

The Development of Temporal Event Construction in Children's Narratives

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Abstract

The present study aims to find the developmental path of event relation construction of Thai children. Data are narratives of Thai children in various age groups: preschool, kindergarten, elementary school, and adults, retrieved from the Thai Frog Story Corpus. The findings show constructions depicting both non-relation between events and event relations consisting of sequential, temporal, and causal relations. The three event relations found occur in different age groups. Sequential and temporal relations are constructed by all age groups, while causal relation occurs only in the groups of elementary school and adults. The levels of complexity among the three event relations and cognitive development are raised as the reasons of different ages in perceiving and constructing event relations.

1. Introduction

Narratives are made up by speakers to tell stories. When telling a story, series of events are normally combined (Adams, 2002). In addition, cohesion is one of the main elements in narratives. All events are linguistically connected to make the narratives cohesive and meaningful (Shapiro & Hudson, 1991). As there must be a linguistic device indicating cohesion, conjunctions are used as a connector connecting the events together, establishing cohesion to the narratives. Moreover, conjunctions can express the relationship between events that are connected (as cited in Dam,

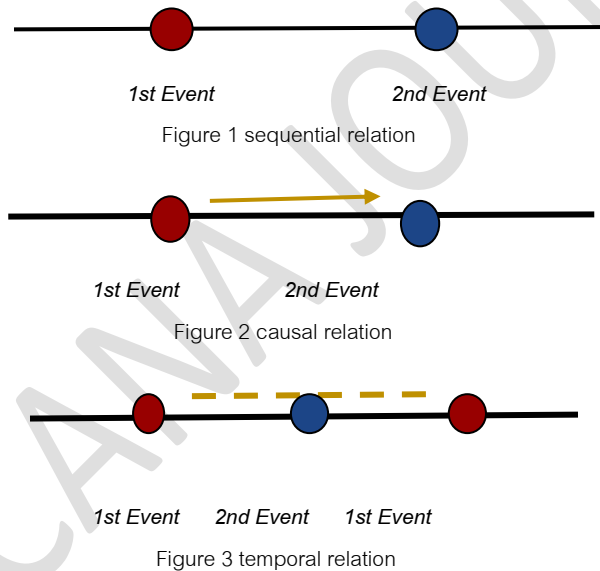
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2010). In relation to the research on temporal event, the term “temporal event” refers to events that are related by time of order using conjunctions to state types of event relations (as cited in Derczynski, 2013).

Specifically speaking, as two events can be connected with any relations, depending on the types of conjunctions, there are 3 main types of event relations focused in this research: sequential, causal, and temporal. Derczynski (2013) identifies sequential relation as a series of events ordered as before and after, as demonstrated in Figure 1. Figure 2 demonstrates causal relation in the same order similar to sequential, but the second event is the direct consequence of the first one. Differently, the events with temporal relation overlap in time because the second event occurs during the ongoing of the first one, as demonstrated in Figure 3.



As illustrated by Figure 1, 2, and 3, the time of starting and ending of the two events are different. These differences of time among the three event relations can lead to levels of complexity when constructing event relations. For some relations, it may be easy to identify the time, but others convey a direct relationship between the first and second events, rather than the times of starting and ending. The relation simple to perceive in terms of starting and ending time may be used to construct events rather than the relation that is more complex to perceive when relating events. As Gloria, Hanauer, Wiethan, Noro, and Mota (2016) state that 3-year-olds mostly produce series of

information in their spontaneous speech by using additive conjunctions, it could be inferred that sequential relation may be the simplest relation used among young children to relate events.

Based on previous studies regarding event relations in children's narratives, it is claimed that children between the age of 3 and 5 construct and comprehend temporal relation with Before conjunction, compared with After conjunction (Blything, Davies, & Cain, 2015). The participants were presented with two pictures containing an agent and two different actions and were required to identify which action occurred first, regarding the provided sentences with Before and After conjunctions. However, the method used to experiment seemed to mislead the result. Since the two pictures were showed at the same time, participants may be led to select the first picture on the left as the first occurring event with Before conjunction. Moreover, the conjunctions Before and After create sequential relation as the example sentence provided "He poured the ketchup before he ate the burger". The first event, pouring ketchup, completely starts and finishes before the starting of the second event, eating burger, similar to Figure 1, even though they are temporal conjunctions. Thus, the method uses inappropriate conjunctions to analyze temporal relation.

Additionally, the number of causal relation events constructed by 5-year-olds is lower than the group of 9-year-olds, when narrating the picture book Frog, Where are you? due to the different stage of cognitive development (Sah, 2013). Even though the main concerned relation is causality, the results of 5-year-olds should provide what kind of event relations they use instead of causality. The possible event relation 5-year-olds tend to create could be sequential relation, due to the simplicity in perceiving occurrences of time of events.

Moreover, apart from the method and result weaknesses, the two previous studies focused on small age groups of participants: 3 and 5 years old. These two age groups are considered, in terms of educational levels, as preschool and kindergarten respectively, so not all event relations could be found. As a result, the number of age groups should be extended in order to see the development of constructing event relations from the young age group to adult. Additionally, instead of focusing only on one event relation, a variety of age groups can show different types of event relations because the two events can be connected with different relations, depending on the narrator's perspective when seeing a picture containing two or more possible events. Therefore,

this research is created, based on the question: what are the event relations constructed in the temporal event of children's narratives?

2. Objective:

- Analyze the developmental path of temporal event construction in children's narratives.

3. Hypotheses:

3.1 Non-relation between the events will be most likely found in the preschool group and become lower in older age groups.

3.2 Sequential relation will be the most used event relation due to its simplicity.

4. Methodology

4.1 Data Collection

1.1) Data

Data are narratives' transcripts of a picture book, Frog, Where are you? retrieved from <https://childes.talkbank.org/access/Frogs/>, and obtained from 2 corpuses: English-Slobin Corpus gathered by Tanya Renner and Virginia Marchman (1994) and English-Miami Corpus gathered by Barbara Pearson (2002). The participants were free to narrate their own stories, based on the wordless picture scenes of the book.

1.2) Age Groups

Participants of this research were in four different age groups, classified by educational levels. The first age group is preschool age, consisting of 24 children at the age of 3 and 4. This group is considered as having limited knowledge to construct event relations. The next two groups are in school age. The second group consists of 24 children from kindergarten between the age of 5 and 6, while the third group is from elementary school, consisting of 24 children between the age of 9 and 10. The last group consists of 12 adults at the age of 20. The adult group functions as the target of development. Therefore, there are 84 participants in total.

1.3) Selected Scene

Apart from the participants' age groups, data were collected from a scene which shows two events happening at the same time, as seen in Figure 4. The scene illustrates a boy and his dog sleeping in the bed, and a frog climbing out of a jar. As this scene portrays a temporal event relation, it is used to study how children narrate these two events linked by different relations.



Figure 4 the selected scene showing two events occurring on one page

4.2 Analysis

To see the development of event construction, the relations created between the pair of events from the selected scene are analyzed. As there is a possibility that one picture scene could be perceived in various event relations, data are categorized into three different relations: sequential, temporal, and causal, and conjunctions are the main focused indicator. Importantly, the set of conjunctions of all relation types are not fixed, and they can be expanded for open markers.

4.2.1) Sequential Relation

For this type of event relation, events do not share the same point of starting and finishing (Derczynski, 2013). The conjunction indicators for sequential relation are “*Before*” and “*After*,” as shown in the examples (1) and (2).

(1) *The boy slept **before** the frog climbed out.*

(2) *The frog climbed out **after** the boy slept.*

By using these conjunctions, between the two events, “the boy’s sleeping” and “the frog’s climbing,” it is easy to recognize which event happens and finishes before the other.

In addition, the conjunction “*and*” is also used in sequential relation to connect two events together demonstrating a series of events, and the starting and finishing points of each are separated, as in the example (3).

(3) *The boy slept **and** the frog climbed out of the jar.*

4.2.2) Temporal Relation

Temporal relation is defined as the occurring of two overlapping events at the same time (Derczynski, 2013). “*While*” and “*When*” are the set of indicating conjunctions.

(4) *The frog got out of the jar **while** the boy was sleeping.*

(5) *The frog got out of the jar **when** the boy slept.*

The example (4) shows that the event of “getting out” started and ended during the ongoing of the “boy’s sleeping”. Therefore, it refers to the durative action of the “sleeping,” which occurred before and longer than the “getting out”. Similarly, with the use of the conjunction *when* in example (5), by the time that the boy slept, the frog started to get out.

4.2.3) Causal Relation

The two events have their relation, for without the happening of the first event, the other event will not happen (Derczynski, 2013). The set of conjunctions used to indicate this relation consists of the subordinator “because”, the coordinator “so”, and the transitions such as “therefore,” as in the examples (6)-(8).

(6) *The frog jumped out of the jar **because** the boy fell asleep.*

(7) *The boy fell asleep, **so** the frog jumped out of the jar.*

(8) *The boy fell asleep; **therefore**, the frog jumped out of the jar.*

The examples (6)-(8) demonstrate the cause and effect relation between the pair of events. The subordinating clause or the *because-clause* functions as the cause event, while the main clause functions as the consequence of the cause event. Differently, the event following the conjunctions “so” and “therefore” functions as the consequence event, while the other clause functions as the cause event.

4.2.4) Non-Relation

Apart from the 3 types of event relations provided, data which do not show any relations between the events will be categorized under this type, for example, if participants provided only words, phrases, or one or two simple sentences without conjunction, as in the examples (9)-(11).

(9) *The frog. The boy. The dog.*

(10) *The boy slept.*

(11) *The boy slept. The frog jumped out.*

4.2.5) Simplicity and Complexity

The 3 types of event relations are classified into different levels of simplicity and complexity, according to their elements of relation. Based on the selected scene, there are two actions occurring: a boy’s sleeping and a frog’s climbing out. The relation classified as **simple** is sequential relation because the actions are time-related. The starting and ending points of the boy’s sleeping and the frog’s climbing are distinctly perceived.

In the same way, the time-related element is also applied to temporal relation. However, the sequential relation is classified as **less complex** than the other because of the overlapping of time occurrences between two actions. It has to be perceived that the action of the frog's climbing out occurs as overlapping during the durative action of the boy's sleeping.

Causal relation is classified as **complex** because this relation is not time-related, but action-related. The action of the boy's sleeping is related to the climbing of the frog as cause and consequence. Thus, it has to be perceived that the frog will not climb out unless the boy sleeps. It is obvious that causal relation has a direct relation between the two actions, different from sequential and temporal which concern about the time of occurrence of the actions.

4.2.6) Results Presentation

After categorizing the data, the results will be presented with qualitative approach to further analyze the open markers found in event relations perceived and constructed in each age group. The examples quoted from the narratives will be provided with reference of the participants including their age and order in the brackets at the end of each example as (03-01). Moreover, quantitative approach will be used to demonstrate the proportions of the event relations in terms of cross ages to see the direction of development.

5. Results

Based on the results, there are both non-relation and event relations constructed by the participants to narrate the selected picture scene. In non-relation, the results show that some participants were unable to realize the relations between the two main events, which are the sleeping of the boy and the climbing of the frog. The participants viewed all elements in the scene as pieces, without linking them together with the event relations.

5.1 Non-Relation

It has been found that some participants in the groups of preschool, kindergarten, and elementary school produce non-relation in their constructed events, based on the picture scene. The results of non-relation are categorized into 2 types: 1) talking about either the boy or the frog, and 2) talking about both the boy and the frog constructed by using phrases or simple sentences.

- **Preschool Age (3-4 years old)**

Non-relation between the events is mostly found in this age group. The participants tended to use phrases to describe the events and objects they saw in the picture scene. Most of the non-relation results are 1 mentioned event, as in the examples (12), referring to the action of the frog and (13), referring to the action of the boy. Additionally, the result of 2 mentioned events is also found in this group, presented in the example (14), referring to the actions of the boy and the frog.

(12) *Getting out (3-11)*

(13) *A person. Sleeping. (4-13)*

(14) *Sleeping. Stepping out of jar. (4-19)*

- **School Age: Kindergarten (5-6 years old)**

Non-relation with 1 mentioned event is still found among the participants studying kindergarten. Apart from constructing the events with phrases, the participants tended to use more simple sentence to mention the event they perceive from the scene, as in the examples (15)-(16).

(15) *Then, he was sleeping one night. (5-02)*

(16) *The frog jumped out of the glass. (6-24)*

- **School Age: Elementary School (9-10)**

Non-relation found in this age group is also simple sentences, but the participants tended to narrate the scene with two or more simple sentences to describe the two main events of the scene, without putting any conjunction to show event relation, as in the examples (17) and (18). Thus, this age group is the only group showing the result of 2 mentioned events.

(17) *The boy and the dog are sleeping in bed. The frog is getting out. (9-03)*

(18) *The frog didn't like him. He was asleep. The frog went out of the jar. (9-08)*

5.2 Event Relation

There are 3 types of event relations found in the participants' narratives. However, some of the found event relations do not occur in all age groups.

5.3 Sequential Relation

This relation is found in every age group. Constructing the events with sequential relation is similar to seeing one event that occurs and ends before being followed by the second event. The conjunctions found in this relation are “**and**”, “**after**” and the open marker “**then**” used among the groups of school age, kindergarten (5-6 years old) and elementary (9-10 years old), as in the examples (19)-(26) from all age groups.

(19) *The boy's sleeping **and** the frog's going to hide.* (3-01)

(20) *I see him snoring **and** the frog gets out.* (4-05)

(21) *They were going to sleep. **Then**, it's gonna go out the window.* (5-01)

(22) *He went to sleep **and** in the middle of the night, his frog crept out.* (6-13)

(23) *He decided to take a nap. **Then**, the frog left the jar.* (9-05)

(24) *One night **after** he goes to bed, the frog sneaks out* (9-09)

(25) *They both go to sleep **and** the frog crawls out of the jar.* (20-01)

(26) ***After** he and his dog went to sleep one night, the frog got out of the jar.* (20-04)

5.4 Temporal Relation

This type is the relation of events that overlap in time. Temporal relation is found in all age groups, indicated by the conjunctions “**when**” and “**while**,” as presented by the examples (27)-(34).

(27) *The frog got out **when** he's sleeping.* (3-04)

(28) ***While** he was taking a nap, the frog's getting away.* (4-17)

(29) ***When** he was sleeping, the frog tried to get out.* (5-12)

(30) *The frog hops out **when** the boy's sleeping.* (6-15)

(31) *The frog got out **when** he fell asleep.* (9-10)

(32) *The frog runs away **while** the boy is sleeping.* (10-17)

(33) *Eventually, the boy and dog grow tired and they go to bed **while** the frog is escaping from his jar right now. (20-06)*

(34) ***When** he sleeps with the dog on his bed, the frog escapes from the jar. (20-08)*

5.5 Causal Relation

Relating the events with causality requires the perception of seeing the first event as directly causing the occurring of the second event. Different from sequential and temporal relations, causal relation is the latest one found only in elementary school and adult groups. The indicators found are the subordinator “**because**”, the transition “**so**”, and the open marker “**consequently**,” which is an adverb, as in the examples (35)-(38).

(35) ***Because** he was asleep, the frog climbed out of his jar. (9-07)*

(36) *In the middle of the night, the boy went to sleep and the dog also went to sleep, **so** that night the frog jumped out of the jar. (10-21)*

(37) *Later that evening, the boy and the dog and the frog went to sleep. However, the frog was not really asleep, **so** it decided to escape into the night. (20-10)*

(38) *The little boy and the dog get tired and go to bed as it's getting late. **Consequently**, the frog feels that it can now get out and explore. (20-11)*

5.6 The Comparison Between Non-Relation and Event Relations

To illustrate the development of non-relation and event relations, Figure 5 compares the two results from all age groups. Each age group consists of the proportions between the non-relation and all event-relations found in said age group.

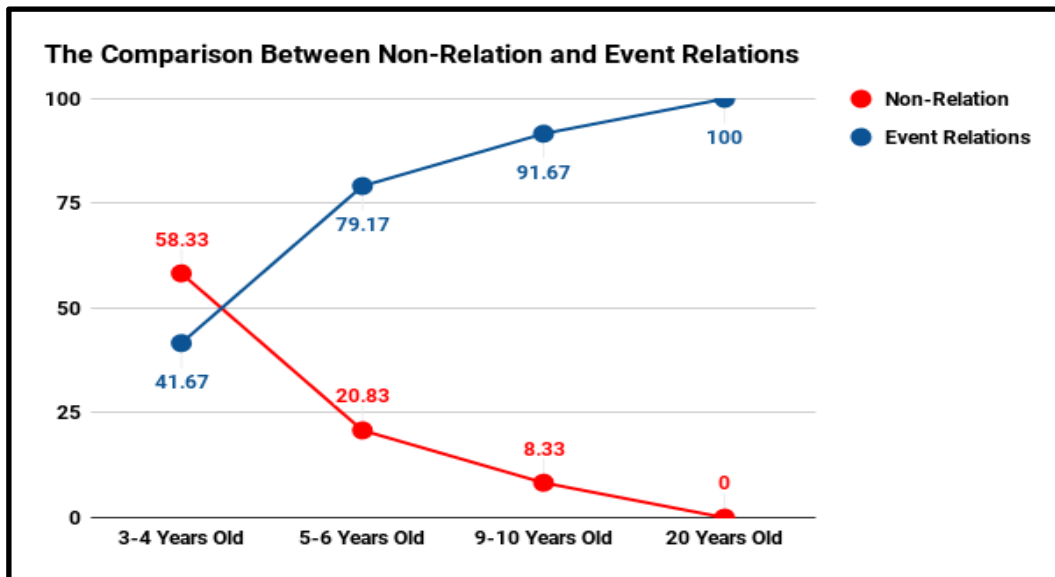


Figure 5 the comparison between non-relation and event relations constructed by all age groups.

In relation to Figure 5, the development of constructing the events with both relations and non-relation is demonstrated. Non-relation mainly occurs in the group of 3-4 years old or those in preschool age. Then, the number of non-relation continuously decreases in higher age groups until it completely disappears in adult age. Conversely, event-relations continuously enhance as the age increases. Specifically, the majority of event constructions in the age of 3 and 4 is non-relation, with the percentage of 58.33, while the event constructed with relations has 41.67%. Differently, the group of 5-6 years old constructs more event-relations at 79.17%, and non-relation is reduced to 20.83%. In the same way, 91.67% of the 9-10 years old children can construct the events with relations, and only 8.33% of the non-relation events occur in their narratives. Distinctively, without non-relation constructed, 100% of adults construct the events with relations.

5.7 The Developmental Direction of Event Relations

The developmental direction of event relations is presented in Figure 6. As not all types of relations occur in every age group, Figure 6 illustrates the occurrence, increasing, and decreasing of the event relations across all age groups.

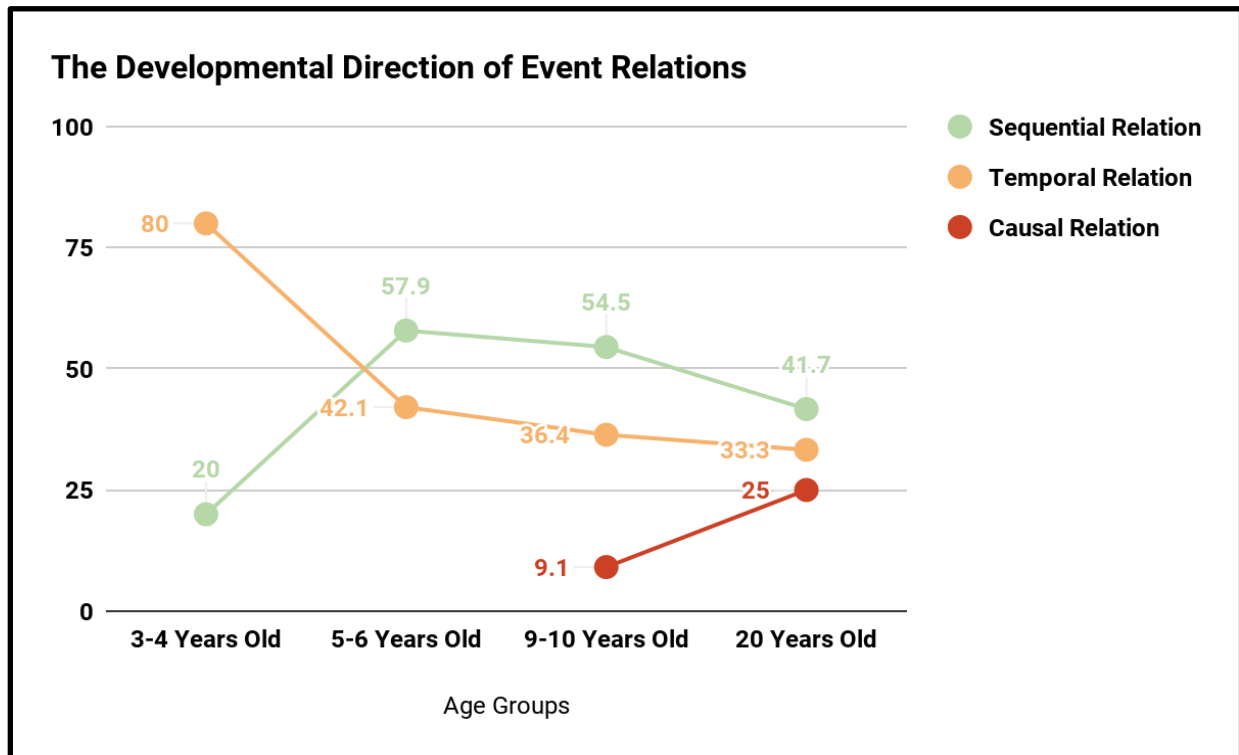


Figure 6 the proportions of even-relation types constructed in each age group.

According to Figure 6, except the group of 3-4 years old, sequential relation is used most to relate the events, compared with other relations in all age groups of 5-6, 9-10, and 20 years old, having the percentages of 57.9, 54.5, and 41.7, respectively. On the other hand, constructing the events with temporal relation tends to diminish cross ages. From 80% in 3-4 years old group, the percentage decreases to 42.1%, 36.4%, and 33.3% in the groups of 5-6, 9-10 and 20 years old, respectively. Interestingly, causal relation can be found only in the group of 9-10 years old at 9.1%. Additionally, the adult group tends to construct the events with causality, as the percentage increases to 25% of all the relations used in the group.

6. Conclusion and Discussion

Overall, the development of event relation constructed in children's narratives starts from non-relation. Children see no relation between the events especially in preschool age. Then, they can link events with simple and less complex relations, which are sequential and temporal, as both of them are used to relate events by all age groups with a quite similar number of usage. Lastly, causal relation, considered as the most complex relation, comes as the latest one to be used among the group of elementary school or 9-10 years old, and it is increasingly used more among the group of adults.

6.1 From Non-Relation to the Increase of Event Relations

Children from preschool age to elementary school age still produce non-relation when constructing events; however, the number of non-relation tends to be lower, whereas event relations are increasingly constructed from preschool age to adult. The reason why preschool children mostly produce non-relation is related to the cognitive development. Young children between 0-3 years old are in the stage of sensorimotor, according to Piaget's cognitive development stages. Children in this stage are unable to create relations among events. They are in the process of recognizing the existence of objects (McLeod, 2010). That is why they tend to produce descriptive information by pointing out individual object or action in the picture such as *the boy, the frog, sleeping, or the frog jumped*. In addition, the focus of attention is also recognizable in young age group, due to the fact that children intend to mention only one event, either the boy or the frog. Based on the examples, children in preschool and kindergarten groups narrate the story from the picture as *the boy was asleep or sleeping* for the boy's event and *jumping out or the frog was getting out of the jar* for the frog's event. According to the examples from the data, it can be concluded that children in preschool age can realize the events in the picture, but are unable to perceive the event relations, and what event is raised to mention, depending on children's attentions.

6.2 The Most Usage of Sequential Relation

Sequential relation has the highest rate of usage for events construction among the groups of kindergarten, elementary, and adults, not only because of its simplicity, but also because it deals with similarities of narrative characteristic and storytelling. A distinctive characteristic of narrative is the retelling story which the events are packed together as a series of events (Paiva, 2008). In the same way, sequential relation supplements the narrator to add the events like a series and order the events as a sequence. Storytelling-like is another reason why sequential relation is highly used even in the adult group who passes all levels of education and is able to connect the events with all types of relations. However, adults narrate the story with sequential relation, according to their perspective as telling a story to kids (Paiva, 2008). In order to make the storytelling-like, the narrator has to make simple construction linking the events to create more understanding and comprehension to young listeners.

6.3 The Late Coming of Causal Relation

It is obvious that causal relation occurs when children are in elementary school or at the age of 9 and 10. As causal relation is classified as complex, children have to understand the concept of cause and effect. Based on cognitive development, children firstly experience and understand the concept of “earlier” and “later,” similar to sequential relation. On the other hand, causality requires logical reasoning abilities stored in concrete operational stage around the age of 7 and 11 to perceive that one event stands for the cause and the other stands for its effect (Hoerl & McCormack, 2011).

6.4 The Higher Use of Temporal Relation Compared to Sequential Relation in Preschool Group

Even though sequential relation is the simplest way to construct events in narratives, it turns out that preschoolers or children between the age of 2 and 3 construct more temporal relation. This could be assumed from the selection of the picture page. As there is only one page selected, instead of using a couple of pages, the children see all the events developing within one page,

similar to the concept of overlapping events of temporal relation. If 2 pages were used, it could lead the children to see the events as before-after, similar to the concept of sequential relation. Thus, the highest number of using temporal relation may be forced from the one page selection leading the children to perceive the two events as overlapping.

6.5 Recommendation

From the result of the preschool group, temporal is the highest relation constructed because it is mainly dominated by the use of 1 page of the picture scene. Further studies should consider using 2 pages as a tool to collect data. The results would be changed to have more proportion of sequential relation since using 2 pages may create a perception of a later event occurring after a previous one. Also, causal relation might be used more in older age groups as participants would see the second page (02-A) as a consequence of the first page (01-A) showing the boy is sitting beside the frog while still in the jar.

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