrative without disrupting the temporal sequence of the events.

The frequent use of ELABORATION in the present study was in line with Alfarwan's (2015) findings on narrative texts by intermediate English learners. She attributed the extensive use of ELABORATION by both strong and weak students to the nature of narrative discourse and argued that it contributed to coherence between text units. However, as pointed out above, ELABORATION is by no means a necessary component of a narrative (Hopper, 1979; Labov, 1972). On the contrary, having too many *free* or *background clauses* could disrupt the flow of the narrative.

ELABORATION is generally considered underspecified because it is highly varied in nature, and in many RST studies this relation is divided into several subcategories in order to account for their different effects on discourse development. Looking more closely at the instances of ELABORATION in the present study, we can differentiate between two main uses of the relation, which can have varying effects on coherence. ELABORATION was employed frequently as a strategy to withhold giving complete information in one clause, possibly in order to increase the reader's curiosity. This can be seen at a global level of the RST structure where it was used to connect the introduction and the body part of the paragraph (Example 6), and also at more local levels (Example 7). These cases exemplify the *general-specific* type of ELABORATION, where the following unit is a satellite serving to elaborate on the event in the preceding nuclear unit.

(6) [1] There was one time that I had to suddenly change the plan at the boarder of Thailand. ... [3] My father, my older sister and I had a plan to visit Cambodia together with my father's friend. *(Text 30)*

(7) [14] And the news, that she told me, was the worst news in my life. [15] my grandmother died. *(Text 16)*

Another type of ELABORATION is *object—attribute*, such as that in Example (8), which was found frequently among the low-rated paragraphs in this study.

(8) [14] So we used tenology to help. [15] this app is call “google map”. [16] We used it to bring me and family to various attention in Khaoyai. [17] Goog map it have GPS function. *(Text 14)*

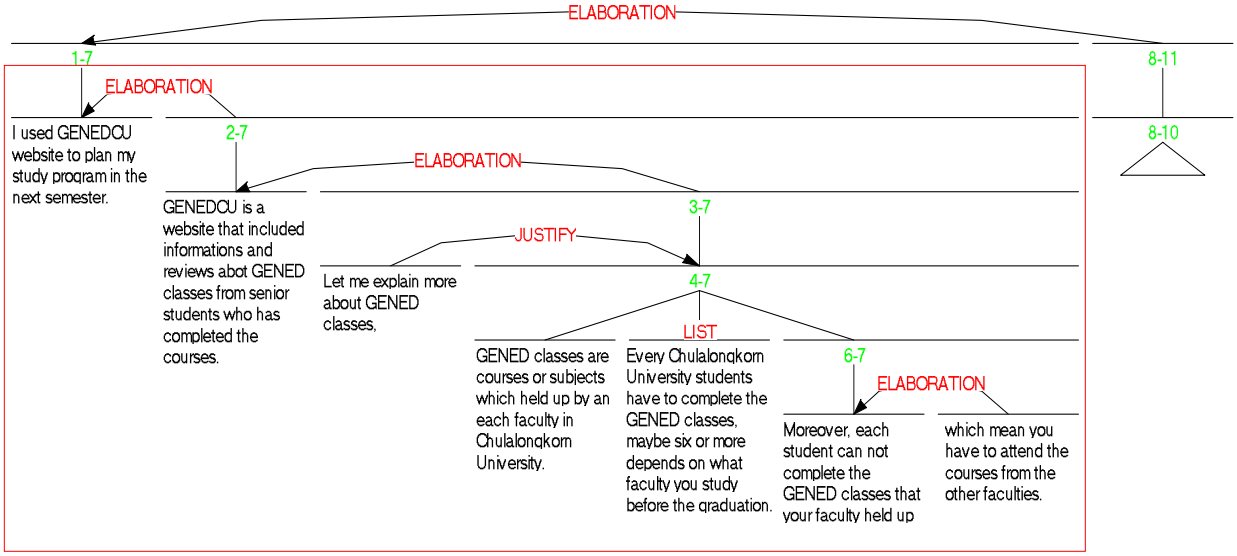
The excerpt in Example (8) would fail to qualify as a narrative according to Labov (1972) since there is only one event [14] and no temporal juncture. Moreover, [15], [16], and [17] are *free clauses*. Overusing this *object—attribute* ELABORATION can negatively affect coherence, making the paragraph become more descriptive or expository than narrative (Abbott, 2008).

Figure 4 shows the RST structure of a low-rated paragraph where ELABORATION was overused. The writer went at great length explaining about the GENEDCU website and GENED classes in Span [2–7], which constituted only the introduction of the paragraph. Three different aspects of GENED classes were elaborated on in Span [4–7], serving only as *free clauses*. Hopper (1979) pointed out that clauses of this type usually have loose relationships, lack sequentially, and contain new information in the subject position. These characteristics can damage text coherence if not appropriately handled.

The high frequency of ELABORATION could stem from the lack of ideas in story development, leading the writers to elaborate on the already-mentioned events or the participating entities instead of mentioning other related events or consequences. Moreover, Hanel and Kosseim (2023) speculated that this relation might be used as a strategy by less proficient writers to compensate for their lack of linguistic resources to express ideas clearly and concisely.

Figure 4

Overuse of ELABORATION in the introduction – Text 13



4.1.3 Use of CIRCUMSTANCE in high-rated paragraphs

The CIRCUMSTANCE relation is the third most common relation for the high-rated group. CIRCUMSTANCE provides a temporal or spatial framework which the reader uses to interpret the event in the nuclear clause. This adds richness to the story and helps with the transition from one event to another as shown in Examples (9) and (10) below.

(9) [1] This is the worst birthday that I have ever had. [2] This story happened 2 years ago *(Text 16)*

(10) [4] On that day, it was a rush hour, [5] so there were lots of cars on the road. … [8] While we were on the road, [9] my cousin saw her friend walking on the sidewalk across the street. *(Text 23)*

The examples above show how the satellite—Unit [1] in (9) and [8] in (10)—was used to provide a temporal frame for interpreting the situation in the nucleus, forming the CIRCUMSTANCE relation. In (10), Unit [8] also served as a transition point connecting the idea in [5] to that in [9]. As pointed out by Matthiessen and

Thompson (1988), certain relations such as CIRCUMSTANCE, "because of their semantic ability to serve as 'guideposts,' are typically involved in transitions from one major portion of text structure to another" (p. 305). Example (10) is a case in point where the relation helped to transition from the scene-setting part of the story to the main body part, which contained a series of *narrative clauses*. Given this important function of CIRCUMSTANCE, the low occurrence of the relation among the low-rated paragraphs may have resulted in the lack of story coherence.

Another observable difference between the high-rated and low-rated paragraphs is the use of SEQUENCE and LIST, the frequencies of which seemed to be in the opposite direction. This usage pattern is discussed in the next section in relation to paragraph structure.

4.2 Relations and paragraph structure

Most RST structures in the present study followed the conventional tripartite paragraph structure with the Introduction, Body, and Conclusion. Figure 5 illustrates the RST structural pattern shared by the majority of the paragraphs. Apart from the common pattern, some variations could be observed. Table 4 shows the presence of different paragraph components and their coherence relations.

4.2.1 SEQUENCE vs. LIST for paragraph development

In the Body part, there were two common relations at the topmost level: SEQUENCE and LIST. Figure 6 compares the paragraphs where the local relations in the Body part were connected via either LIST (6A) or SEQUENCE (6B).

Table 4

Coherence relations connecting different paragraph components

Component	Relation	Total
Introduction	ELABORATION	**24**
	no/ambiguous	**4**
	BACKGROUND	**1**
	PREPARATION	**1**
Body	SEQUENCE	**19**
	LIST	**6**
	no/ambiguous	**4**
	CAUSE/RESULT	**1**
Conclusion	CAUSE/RESULT	**15**
	no/ambiguous	**7**
	SUMMARY	**5**
	EVALUATION	**3**

Figure 5

RST tree labelled with different paragraph components (Text 30)

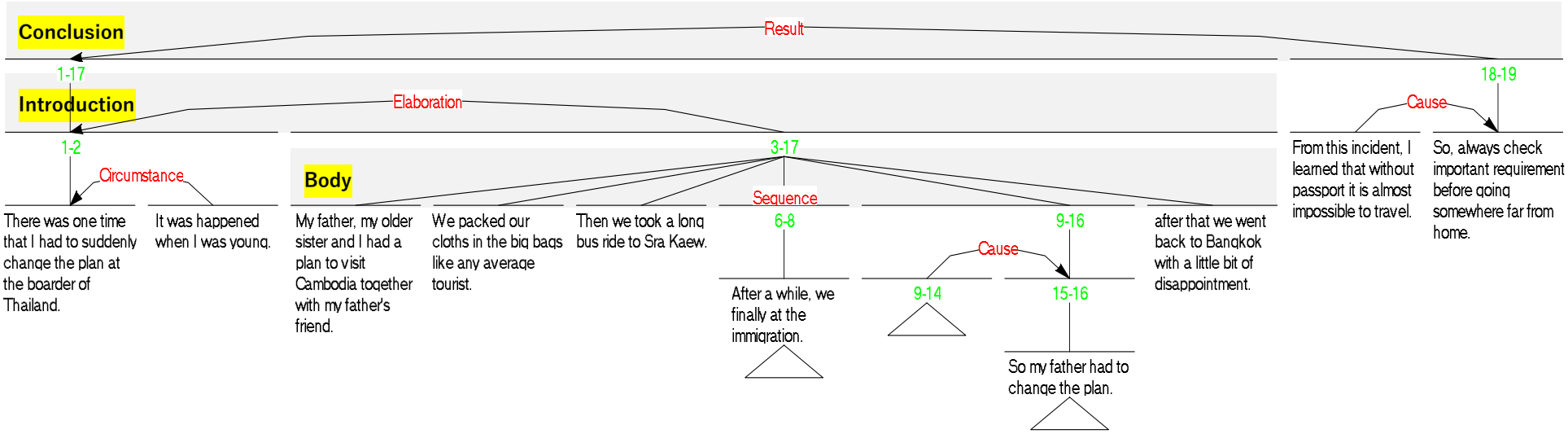


Figure 6A

RST tree with LIST at the highest level in the Body part (Text 6)

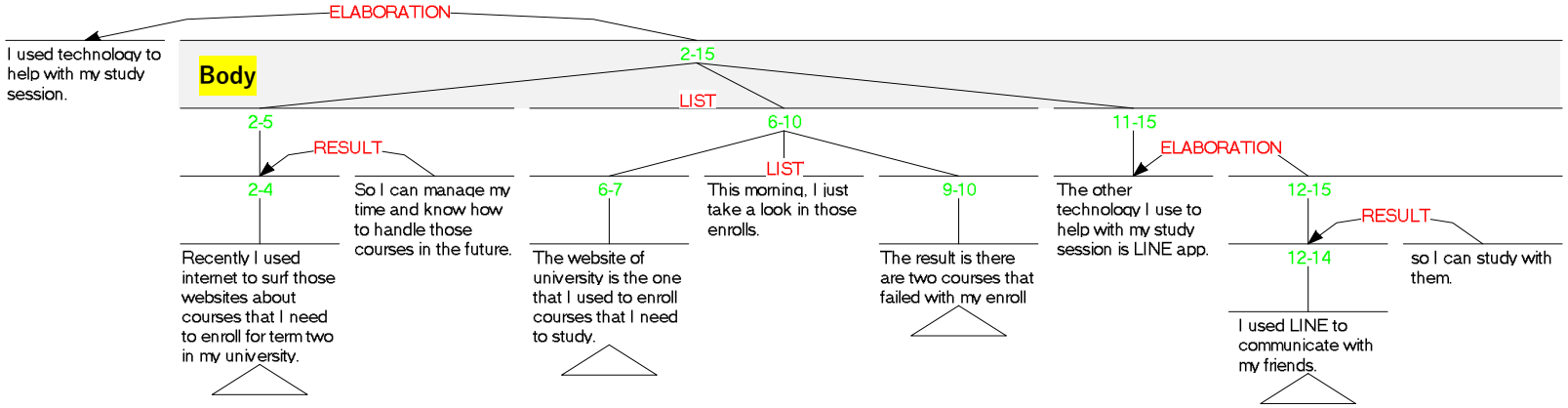
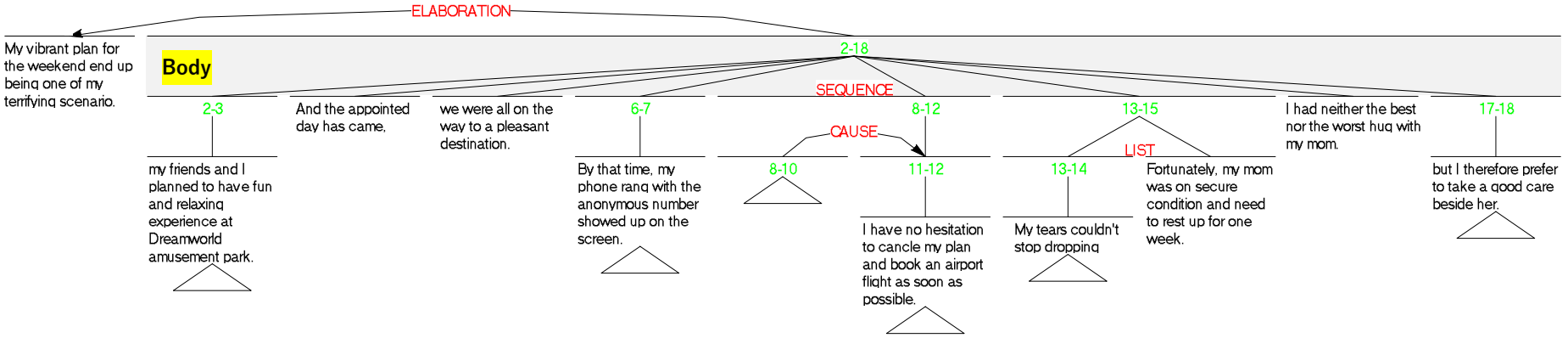


Figure 6B

RST tree with SEQUENCE at the highest level in the Body part (Text 22)



Five texts relying on LIST addressed the *technology* prompt while only one addressed the *unexpected situation* prompt. It is possible that, in addition to the writing genre, writing prompts may influence coherence relations in text construction. Some topics, such as unexpected situations, naturally lend themselves to sequential development. Conversely, topics such as technology may offer various structural development options. The way in which the prompt is phrased (i.e., *Write about a time when you used technology to help you plan something*) does not suggest a complicating action and resolution—elements considered crucial to narratives. The presence of an ambiguous Body structure (containing several unconnected spans) in four paragraphs, all of which addressed the technology prompt, suggests that some students might have struggled with organizing their narratives coherently when faced with structural options associated with certain writing prompts. This effect of prompts on RST structure could be further explored.

The most common relations found in this study closely resemble those found by a previous study analyzing paragraphs written to describe a picture story, except for LIST, which accounted for 13% in the samples of the current study (mostly in the low-rated paragraphs) but only 0.41% in Shokouhi and Shirali's (2011)[4]. This points to the source of challenges that learners may face when dealing with a less controlled narrative writing task. A picture description task comes with a predetermined conceptualization of the story plot that guides learners in their development of the narrative while a free narrative writing task is more cognitively complex, requiring learners to form relations among the ideas and organize them into a coherent story. Kormos (2011) studied the linguistic features of narrative texts produced by L2 writers and found that controlled and free narrative writing tasks had only a minor effect on explicit temporal cohesion. While the use of explicit linguistic cues to express local relations might not differ, the

[4] The LIST relation in this study is comparable to the JOINT relation in Shokouhi and Shirali's (2011).

present study shows that with a less controlled task, learners may struggle with textual organization at the global level of RST structure.

One reason that can explain the use of LIST as the main relation in the Body might be that some learners confused SEQUENCE with what is sometimes referred to as *presentational sequence*. These two differ in what Sanders et al. (1992) defined as *source of coherence*. SEQUENCE is a semantic relation where the reader recognizes the temporal succession of events presented in the nuclei. *Presentational sequence* is a pragmatic relation, the effect of which is that the reader recognizes the order in which the writer chooses to present different pieces of information. Abbott (2008) pointed out that narratives always consist of two layers of temporal movement: external (the order of presentation of events) and internal (the sequence of events). The internal layer of temporal movement is what makes narratives distinct from other text types, and without it, a text does not qualify as a narrative. The paragraphs relying on LIST consist of only external temporal movement.

Another possible explanation could be the tendency to focus more on local relations at the level of individual propositions than on the macrounit of the narrative discourse. This may be the reason for texts with a short SEQUENCE or CAUSE/RESULT series under a longer LIST span. Such paragraphs contain several micro-narratives (short stories) that are topically related instead of one elaborate story. When SEQUENCE or CAUSE/RESULT appears lower in the RST structure, the cumulative narrative force of the paragraph becomes weaker. This pattern can also be seen in Figure 6A above, where a LIST series was developed further with RESULT connecting spans at lower levels in the RST structure.

4.2.2 Relations in the Introduction and Conclusion

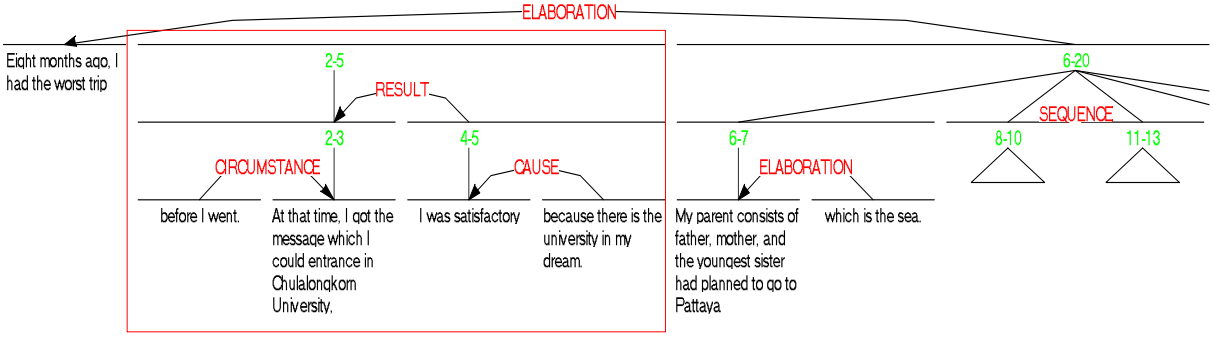
CAUSE/RESULT, SUMMARY, and EVALUATION were the three variations found in the Conclusion part, with CAUSE/RESULT being the most popular. EVALUATION was a

less popular means for ending the stories, perhaps because it involves a shift in perspective from the objective description of the events to a more subjective, writer-oriented judgement. Similarly, in the Introduction part, BACKGROUND and PREPARATION—both of which are presentational relations—were also found, but their uses were much less common than ELABORATION, a subject matter relation. That means that the Introduction generally gave a broad idea of what the story was about, instead of serving to provide background information or drawing the reader's attention to the story. This could be the effect of the explicit instruction to include a clear main idea sentence in the Introduction before elaborating on it in the Body; and this could also be taken to reflect the tendency of the writers to place more emphasis on event description than subjective experiences and interaction with the reader.

Some failed attempts to establish a relation between the Introduction and the Body can be identified, as shown in Figure 7. Span [2–5] is unconnected to the rest of the paragraph, intervening in the schema formed between Unit [1] and the rest of the text. The purpose of the dangling span is unclear, but it seems to provide some background information. However, it was not integrated appropriately into the text. The rare instances of BACKGROUND and PREPARATION and the unconnected spans as seen in Figure 7 suggest that these relations might be more challenging for learners than ELABORATION because they usually require explicit marking or other linguistic cues to convey them successfully.

Figure 7

Unconnected span in the Introduction part of an RST diagram (Text 27)

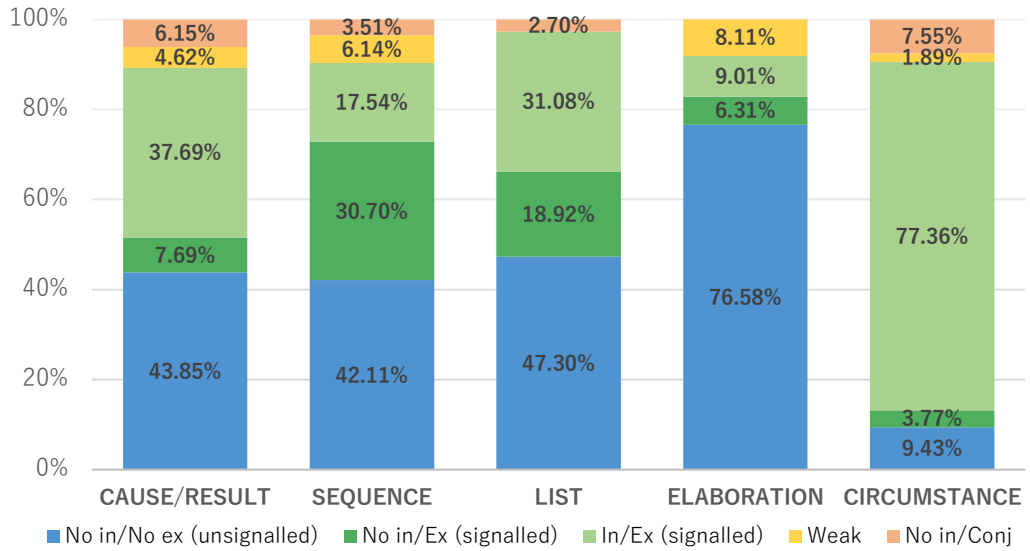


4.3 Explication via connectives and clause integration

This section discusses the use of discourse connectives and clause integration to signal the five most common relations. Figure 8 shows the differences in the levels of signaling. The overall level of signalling of the relations was 48.01% (N = 211). Signaled relations are those where a connective is present to explicate the relation between clauses, which are either integrated (In/Ex) or written as separate clauses (No in/Ex). Unsignaled relations are those where there is neither clause integration nor explication by a connective (No in/No ex). CAUSE/RESULT, SEQUENCE, and LIST had similar proportions of unsignaled relations (the blue bars) and signaled relations (the dark and light green bars), while ELABORATION was mostly unsignaled, and CIRCUMSTANCE was almost always signaled. There were only a small number of inappropriately signaled relations by weak integration (the yellow bars) and by using a conjunction without clause integration (the orange bars), which could be confusing or rhetorically less desirable (Pelsmaekers et al., 1998). This, however, accounted for only a small portion of about 10% or less in each relation. A few cases of semantically inappropriate connectives were excluded from the discussion.

Figure 8

Percentages of signalling strategies by coherence relation



4.3.1 Signaling of CAUSE/RESULT

Most instances of signaled CAUSE/RESULT involved the integration of two clauses via conjunctions, and the two most common ones were *because* and *so*. This could be taken to mean that CAUSE/RESULT was used mostly to connect local relations. However, there appeared to be several attempts to connect larger text spans, but unsuccessfully due to over-integration (Example 11) and inappropriate use of conjunctions (Example 12).

(11) [14] I was depressed [15] **so** I had cried every day [16] **because** I was afraid that I would got F in my grade. *(Text 17)*

(12) [8] My mother made Antigen test fine COVID-19, [9] I and My father infected COVID-19. [10] **Because** My mother went to the PRA school and teached in room crowded. *(Text 1)*

In (11), the conjunction *because* invited a local interpretation where [16] was the cause of the crying in [15], while [14] and [15] had already formed a causal schema. In this case, clause integration could lead to ambiguity. Example (12) shows an unsuccessful attempt to connect Unit [10] to [8], which had already formed a schema with [9]. This resulted in crossed dependency, which violated the RST structural well-formedness. Two possibilities are available to solve such a violation. The first is to rearrange the linear order of clauses to allow the local CAUSE/RESULT relation to form a schema (between [8] and [10]) before being connected to [9] via SEQUENCE. Second, the conjunction *because* could be replaced with an independent connective that helps the reader in establishing a global relation between Unit [10] and Span [8–9].

Independent connectives were rarely used to signal CAUSE/RESULT and were almost exclusively found in the Conclusion in order to globally connect the resolution of the story to the preceding text span. There was only one paragraph

in the low-rated group where an independent connective was present, also in the Conclusion.

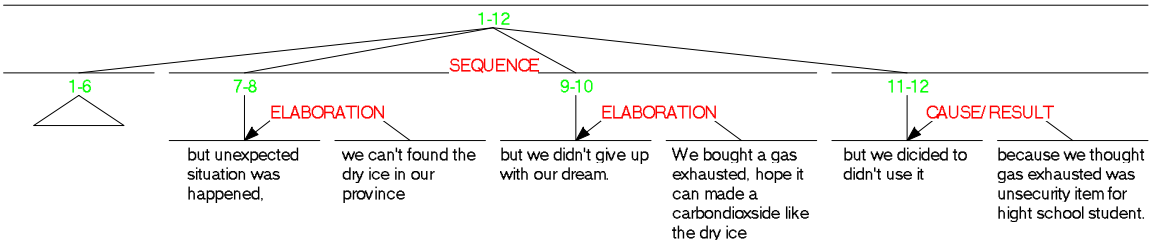
4.3.2 Signaling of SEQUENCE and LIST

The signaling strategies for SEQUENCE and LIST follow similar patterns, but the degree of clause integration was lower for SEQUENCE. Apart from the coordinator *and*, a variety of adverbials (e.g., *finally*, *moreover*, etc.) and prepositional phrases (e.g., *in the end*, *at that moment*, etc.) were quite common. The high frequencies of independent connectives might be attributed to explicit instruction that focused on the use of these connectives for narrative writing. However, since SEQUENCE and LIST share many common connectives, the presence of such connectives does not always contribute to narrativity. These shared connectives—especially adverbials—may be one reason why some of the learners developed their narratives based on LIST rather than SEQUENCE, as discussed in Section 4.2.1.

Overuse of coordinators can be observed in a few texts such as in Figure 9 below. The RST diagram in Figure 9 shows that [7] forms a local relation with [8] before being connected to Span [1–6] via SEQUENCE and to Span [9–10] and [11–12] in the same manner. However, the writer's use of the conjunction '*but*' to locally connect [6] to [7], [8] to [9], and [10] to [11] does not correspond with the underlying discourse structure and could negatively affect text coherence.

Figure 9

Overuse of coordinators to connect global SEQUENCE relations (Text 12)



4.3.3 Signaling of ELABORATION

ELABORATION was a rarely signaled relation. Considering the very low level of signaling in general, weak integration was a common strategy to signal ELABORATION. Some examples are shown below. These uses of weak integration might be attributed to some learners' feeling the need to signal the existence of the relation, which is typically left implicit.

(13) [4] I use application name is Goodnote-5 for study in everyday, [5] this application can help you with shortnote and lecture in class. *(Text 11)*

(14) [17] my brian had nothing, [18] I didn't know how to do or how to feel *(Text 16)*

Apart from weak integration, all except one instance of ELABORATION clause integration was done using relative pronouns, as shown in Example (15). As relative pronouns are usually underspecified, co-indexing with their antecedent, using them to signal the existence of a relation can be viewed as equivalent to weak integration. These two signaling strategies comprised almost all cases of signalled ELABORATION.

(15) [14] However, the incident that I did not expected was happened [15] **that** I forgot my room key and smartphone *(Text 25)*

4.3.4 Signalling of CIRCUMSTANCE

There was a very high tendency to signal CIRCUMSTANCE by means of subordinators. This pattern is in line with previous studies indicating that CIRCUMSTANCE is among the most frequently signalled relations. For example, Taboada (2006) found that 66.42% of the CIRCUMSTANCE relations in a corpus of newspaper articles were signaled. In the present study, the percentage of signaled

CIRCUMSTANCE was as high as 89.59%. This could be due to fewer occurrences of the relation, mostly in the high-rated paragraphs, or the tendency to rely on a very limited number of subordinators, especially *when*, in expressing this relation.

Overall, this study showed that relations differed in signaling patterns and potential learner challenges. Previous studies have found relationships between explicit signaling and writing quality. Kim et al. (2015), for example, found that in narrative writing, connectives indicating addition of ideas (e.g., *furthermore*, *also*, *besides*) were negatively related to several indicators of writing quality, while temporal connectives were positively related to writing quality. This mirrors the overuse of ELABORATION and LIST in low-rated paragraphs and the higher frequencies of SEQUENCE and CIRCUMSTANCE in the high-rated paragraphs. It is possible that the correlations between types of connectives and writing quality are epiphenomenal to the underlying coherence relations.

5. Conclusion

The present study examined coherence relations in English L2 learners' narrative paragraphs. CAUSE/RESULT and ELABORATION were common relations found in both the low-rated and high-rated paragraphs. A disproportionately high frequency of ELABORATION was found in many of the low-rated paragraphs. CIRCUMSTANCE was much less frequently found and was mostly found in the high-rated paragraphs. SEQUENCE and LIST were two common relations in the Body part of the paragraphs. While SEQUENCE contributes to narrative development, LIST does not, and almost all of the paragraphs using LIST were rated low in coherence. The most common relations used in the Introduction and Conclusion were ELABORATION and CAUSE/RESULT, respectively, both of which are semantic relations. Some pragmatic relations such as EVALUATION and PREPARATION were also observed, but they were rare and mostly unsuccessfully handled.

Apart from the frequencies of different relations, we looked at how the most common relations were signaled through clause integration and explication by connectives. CIRCUMSTANCE, which is a commonly signaled relation, was almost always signaled, and ELABORATION, which is often left implicit, was almost always unsignaled or inappropriately signaled via weak integration or relative pronouns. These extreme degrees of (un)signaling suggest that learners tended to rely on limited, default strategies for signaling such relations. Use of independent connectives to explicate CAUSE/RESULT was quite limited, with a few of them present almost exclusively in the Conclusion. Some global CAUSE/RESULT relations were inappropriately signaled via local subordinators. Independent connectives were more frequent among SEQUENCE and LIST, probably because of the lack of conjunctions to explicate such relations and previous instruction.

From the findings, some pedagogical implications can be proposed. First, learners should be made aware of the differences between SEQUENCE and LIST (or *presentational sequence*) since only the former contributes to narrativity, even though both share many common connectives. Using LIST at a high level of RST structure could make the paragraph more descriptive or expository than narrative. A picture description task with a variety of topics could be used to guide learners in structuring their narratives before they have to tackle a less controlled task, as such a task was found to produce quite a homogenous discourse structure and relations that reflect narrative development (Shokouhi & Shirali, 2011). Second, ELABORATION seems to pose problems for learners, both in terms of the tendency to overuse it—which could overshadow main *narrative clauses*—and in terms of inappropriate use of clause integration strategies. These pitfalls could be explicitly pointed out to the learners. Third, learners may benefit from a wider range of connectives for CAUSE/RESULT, as the strategies used to explicate such a relation are mostly limited to conjunctions, which are inappropriate for global relations. Fourth, given the relatively low frequency of CIRCUMSTANCE and its role in providing temporal details and transitioning between major text portions, instruction on how

to employ this relation in narrative writing might help to increase paragraph coherence. A practice activity where learners identify or supply temporal or spatial context for events might be useful. Fifth, a few cases of unsuccessful use of presentational relations in the Introduction and Conclusion suggest that these relations may be challenging for learners. Since these relations often involve a shift in tense, aspect, or mood, related linguistic features could be taught to help learners handle them successfully.

The findings of this study need to be interpreted with caution. First, the study was exploratory and based on a small text sample. A larger and more diverse sample is needed for more representative findings. Second, coherence relations are abstract concepts, and the assignment of relations involves a certain degree of subjective interpretation. Future studies may investigate the relationship between human judgement of text coherence and relation types and positions, or between relation types and other measures of coherence. Third, although connectives are linguistic markers that strongly suggest coherence relations, they are by no means the only cues that affect the interpretation of relations. Other signals—referential, lexical, semantic, syntactic, and graphical features—could be used to explicate coherence relations and may be explored in future studies. Finally, we only took finite clauses as the units of analysis. Non-finite clauses may be viewed as rhetorical units in themselves and can be investigated for wider coverage. Previous work has provided preliminary evidence showing a correspondence between relation types and different (both finite and non-finite) clause integration strategies (Green, 2017). Future research could examine this connection among texts produced by L2 learners.

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