THE DETAILS HE REMEMBERS:
THE READING SPAN OF AN 8-YEAR-OLD DYSLEXIC CHILD

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Abstract

The main goal of reading is to comprehend the text by understanding all of the details stated in the text. Unfortunately, due to their lacking ability in processing the details, dyslexic readers tend to fail in recalling some of the sentence details. Thus, this research aimed to point out the reading span of a dyslexic child as well as the tendency of his answers when being asked about the sentence details. A battery of 51 sentences that consisted of evenly distributed information details such as Noun (as the Subject and Object of the sentence), Verb (as the predicate), Adjective, and Adverbs was constructed. It was accompanied by 219 comprehension questions related to each detail presented in the battery. In obtaining the data, the Participant was asked to read sentences and answers the comprehensive questions that follow each sentence. Results showed that the participant tends to make more incorrect answers as the number of details within a sentence increased. In addition, Participant tends to be able to correctly recall details that were placed in latter parts of the sentence. Also, the Participant of this study tends to fail in recalling the modifiers. Implications were discussed. The results of this research is expected to help parents and children to provide better education quality and facilities for dyslexic children as part of the inclusive education programs.
Keywords: dyslexia; information details, reading comprehension; reading span

I. INTRODUCTION

Dyslexic readers are known to have problems in phonological awareness. This low level skill in reading is less demonstrated in language with clear orthography [1] [2] [3] such as Indonesian language. Instead, the deficiencies likely appear in their reading comprehension. The failure in comprehending the text, regardless their adequate accuracy in reading each word, unfortunately becomes one of their major obstacles in successfully understanding the text. Apparently, reading is crucial ability that is required in their study at school. Therefore, due to their lacking ability in comprehending the text, many of those dyslexic readers, even though excelled in intelligence [4], find it hard to also excel in their academic lives.

Reading is done to achieve some end [5]. She claimed that a reading activity involves: 1) one or more purposes such as completing class assignment, 2) some operations to process the text at hand, 3) the consequences of performing the activity. In other words, readers are not only expected to be able to read accurately, but also to achieve something at the end of the reading process. In those dyslexic readers' academic lives, most of the activities involve reading texts to acquire new knowledge as well as accomplishing class assignments and exam. Thus, it is necessary for them to be able to comprehend the text that they encounter.

Many researches discussed various aspects of dyslexic readers' reading comprehension [6] [7]. Yet, the focus of this study is dyslexic child who is in his early academic years. In Surabaya, approximately 19,8% elementary school students suffer from dyslexia [8]. People might have been aware of how this impairment in reading affects the children's academic period. Nevertheless, there are quite a few studies, particularly in Indonesia, that discuss the disorder in linguistic point of view even though it affects the reading ability which involve linguistics aspects [9]. Studying the reading comprehension of those dyslexic children is expected to give early awareness to the people around them so they can provide assistance in their study since their early academic lives.

One of the aspects of reading comprehension that is analysed in the research is working memory [10]. Many of those research found that the deficiency in their working memory correlates with their ability in comprehending texts [11]. The working memory capacity is more limited for poor comprehenders compared to the expert ones [12]. However, Daneman and Carpenter argued that it was not the capacity of working memory that affected the reading comprehension, instead it was the skill with which they were using their working memory capacity [13]. This study used a similar concept with Daneman and Carpenter's research. However, instead of testing the reading span with several sentences, this study aimed to analyse how many details that the participant can process in a sentence. This method is expected to give an overview of how dyslexic readers comprehend the sentence as a whole by discovering how they perceive each detail that is stated in the sentence.

Each word can make countless new meanings if combined with other words in a sentence [14]. Therefore, it is important for readers to be able to understand them as the units that construct the meaning of a sentence. Another ability that is necessary to comprehend a text is recalling new information [15]. Some texts might inform new things that could be different from common knowledge which has been acquired by the readers. The contextual situation provided in the text can also be the factor that makes prior information inappropriate to be applied. Therefore, it is necessary for the reader to comprehend the information details presented in the text to fully comprehend the text.

The ability to comprehend the information details could be analysed by examining the reading span as one of the reliable predictors of conventional reading comprehension performance [13] because it is closely related to the working memory capacity. This skill also relates to the ability in organizing detailed information into a hierarchical macrostructures [12]. For novice comprehenders, Kintsch and Rawson argued that they could not rely on the automatized skills in this aspect, instead they need to activate strategic processes to compensate their lacking in this aspect [12]. However, since this skill requires greater effort for the novice comprehender, they tend to be satisfied with forming a reasonable accurate textbase and neglecting the more effortful construction of higher aspect in comprehension, such as situation model. This unfortunately results in the shallow comprehension that is insufficient for deeper understanding and learning from text. Hence, this research aimed to find the reading span of a dyslexic child. This research also analysed the tendency of remembered and omitted details.

This research was conducted as a case study of a dyslexic child aged 8 years old who was in second grade of elementary school. Despite the high percentage of dyslexic readers in Surabaya, there are very few parents and teachers who are willing to let their children being involved in a research. The child is diagnosed with mild dyslexia with sufficient ability in reading texts in Indonesian language accurately yet occasionally experience failures in reading comprehension performance. The failures seem to lie on the child's understanding of the text's meaning, but further observation showed that it was the information details that the child fails to obtain.

II. THEORETICAL FRAMEWORK

Reading comprehension is one of the most complicated mental activities that involve linguistic processes such as decoding individual words in the mental lexicon, parsing and bridging syntactic structures for sentence meaning and building discourse on the basis of sentential meaning [16]. Kintsch and Rawson explained that it is necessary to combine word meanings in ways stipulated by the text to form idea units or propositions which interrelated in the *microstructure* of the text [12]. The microstructure itself is organized into higher-order units which is called the macrostructure. The formation of macrostructure involves the recognition of global topics and their interrelationships, which are frequently conventionalized according to familiar rhetorical schemata. The combination of the microstructure and macrostructure is called the textbase. Textbase is the representation of the meaning of the text just the way it is actually expressed in the text. Therefore, the ability in recalling the information in the text correctly is required in text comprehension, particularly when the text contains new information for the readers.

There are several views about how the capacity of working memory affects the reading comprehension. One of the ways to study it is by examining how many information details in a text that can be processed by dyslexic readers. One of the well known research measuring the capacity of working memory was conducted by Daneman and Carpenter which investigated the capacity of working memory by asking their research subjects to read a series of sentences and then recall the last word of each sentence [13]. They claimed that working memory that was measured in this way, which was also called reading span, correlates quite well with reading comprehension. In other words, reading span is defined as the number of information in a text that can be processed during a reading activity. The study found that, among individuals, the reading span varies between two to six.

Several researches found that the reading span of dyslexic readers was shorter compared to normal readers [17] [18] [19] (Robertson and Joanisse, 2010; Towse, Hitch, Horton, and Harvey, 2010; Farmer, et al., 2016). This occurred as the longer the text, it is likely to posses more details to be processed [17] (Robertson and Joanisse, 2010). Thus, due to the their lacking ability in processing data, as novice readers, dyslexic readers tend to be satisfied with forming a reasonable accurate textbase and neglecting the more effortful construction of higher aspect in comprehension such as situation model [12](Kintsch and Rawson 2005). This result in the little details that they could recall during reading comprehension exercises.

III. METHODOLOGY

This research was conducted on a multilingual dyslexic child aged 8 years old. The diagnosis was issued by a psychiatrist following a test that was conducted when the child was seven years old. A few months afterward, another test resulting the same diagnostic was administered by a state psychiatric hospital. The child is adequately fluent in speaking Indonesian language. In addition, to contrast the reading performance of the participant, three 8-year-old children were involved as control participants. The three children acquired Indonesian language. The research was conducted after obtaining the permission from the participants' parents.

The instrument was set in such a way so that both aimed could be achieved. The instrument consisted of 219 content words. Content words, which consists of Noun. Verbs, Adjective, Adverbs [20](Alwi, et al, 1998), contain most of the referential meaning (cognitive meaning) [20](Katamba, 2005). In this instrument, the length of the words was designed to be one to four syllables. Within those words, their complexity (the number and the position of affix within the words) and their types of affix (derivation and inflection) were taken into consideration. In addition, every phoneme in Indonesian language was included in this instrument.

However, since this study only tries to discover the number as well as the tendency of the details that were remembered or forgotten, the influence of the morphological aspects (such as affixes, length of the words) and the phonological aspects (such as the appearance of the phonemes) were not analysed. The words were obtained from extracting texbook of Indonesian Languages lesson that were approved by the Indonesian Ministry of Education.

In order to find how the child's reading span as well as the tendency of remembered and omitted details, the sentence constructions were illustrated in Table 1. Three different sentences were constructed for each type in order to check the consistency.

Table 1. Types of Sentences in Research Instrument

No	Type	No. of details	Variations of details	No of sentences

1	1-A	3	(N-V-N)	3
2	1-B (I)	3	(Adv - N - V)	3
3	1-B (II)	3	(N - V - Adv)	3
4	1-C	3	(N - A - V)	3
5	2-A	4	(N - V - O - A)	3
6	2-B	4	(N - A - V -O)	3
7	2-C (I)	4	(N - A - V - Adv)	3
8	2-C (II)	4	(Adv - N - A - V)	3
9	2-D (I)	4	(N - A - V - Adv)	3
10	2-D (II)	4	(Adv - N - A - V)	3
11	3-A	5	(N - A - V - N - A)	3
12	3-B (I)	5	(N - A - V - N - Adv)	3
13	3-B (II)	5	(Adv - N - A - V - N)	3
14	3-C (I)	5	(N - V - N - A - Adv)	3
15	3-C (II)	5	(Adv - N - V - N - A)	3
16	4-A (I)	6	(N - A - V - N - A - Adv)	3
17	4-A (II)	6	(Adv - N - A - V - N - A)	3
Total No of Details		219	Total No of Sentence	51

Indonesian language requires Subject and Predicate to form a sentence. Therefore, regardless the variations of every type, each sentence included the structure of S – P. The variations in each type of the sentence were only the placement of modifiers; Adjective and Adverbs. The texts were mostly arranged in spatial analogues [22] (Haenggi, Kintsch, and Gerbacher 1995) as well as time [23] (Zwaan and Radvansky 1998). Therefore, the adverbs used in this research were only adverb of time and adverb of place. These variations were applied in order to find whether the placement of the detail also gives contribution on how the participant used his working memory.

Even though Indonesian language is considered a transparent language, some graphemes or their combinations are still difficult to be read, such as diphthongs, digraphs, and consonant clusters. Nevertheless, since they appear occasionally in words of Indonesian language, those graphemes are involved, with the least occurrence frequency, in the words used as the instrument of this research. In other words, to avoid the low reading performance during the test due to the decoding difficulties, the number of digraphs, diphthongs and consonant clusters were kept to a minimum. The percentage of digraph, diphthong, and consonant cluster in the instrument was stated in Table 2 below.

Table 2. The Digraph, Diphthong, and Consonant Cluster in the Reading Instrument

No	Types	Percentage	Number
1	Digraph /ny/	0,91%	2
2	Digraph /ng/	20,55%	47
3	Diphthong	3,65%	8
4	Cluster	0,91%	2

Furthermore, in figuring out the participant's reading comprehension performance, a set of questions that asking the participant to recall the information he had just read were delivered. Since the aim of this study is only finding the reading span, the analysis of this study was limited to how many textbased details that the participant was able to recall in each sentence. Textbased is the meaning of the text as it is actually expressed by the text (Kintsch & Rawson, 2005) [12]. Kintsch & Rawson (2005) also argued that good comprehension is indicated not so much by how many propositions are reproduced from a text, but which ones of it that the readers could recall (insignificant detail can be neglected, but not important ideas) [12]. However, the handicap in memory affects the reading ability of dyslexic readers (Bartlett, Moody, & Kindersley, 2010) [24]. This means that there will be fewer details that can be remembered by the participant. Moreover, as dyslexic readers tend to be satisfied with forming only a reasonable accurate textbase [12] (Kintsch and Rawson 2005), it is expected that the participant would recall the information less accurately or even forget the information when answering the questions prepared in the reading instrument even though they can read the text accurately.

The test was administered by asking the participant and the control group to read the sentences one by one and answers related questions about each sentence. Both the reading section and the questions were delivered directly by the researcher. Each of the sentences was followed by three to six questions which were delivered verbally to find out the comprehension of the participants about the text (sentence); for example, for sentence

a) *Kemarin Ibu belanja*   Yesterday, Mother went shopping

The questions that followed were

(1) Who went shopping? (asking the Subject, detail no. 1)

(2) When did Mother go shopping? (asking the Adverb, detail no. 2)

(3) What did Mother do yesterday? (Asking the Verb, detail no.3)

Nevertheless, since there were quite a lot sentences to be read, the test was conducted in two days with the length of data collection timing was adjusted to the mood of the participant so that the data acquired could be as natural as possible. The entire reading test was recorded using the voice recorder.

In assessing the participant's comprehension performance, the dichotomy of "correct" and "incorrect" were used. In addition, "Forget" option was also taken into account since there is possibility that the participant completely forgot about the detail. Even though there might be a vague boundary between "Correct" and "Incorrect" answers as the result of natural logic [25](Johnson, 1987 in Saeed, 2003), a particular entity to experience a relatively fixed and precise dimension (location, time, etc.) is made [4]. This means that, the more precise detail mentioned to answer the question, the more the value of "correctness" that the answers would have. Thus, in this study, the standard of correct and incorrect was based on the accordance of information given in the given texts. In other words, if the answer was in accordance with the expected answer (which was based on the information provided in the text), the answer was considered to be correct. If the answer was somewhat different than the expected answer, it was considered incorrect. After each answer was assessed, the result of the answer was tabulated to find the frequency of each kind of answer.

IV. ANALYSIS

4.1. The Participant's Reading Span

During the reading test, the Participant and control participants read 51 sentences that consist of 3-6 information details. The number of control participants involved in this research was three and their reading performance scores were taken from their average values. From the data collection, the Participant's reading performance seems to be excelled in sentences that consisted of three information details. 75% comprehension questions were correctly answered (n= 27, total= 36). However, when the number of details was increased, the performance seemed to decrease. Even though similar tendency also appeared in the control's reading performance, the participant's correct answers in each sentence detail were lower than control. The lowest score of reading comprehension performance was on the sentences with six details. Only 25% (n=9, total=36) of the details could be recalled correctly. In other words, the number of incorrectly answered questions was increasing as the number of details increased. Similar tendency also appeared in the details which were totally forgotten by the Participant. However, the percentage of correct answers was higher in sentences containing five details than sentences with four details.

Table 3. Tabulation of Participant's Answers

Type	No. of details	Variations of details	Accurately Read Text						Inaccurately Read Text					
			Correct Answers		Incorrect Answers		Forgotten Answer		Correct Answers		Incorrect Answers		Forgotten Answer	
			Participant	Control	Participant	Control	Participant	Control	Participant	Control	Participant	Control	Participant	Control
1-A	3	(N-V-N)	9	9	0	0	0	0	0	0	0	0	0	0
1-B (I)	3	(Adv - N - V)	7	7	2	1,3	0	0,7	0	0	0	0	0	0
1-B (II)	3	(N - V - Adv)	4	8,3	2	0,7	1	0	0	0	2	0	0	0
1-C	3	(N - A - V)	7	8,7	0	0	2	0,3	0	0	0	0	0	0
		Percentage	75%	92%	11%	6%	8%	3%	0%	0%	6%	0%	0%	0%
2-A	4	(N - V - O - A)	5	10,3	4	1	1	0,3	1	0	1	0,33	0	0
2-B	4	(N - A - V -N)	6	9,3	4	2	2	0,3	0	0	0	0,33	0	0
2-C (I)	4	(N - A - V - Adv)	9	11,3	3	0,3	0	0,3	0	0	0	0	0	0
2-C (II)	4	(Adv - N - A - V)	7	7	5	2,7	0	2,3	0	0	0	0	0	0
2-D (I)	4	(N - A - V - Adv)	6	10,3	2	0,7	4	0,7	0	0	0	0,33	0	0
2-D (II)	4	(Adv - N - A - V)	1	6,3	10	3,7	1	2	0	0	1	0	0	0
		Percentage	47%	76%	39%	14%	11%	8%	1%	0%	3%	1%	0%	0%
3-A	5	(N - A - V - N - A)	4	10	8	4,3	2	0,7	0	0	1	0	0	0
3-B (I)	5	(N - A - V - N - Adv)	7	13,7	8	1,3	0	0	0	0	0	0	0	0
3-B (II)	5	(Adv - N - A - V - N)	7	11	7	3,3	1	0,7	0	0	0	0	0	0
3-C (I)	5	(N - V - N - A - Adv)	11	14,3	4	0,7	0	0	0	0	0	0	0	0
3-C (II)	5	(Adv - N - V - N - A)	7	11,7	6	2,7	2	0,7	0	0	0	0	0	0
		Percentage	48%	81%	44%	16%	7%	3%	0%	0%	1%	0%	0%	0%
4-A (I)	6	(N - A - V - N - A - Adv)	4	11,3	7	5	6	1,7	0	0	0	0	1	0
4-A (II)	6	(Adv - N - A - V - N - A)	5	12	12	4,7	0	1,3	0	0	1	0	0	0
		Percentage	25%	65%	53%	27%	17%	8%	0%	0%	3%	0%	3%	0%

Kintsch and Rawson (2005) explained that high-span readers are able to easily organize detailed information into a hierarchical macrostructure due to their high level of reading expertise [12]. Meanwhile, dyslexic impaired individuals tend to have difficulties in processing information details in texts [24] (Bartlett, Moody and Kindersley 2010). The tendency that was shown by the Participant of this research demonstrated this claim. As the aim of this research was to know how the reading span of the Dyslexic child, the Participant's reliance to his background knowledge was kept to a minimum. Most of the sentences that were used in the instrument were constructed a little differently from the common knowledge. Therefore, the Participant would give his effort to process the information details that were presented in the text. This was illustrated in the Extract 1.

Extract 1: Text 2A-1

Target	: *Gadis manis minum susu*. Sweet girl drinks milk.
Read	: *Gadis manis minum susu*. Sweet girl drinks milk.
Question 1	: *Siapa yang minum?* Who drinks?
Target answer	: *Gadis*. [The] girl.
Participant's answer	: *Ngga tau*. I don't know
Question 2	: *Gadis itu minum apa?* What does she drink?
Target answer	: *Susu*. Milk
Participant's answer	: *Bir*. beer
Question 3	: *Apa yang dilakukan gadis itu?* What does she do?
Target answer	: *Minum*. Drinking
Participant's answer	: *Minum bir.* [She] drinks beer.
Question 4	: *Bagaimanakah muka si gadis?* How is her face?
Target answer	: *Manis.* Sweet
Participant's answer	: *Ngga tau.* [I] don't know

The textbased information that was expressed in Text 2A-1 was there is a sweet girl who drinks milk. In Indonesian Language, the word *gadis* (girl) is usually predicted to be followed by *cantik* (pretty) [27](Junaiyah & Arifin, 2010). Hence, in order to trigger the ability in recalling the texbased information, *manis* (sweet) was chosen as the adjective following the word girl instead of *cantik*. The extract showed how the participant read accurately yet answered the question incorrectly. The participant could only recall the predicate. He could not recall the object, *milk*, correctly and instead answering *beer*. In addition, he also forgot two of the details, namely the doer and the adjective. The extract bellow illustrated the participant's reading performance in sentence with five details

Extract 2: Text 3A-3

Target	: *Penjahit ramah itu memperbaiki baju lamaku*. The friendly tailor fixes my old clothes
Read	: *Penjahit ramah itu memperbaiki baju lamaku*. The friendly tailor fixes my old clothes
Question 1	: *Siapa yang memperbaiki bajuku?* Who fix my clothes?
Target answer	: *Penjahit.* [The] tailor.
Participant's answer	: *Bapak yang menjahit*. The man who sews
Question 2	: *Bagaimana orangnya?* How is he?
Target answer	: *Ramah.* Friendly
Participant's answer: *Baik.* Nice	
Question 3	: *Apa yang dia lakukan?* What does he do?
Target answer	: *Memperbaiki (bajuku)*. Fixing (my clothes)
Participant's answer: *Menjahit.* Sewing	
Question 4	: *Apa yang dia perbaiki?* What does he fix?
Target answer	: *Bajuku*. My clothes
Participant's answer: *Baju.* Clothes	
Question 5	: *Bajuku yang mana yang dia perbaiki?* Which clothes of mine that he fixes?
Target answer	: *Yang lama*. The old one.
Participant's answer: *Yang putih.* The white one	

There were five information details in the text 3A-3; the doer, the personality of the doer, the activity, the object and the description of the object. In this sentence, the participant managed to correctly recall the object. He couldn't remember the term used to mention the doer, *penjahit* (tailor). Instead, he stated *the man who sew*s to compensate his inability to say the exact term. It is common knowledge that sewing is what any tailor does. Therefore, the word *memperbaiki* (fix) was used instead of *menjahit* (sew) in order to prevent the use of background knowledge when the participant read the sentence. However, he still answered using his background knowledge particularly when answering the doer's activity. The participant also could not correctly recall the adjectives that followed both the subject and the object.

The tendency of the correct answers which decreased as the number of details increased could be the result of the limited ability of the readers to process the information. Only to comprehend a sentence with few details,the dyslexic Participant needed to make a more considerable effort and expend it in just the right way to achieve the result as equal as expert readers which skill is automated (Kintsch dan Rawson, 2005) [12]. Hence, the effort that the Participant took to process more number of information in each text would be greater too. In other words, his skill might not be as good as the typically developed readers to process more number of detail information. As the result, the Participant produced more incorrect answers or even could not remember the sentence details.

Table 3 also showed that the Participant made more correct answers in Sentence Type 3 compared to Type 2. This tendency appeared as there were more sentences which in accordance with common knowledge in sentences Type 3. One of the sentences was

a. *Perempuan cantik memakai jaket saat musim dingin*. Pretty woman wears jacket in winter (3-B)

There were details in this sentence which semantic properties were bound as occurred in common knowledge. The properties of some concept were mentally structured [28](Riemer, 2016), thus most people perceive it similarly. The first related concept were; the subject of sentence (a) and its modifier, *perempuan* (women) and *cantik* (pretty). Pretty is the property that commonly belongs to women. The second related concept were *memakai jaket* (wearing jacket) and *musim dingin* (winter). In this case, people do wear a jacket during winter to keep their body warm. Having this background information, Participant could correctly answered the questions that were related to the information details in this kind of sentence.

This findings agreed with Kintsch and Kintsch (2005) [29]. They argued that the comprehension processes require the delicate interaction of several component processes that integrate information from the text that the readers are reading with their background knowledge and experience. This implies that participants' background knowledge and experience also contribute to their reading comprehension performance. In other words, the use of Participant's background knowledge helped him answering the questions about the texts which information was in accordance with his background knowledge as well as common knowledge. Therefore, since there were more sentences whhich in accordance with common knowledge in Sentence Type 3 than Type 2, the percentage of correct sentences were higher in Sentence Type 3.

Kim and Bolger (2017) argued that longer words were more difficult to identify due to the limitation of our visual system [30]. This results in the obstacles in processing words with longer syllable. It also becomes the effect of longer latencies for naming and lexical decision. This suggests the possibilities that the failure in recalling the details happened due to the words with longer syllable were involved in the instrument of this study. However, further tabulation analysis showed the contrary.

Table 4. Target Word and Deviation based on the Number of Syllables

Target		Deviations	
Number of syllables	Frequency	Frequency	Percentage
in words			
2 syllables	109	42	46,70%
3 syllables	58	18	20,00%
4 syllables	18	12	13,30%
5 syllables	2	1	1,10%
in phrases			
3 syllables	10	3	3,30%
4 syllables	9	6	6,70%
5 syllables	13	8	8,90%
total	219	90	100,00%

In Indonesian language, numerous adverbs are formed from one preposisition and one noun (example: above: *di a-tas*, between: *di an-ta-ra*, ago: *yang la-lu*, etc). Nevertheless, Table 4 showed that words with two syllables were dominant in the instrument. In addition, during the reading activity, among the 90 incorrect answers made by the participant, most of them were produced when the participant read words with two syllables.

Table 4 was an evidence that the length of the words might not give influence to the ability in recalling the details of the text, at least for the case of the participant in this study. Most of the incorrectly answered questions occured in target words which were consisted of two syllables (46,70%). The participant tended to be able to recall the information which was placed in the latter part of the text regardless the number of the syllable of the target words.

Syllable structures that contained digraphs, diphthongs and clusters could be a challenge for the young readers. However, during the reading test, there were only eight occurrences of reading deviation produced by the participant and three deviations that were produced by one of the Control Participants.

Table 5. List of the Deviations in Reading Activity

No	Participant	
	Target word/answer	Deviation
1	*di teras* (on the terrace)	di təras /təras/ (pseudowords)
2	*di taman* (at the park)	*di tanam* (to plant)
3	*beli* (buy)	*membeli* (buy)
4	*lebat* (thick)	*lembat* /ləmbat/ (pseudowords)
5	*kelabu* (grey)	*kelebau* /kələbau/ (pseudowords)
6	*tingkat* (decker)	*setingkat* (same level)

7	*rumah sakit* (hospital)	*rumah* (house)
8	*pramuka* (boy scout)	*peramuka* / pəramuka/ (pseudowords)
No	Control 1	
	Target word/answer	deviation
1	*vas* (vase)	*vas bunga* (flower vase)
2	*minum* (drink)	*meminum* (drink)
3	*menggonggong* (bark)	*mengonggong* (pseudowords)

Table 5 showed that among all of the deviations produced by the participant, there were only two of them that contain digraph and consonant cluster; *tingkat* (/tiŋkat/) and *pramuka (/pramuka/)*. This implies that the dyslexic participant was able to read almost every word accurately. This showed that the participants nearly had no difficulties in reading the digraphs, diphthongs, and consonant clusters that appeared in the research instrument. Among the eight deviations, seven of them were followed by the participant's incorrect answer when he was presented questions that tested his ability in recalling those particular items. Nevertheless, the elaboration which explained the process on how the participant chose those answers was beyond the focus limitation of this research.

4.2. The Distribution of Participant's Answer in each Sentence Details

Table 6 illustrated the distribution pattern of participant's answer in each of the sentence parts in every sentence type sentence.

Most frequently, the Participant was able to correctly recall the Object. The Verb followed as the second position and Subject in the third position. On the contrary, in every sentence type, the Control mostly recalled the Subject correctly. This tendency was followed by the Object of the sentence. The details that were the least correctly answered by the participant was the modifiers; Adjective and followed by Adverb. Consequently, the most incorrectly recalled details were also the modifier; adverb and adjective respectively. The detail that was mostly forgotten was adjective.

If the data was seen from the placement of details, the Object was located in the latter part of the sentence, compared to Subject and Predicate. Meanwhile, the details that were located in the earlier part of the sentence, the Subject, tend to be the least correctly recalled. Table 6 also elucidated that Adverb tends to be incorrectly recalled by the participant. Similar tendency was shown in Control's incorrect answers. This tendency was shown in sentences that contained three, four, and six details. Meanwhile, in sentence with five details, the adjective was the one that mostly incorrectly recalled.

In the other three types of sentence, the percentage of the incorrectly recalled adjective was varied. In sentence with three details, there were no adjective that was incorrectly recalled. In sentence with four details, the adjective was the details that were mostly recalled incorrectly after the adverb. Meanwhile, in sentence with six details, the percentage of the incorrectly recalled adjective was equal with the Object and the Verb.

The similar percentage of the Object and the Verb were also found in a sentence that contained four and five details. The Subject becomes the next tier after Adverb and Adjective in three types of sentence; sentence containing three, four, and five details. Meanwhile, in sentence with six details, the percentage of incorrectly recalled Subject was equal with the Adverb. However, in the Control's incorrect answers, the sentence Subject became the least incorrectly recalled in each sentence type.

This tendency was in line with findings that was demonstrated in Table 3. When the data were compared from the placement of details, it was the Subject that became the most incorrectly recalled. Meanwhile, the details that were located in the latter part of the sentence, the Object, tend to be the least incorrectly recalled. Affirming the data in Table 4, the Modifiers (Adverb and Adjective) became the least correctly recalled details.

The distribution of forgotten details was varied among the sentence types. However, no Object was completely forgotten in every sentence type. Table 6 also implied that the Subject, Verb, and Object were recalled more accurately during the comprehension test compared to the Adjective and adverb. Considering the consistent tendency in each sentence type, this might suggest that the Participant tends to give more focus on the Agent, predicate and patient than to the modifier. This suggests that agent-patient relations might be easier to process for the Participant. Meanwhile, because the modifier tended to be more difficult to process, the Participant might choose not to give much effort to process it. Hence, focusing on the agent-patient relations and the predicate could be the strategy that the dyslexic readers chose to compensate their lacking ability in comprehending sentence which details were more than they could process [17] [31] (Robertson and Joanisse 2010; Boyle, Lindell, and Kidd 2013)

Table 6. Distribution of Participant's Answer in each Sentence Detail

3 details	Subject (n=12)			Verb (n=12)			Object (n=3)			Adj (n=3)			Adv (n=6)		
	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten
Participant	10 83%	2 17%	0 0%	10 83%	0 0%	2 17%	3 100%	0 0%	0 0%	2 67%	1 33%	1 33%	2 33%	3 50%	0 0%
Control	12 100%	0 0%	0 0%	10,7 89%	1,3 11%	0 0%	3 100%	0 0%	0 0%	2,7 89%	0 0%	0,3 11%	4,7 78%	0,7 11%	0,7 11%

4 Details	Subject (n=18)			Verb (n=18)			Object (n=12)			Adj (n=12)			Adv (n=12)		
	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten
Participant	7 39%	9 50%	2 11%	13 72%	3 17%	2 11%	7 58%	5 42%	0 0%	4 33%	6 50%	2 17%	4 33%	7 58%	1 8%
Control	16,7 93%	1 6%	0,3 2%	11,7 65%	3,7 20%	2,7 15%	11 92%	0,3 3%	0,7 6%	9 75%	3 25%	0 0%	6,7 56%	3 25%	2,3 19%

5 Details	Subject (n=15)			Verb (n=15)			Object (n=15)			Adj (n=18)			Adv (n=12)		
	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten
Participant	8 53%	7 47%	0 0%	7 47%	6 40%	2 13%	10 67%	5 33%	0 0%	5 28%	11 61%	2 11%	6 50%	5 42%	1 8%
Control	14 93%	1 6%	0 0%	11,7 78%	3,7 20%	1 7%	13,7 91%	0,3 3%	0 0%	14 78%	3 25%	0 0%	9 75%	3 25%	0,3 3%

6 Details	Subject (n=6)			Verb (n=6)			Object (n=6)			Adj (n=12)			Adv (n=6)		
	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten
Participant	1 17%	4 67%	1 17%	1 17%	3 50%	2 33%	3 50%	3 50%	0 0%	3 25%	6 50%	3 25%	1 17%	4 67%	1 17%
Control	5,7 94%	0,3 6%	0 0%	3,3 56%	2,7 44%	0 0%	4 67%	1,3 22%	0,7 11%	6,7 56%	4,3 36%	1 8%	3,7 61%	2 33%	0,3 6%

Table 7. Distribution of modifier

	Adjective						Adverb					
3 details	Front (n=3)			Back (n=0)			Front (n=3)			Back (n=3)		
	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten
Participant	2 67%	0 0%	1 33%	0 0%	0 0%	0 0%	2 67%	1 33%	0 0%	0 0%	3 100%	0 0%
Control	2,7 89%	0 0%	0,3 11%	0 0%	0 0%	0 0%	1,7 56%	0,7 22%	0,7 22%	3 100%	0 0%	0 0%
4 Details	Front (n=9)			Back (n=3)			Front (n=6)			Back (n=6)		
	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten
Participant	3 38%	5 63%	1 13%	1 33%	1 33%	1 33%	1 17%	1 17%	0 0%	3 50%	3 50%	1 17%
Control	7 88%	2 25%	0 0%	2 67%	1 33%	0 0%	1,7 28%	1,7 28%	1,7 28%	5 83%	0,33 6%	0,7 11%
5 Details	Front (n=9)			Back (n=9)			Front (n=6)			Back (n=6)		
	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten
Participant	3 33%	5 56%	1 11%	2 22%	6 67%	1 11%	2 33%	3 50%	1 17%	4 67%	2 33%	0 0%
Control	7,3 81%	1,7 19%	0 0%	6,7 74%	2,3 26%	0 0%	3 50%	2,7 44%	0,3 6%	6 100%	0 0%	0 0%
6 Details	Front (n=6)			Back (n=6)			Front (n=3)			Back (n=3)		
	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten	correct	incorrect	forgotten
Participant	1 17%	3 50%	2 33%	2 33%	3 50%	1 17%	0 0%	3 0%	0 0%	1 33%	1 33%	1 33%
Control	2,7 44%	2,3 39%	1 17%	4 67%	2 33%	0 0%	1,3 44%	1,3 44%	0,3 11%	2,3 78%	0,7 22%	0 0%

Previous paragraphs demonstrated that among the tendency, the noticeable one was the modifiers. This was quite constant in each type of the sentence. The Participant once admitted that it was difficult for him to understand the characteristics of the things (Subject and Object) stated in the sentence. Also, he has difficulties in remembering the time and place where the event occurred. Therefore, this section focused on the tendency of the modifier. Table 7 showed the distribution of the modifier in all of the participants' reading.

In the instrument, the modifiers were placed both in earlier and latter parts of the sentences. Hence, the modifiers that were located in the early part of the sentence were given a note of F which means Front. Similarly, those who were located in the latter part were given a note of B (back). The adjectives that were given title (F) was the modifier of the Subject, thus it was placed in the earlier part of the sentence. Meanwhile, Adjective that was entitled (B) was the modifier of Object so it was placed in the latter part of the sentence. Similarly, the adverb in front meant that it was placed preceding the Subject and adverb at the back meant that it was placed at the end of the sentence.

In the sentence with three details, there was no record of Adjective at the latter part of the sentence. This occurred as in this sentence type, the Adjective that modifies the Object was not be added due to the limitation of the details of this Sentence Type. Here, the modifiers that were correctly recalled were both located in the earlier part of the sentence. In the other three types of sentence, the tendency was quite similar. The Participant of the research tended to be able to recall Adverbs that were placed in the latter part of the sentence. This occurred in the sentences with 4-6 details. On the contrary, the adjectives tend to be recalled correctly even though it was placed following the subject of the sentence. Meanwhile, this kind of distribution was not presented in the Control's answers. In each type of the sentence, the pattern was different.

In sentence with three details, none of the adjective was incorrectly recalled. In sentence with four details, the percentage was higher for the adjective located in the earlier part of the sentence. In sentence with five details, the adjective in the latter part of the sentence was incorrectly recalled more frequently. Meanwhile, in sentence with six details, the percentage was equal. In addition, adverbs at the latter part of the sentence that were incorrectly recalled only occurred in sentence with three details. In the other sentence types, the percentage was higher for adverbs that were placed in the earlier part of the sentence (Sentence Types with four and six details). A similar tendency was also shown in the distribution of Control's incorrect answers.

As illustated in Table 7, the distribution of forgotten modifier was also varied among the sentence types. In every type of sentence, the forgotten Adjective that was placed in the earlier part of the sentence were found. However, not in each sentence type, the completely forgotten Adjective (B) and adverbs both (F) and (B) were found. A similar tendency was also shown in Control's forgotten answer.

Another information obtained from the observation was related with the adverbs. Among the 219 comprehension questions, there were 36 questions about the adverbs among the texts. The adverbs used in this research were only adverbs of time and adverbs of place. In total, there were 18 questions each of the adverbs. In the texts, the adverbs were distributed evenly in the beginning (preceding the subject) and at the end of the sentences. The order of the comprehension questions was the same in every sentence.

Table 8. Distribution of Adverbs

Placement	Time				Place			
	Correct	Incorrect	Forget	Total	Correct	Incorrect	Forget	Total
Front	3	9	1	13	2	3	0	5
Back	2	3	0	5	9	2	2	13
Total	5	12	1	18	11	5	2	18
Percentage	28%	67%	5%	100%	61%	28%	11%	100%

Table 8 illustrated that Participant tended to make the most correct answers when he was asked about the Adverb of Place (n= 11). In contrast, the most incorrect answers were about the Adverb of Time (n= 12). There were more correct answers that were found when the Adverbs of place were placed at the latter part of the sentence (n=9). Meanwhile, there were more incorrect answers about Adverbs of Time when they were placed at the beginning of the sentence 9 (n=9). In addition, if the data were compared based on the number of details, the tendency was the same in each sentence type. In sentences with four to six details, the participant tended to give correct answers when being asked about the adverb which were placed at the end of the sentence. In result, there were more incorrect answers when the details were placed at the beginning of the sentence. There were also several forgotten details on both types of adverb. Participant forgot 5% of the time details when it was placed at the beginning of the sentence and no forgotten time detail when it was placed at the end of the sentence. In contrast, 11% of the Adverbs of place were forgotten when it was placed at the end of the sentence and no forgotten details when it was placed at the beginning of the sentence.

In both modifiers, Participant tends to focus on the modifiers that were located in the latter part of the sentence. In result, he chose to lessen his focus on modifiers placed in the earlier part of the sentence. This strategy might be done to compensate his lacking ability in processing details as dyslexic readers tend to use [12](Kintsch and Rawson 2005). On separate time, the Participant was asked about his difficulties in comprehending the text. He said that he often could not remember the description of the Agent, patient, as well as where and when the event stated in the sentence occurred. Moreover, as Kintsch and Rawson (2005) claimed, novice comprehenders also tend to feel satisfied with forming a reasonable accurate textbased information, neglecting the more effortful construction of a situation model resulting in shallow comprehension [12]. This claim corroborates with the result of this research where the Participant tends to focus only to the Agent, patient, and predicate, neglecting the other information that provides extra details of the sentence by either incorrectly recalling the modifiers or simply forgetting it.

V. STUDY RESULTS, SUMMARY, AND CONTRIBUTION

This study has examined the reading span of a dyslexic reader as well as the distribution of the processed information details. The participant's reading performance was contrasted with his normal peers who were involved in this study as control participants. The results showed that the Participant excelled in comprehending the information details in the sentences with the least amount of information details. Also, as the number of details increase, the number of correctly recalled detail information tend to decrease in each type of sentence. This occurred due to the lacking ability possessed by the Participant to process it. Hence, as a typical novice comprehenders, Participant tends to be satisfied with forming a reasonable accurate textbase and neglecting the more effortful construction of higher aspect in comprehension such as situation model. Another finding demonstrated that the Participant tends to focus on the Agent, Patient and Predicate compared to the modifiers. Thus, the percentage of correctly recalled information details were higher in the Subject, Predicate and Object compared to the modifiers. Also, the Participant tends to correctly recall adverbs that were placed in the latter part of the sentence as well as the adjectives that modified the Subject. Therefore, it is suggested that the Participant were trained on how to comprehend the modifier wherever it is placed in a sentence to minimize this tendency. In addition, Participant also tends to correctly recall the Object compared to the other three information details. This tendency was distributed in each type of sentence.

Though dyslexic readers are known to have difficulties in phonological accuracy during the reading process, the findings of this research reveal more insights on how a dyslexic reader might comprehends a text. Hence, for dyslexic readers who speak language with transparent orthography such as Indonesian language, the difficulties in reading texts might not appear as reading accuracy but in their reading comprehension instead. These findings are also expected to give clues to parents and teachers in assisting the participant to comprehend the text during his reading activity to achieve better grades in his academic life. In addition, many of the studies that were mentioned in the previous sections claim that dyslexic readers are less able to utilize their working memory during reading. With their tendency to feel satisfied with forming a reasonable accurate textbased information, understanding how much and which information they tend to consider can be a door to develop their reading performance. This research described how a dyslexic child processed the information within a sentence during reading aloud activity. Nevertheless, this research only focuses on the number of details and how the distribution of the details might affect the number of information that can be processed by the Participant. Hence, to find whether the number of syllables or the form of words (monomorphemic or polymorphemic words) used as the instrument influence the majority dyslexic readers' ability in processing information in the text, further research is required.

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