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Comparison of language skills of students with and without reading difficulties

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Abstract. The aim of this study was to examine the language skills of students with and without reading difficulties (RD) comparatively. For this purpose, a comparative descriptive research methodology was utilised with a participant group comprised of 52 elementary school 3rd grade students with and without RD. The results of this study revealed that students with difficulties in reading fluency were less successful in phonological processing than their peers with no difficulty in reading fluency. Also, students who had difficulties in reading comprehension were less successful than their peers with no difficulties in oral language assessments. In summary, it was recognised that students who experienced difficulties in reading also possessed difficulties in language skills. As a result, the assessment of both reading skills and language skills is critical for the identification of RD as well as for conducting appropriate intervention programs to address these difficulties.

Keywords: Reading difficulty, reading fluency, reading comprehension, phonological processing skills, oral language skills

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INTRODUCTION

Reading is one of the most important skills acquired during the first years of elementary school and is necessary throughout one's life. Reading is a prerequisite for students to acquire many skills in their academic lives and success in reading also affects academic performance positively (Göktaş and Gürbüztürk, 2012; Yıldız, 2013). Ultimately, students' success in reading depends on the development of their reading fluency and reading comprehension.

Reading fluency is the accurate, automatic and prosodic reading of a written text (Hudson, Pullen, Lane and Torgesen, 2009; Lai, Benjamin, Schwanenflugel and Kuhn, 2014; Rasinski, 2004). Students who can read fluently can concentrate their attention and other cognitive resources on understanding what they are reading, which in the end enables them to more fully understand what they have read (Kim, Wagner and Foster, 2011; Kuhn and Stahl, 2003). Reading comprehension, which is the ultimate purpose of reading, is the process of creating a mental representation of the text being read. Importantly, reading comprehension is affected by various skills such as language comprehension, activating previous knowledge about text content, knowledge of text structure, memory, interpretation skills and monitoring comprehension (Basaraba, Yovanoff, Alonzo and Tindal, 2013; Baydık, 2011; Cain, Oakhill and Bryant, 2004; Nation and Angell, 2006; Tankersley, 2003).

Students with reading difficulties (RD) experience difficulties in the fluency and/or comprehension dimensions of reading. Students who have difficulties in fluency read texts slowly, fail to analyse words correctly, and are unable to read automatically as well as have difficulties in prosodic reading (Ceylan and Baydık, 2018; Ergül, 2012; Seçkin-Yılmaz and Baydık, 2017). While students who have difficulties in reading comprehension have difficulties in remembering general text content, combining information from different parts of a text, and reaching the meaning of unknown words by using context clues. Along with difficulty utilising other comprehension strategies, they also struggle in determining the main idea, establishing a cause-effect relationship, distinguishing important information from insignificant information, and

monitoring comprehension (Baydık, 2011; Baydık and Seçkin, 2012; Cain and Oakhill, 2006; Nation, Cocksey, Taylor and Bishop, 2010).

When the literature was reviewed for studies that had examined language skills related to reading difficulties, it was observed that difficulties in reading fluency are associated with inadequacies in phonological processing skills (Nithart et al., 2011; Papadimitriou and Vlachos, 2014; Soltani and Roslan, 2013) while difficulties in reading comprehension are explained as being associated with poor oral language skills (Cain and Oakhill, 2006; Catts, Adlof and Weismer, 2006; Justice, Mashburn and Petscher, 2013; Nation and Snowling, 2000; Nation, Clarke, Marshall and Durand, 2004). Therefore, in this study, language skills were assessed under two main headings: Phonological processing skills that affect reading fluency and oral language skills that affect reading comprehension.

Phonological Processing Skills

Defined as the perception and manipulation of speech sounds, phonological processing skills are important in acquiring reading fluency. Phonological awareness, rapid automatized naming (RAN) and phonological short-term memory (STM) constitute the dimensions of phonological processing (McArthur and Castles, 2013; Nithart et al., 2011; Papadimitriou and Vlachos, 2014; Soltani and Roslan, 2013).

Phonological awareness

Phonological awareness is the ability to perceive and manipulate words in sentences as well as syllables and sounds in words (Sodoro, Allinder and Rankin-Erickson, 2002; Taub and Szente, 2012). Importantly, the phonological awareness skills that are most related to reading are those skills at the phonemic awareness level (Akoğlu and Acarlar, 2014). Phonemic awareness skills include identifying sounds in words, combining sounds, separating words into sounds, changing the position of sounds in words, recognising the number of sounds in words, adding sounds to words or removing sounds from words (Soltani and Roslan, 2013; Taub and Szente, 2012; Tobia and Marzocchi, 2014). Phonological awareness is seen as a prerequisite for acquiring accurate reading skills; and it is a feature that is considered to separate successful versus unsuccessful readers (Papadimitriou and Vlachos, 2014; Puolakanaho et al., 2008). Students who are successful in phonological awareness learn to establish a letter-sound relation more easily and become fluent readers in a shorter time by establishing letter-sound relationships more quickly (Hulme and Snowling, 2009).

Rapid automatized naming

In addition to phonological awareness, another phonological processing skill which effect on reading fluency has been widely researched, is RAN. Performance in this skill is measured by the speed on naming a number of objects, colours, numbers, and letters that have been presented visually (Bakır, 2007; Bowey, McGuigan and Ruschena, 2005). The purpose of this measurement is to assess a child's ability to process automatically. RAN is associated with reading because it requires the same sequential operations as reading such as perception and oral expression of visual stimuli, and oral production or the so-called naming of the given stimulus. The speed of retrieving phonological representations from long-term memory is important in both reading and RAN (Georgiou, Parrila, Cui and Papadopoulos, 2013).

Past studies have shown that RAN has a predictive effect on reading in the early years of reading acquisition as well as during the transition to fluent reading (Caravolas et al., 2012; Elwer, Keenan, Olson, Byrne and Samuelsson, 2013; Tobia and Marzocchi, 2014). As reading fluency develops, reading achievement's relation to phonological awareness decreases while its relation to RAN increases, because as students' reading fluency develops, they begin to read words holistically and move away from utilising the phonological analysis strategy (Vaessen and Blomert, 2010).

Phonological STM

Defined as the ability to retain oral information in memory for a short time, phonological STM is associated with the ability to analyse meaningful and meaningless words. Phonological STM has a facilitating effect on maintaining the sound of each letter in mind and creating words by combining sounds while in the process of reading the words (Høien-Tengesdal and Tønnessen, 2011; Nithart et al., 2011; Shapiro, Carroll and Solity, 2013). Students with RD also have more difficulties in phonological STM tasks compared to their non-RD peers (Demirtaş, 2017; Rispens and Baker, 2012; Wang and Gathercole, 2013). Since students with RD have limited phonological STM capacities, these students may not remember the first syllables when reading a word and therefore may read words incorrectly (Aksoy-Tercan, Kesikçi-Ergin and Amado, 2012).

In summary, past studies reveal that phonological awareness, RAN, and phonological STM are associated with reading fluency, and that performance of these skills distinguishes the reading achievement of students with and without RD. Therefore, the assessment of phonological processing skills is important in identifying students with difficulties in reading fluency as well as to specify the reasons for these difficulties. As reading becomes fluent, students concentrate on reading comprehension, and as a result, oral language skills become more indicative of reading success (Cain and Oakhill, 2006; Catts et al., 2006; Justice et al., 2013; Nation and Snowling, 2000; Nation et al. (2004)

Oral Language Skills

Students with difficulties in reading comprehension may not be as successful in vocabulary skills (Catts et al., 2006; Elwer et al., 2013; Nation et al., 2004; Nation et al., 2010; Nation and Snowling, 1998) or grammar skills (Catts et al., 2006; Nation et al., 2004; Nation et al., 2010; Tong, Deacon, Kirby, Cain and Parrila, 2011) as their peers who have no difficulty in reading comprehension.

Vocabulary

Vocabulary is a skill that is associated with reading comprehension and predicts reading comprehension. To fully understand a text, students need to know the meaning of the words that create the text (Ricketts, Nation and Bishop, 2007; Silverman et al., 2015). Students with an advanced vocabulary better understand what they have read than their peers who possess less developed vocabulary (Tannenbaum, Torgesen and Wagner, 2006; Yıldırım, Yıldız and Ateş, 2011). There is also a two-way relation between vocabulary and reading comprehension. While students with an advanced vocabulary better understand what they read, students who understand what they have read can ultimately better improve their vocabulary because they have more reading opportunities based on their understanding (Ritketts et al., 2007; Verhoeven and Perfetti, 2011; Verhoeven and Leeuwe, 2008).

Some studies have revealed that students with difficulties in reading comprehension possess limited vocabulary in comparison to their peers without these difficulties (Catts et al., 2006; Elwer et al., 2013; Nation et al., 2004; Nation et al., 2010; Nation and Snowling, 1998). From this point of view, it can be postulated that assessing the vocabulary of young students and conducting the necessary interventions can be an effective way of preventing and reducing difficulties in reading comprehension.

Grammar (Morphosyntax)

Grammar is evaluated in two areas: Syntax and morphology. Students with difficulties in reading comprehension also have difficulties in these areas of language (Adlof and Catts, 2015; Tong, Deacon and Cain, 2013). However, studies regarding the grammar skills of students with difficulties in reading comprehension are quite limited in comparison to studies related to phonological processing and vocabulary (Adlof and Catts, 2015; Nation and Snowling, 2000; Tong et al., 2013).

Syntax examines the rules of word arrangements in sentences (Topbaş and Maviş, 2004; Topbaş, 2005). It is thought that students who have advanced syntax skills can easily analyse unfamiliar words by using their syntax knowledge as well as context clues. Also, due to this knowledge, they are able to combine information at the sentence and text level more easily, monitor their comprehension by realising their faults, correcting their mistakes, and as a result, better understand what they read (Cain, 2007 Nation and Snowling, 2000; Oakhill, Cain and Bryant, 2003). Students with difficulties in reading comprehension are not as successful in the syntax component of language as their peers with no difficulties in reading comprehension (Adlof and Catts, 2015; Catts et al., 2006; Nation and Snowling, 2000; Nation et al., 2004; Nation et al., 2010; Tong et al., 2013).

Morphology, which is another oral language skill, examines word formations, word affixes, and the features of their arrangements and derivations (Topbaş and Maviş, 2004; Topbaş, 2005). Students with an advanced understanding of morphology can better identify morpheme boundaries, which can enable these students to better recognise affixes that are added to words, making it easier for them to distinguish and read the root word, and as a result, understand its meaning in this way (Bowers, Kirby and Deacon, 2010; Deacon and Kirby, 2004). On the other hand, students with difficulties in reading comprehension perform poorly in morphological assessments, compared to their peers who do not have any difficulty in reading comprehension (Nation et al., 2004; Tong et al., 2011; Tong et al., 2013).

In summary, reading that is a complex skill in itself, is affected by both phonological processing and oral language skills. Phonological processing skills are particularly important for reading fluency. When the Turkish literature was reviewed, it was recognised that there is a quite limited number of studies regarding the effects of phonological processing skills on reading fluency (Abolafya, 2008; Aksoy-Tercan et al., 2012; Bakır, 2007; Demirtaş, 2017; Erdoğan, 2009; Sürgen, 2019). A majority of the studies conducted abroad are generally conducted in English, which is a language with a non-transparent writing system, so these studies tended to be less helpful in accounting for why native Turkish speaking students with RD had difficulties. This appears to be related to Turkish having a more transparent writing system and through the review of past research, unfortunately no study where both reading comprehension and oral language skills were examined together as well as being conducted with Turkish-speaking students could be found.

Defining the limitations of students with RD in regards to their language skills will in effect enable these students to be better identified in the early stages of their education well before the start of their reading and writing education, and as a result, aid in helping them improve their reading skills by providing early support of their language skills. Supporting limited skills with preventive education programs and intervention programs is extremely important for the prevention and reduction of reading difficulties.

In line with the above-mentioned requirements, this study aimed to assess the phonological processing and oral language skills of third-grade students with difficulties in reading fluency and/or reading comprehension, compared to students without these difficulties. For this purpose, attempts were made to answer the following questions:

In relation to the elementary school 3rd grade students who a) have difficulties in reading comprehension and reading fluency, b) have difficulties in reading comprehension but have no difficulty in reading fluency, c) have no difficulty in reading comprehension but have difficulties in reading fluency, or d) have no difficulty in reading;

1. Does their performance in phonological processing skills differ?
   1.1. Does their performance in phonological awareness skills differ?
   1.2. Does their phonological STM performance differ?
   1.3. Does their performance in rapid automatized naming skills differ?
2. Does their performance in oral language skills differ?
   2.1. Does their vocabulary performance differ?

2.2. Does their performance in grammar skills differ?

METHODS

Research Design

In this study, the language skills of elementary school 3rd grade students with and without difficulties in reading fluency and/or reading comprehension were examined comparatively by utilising a comparative descriptive research design. Through this research design, firstly, the groups to be compared were described in detail by using common scales in terms of specific variables; and secondly, these descriptions were compared (Karasar, 2010).

Study Group

52 elementary school 3rd grade students participated in this study. The study participants were selected from among students at an elementary school located in the Yenimahalle district of Ankara, the capital city of Turkey, during the second semester of the 2016-17 academic years. It was determined from the school administration of the school where the study was conducted, that the participant students were from both middle and lower socioeconomic class families. The overriding determinant for choosing this school was its accessibility as well as the convenience of communicating with the school's teachers and administrators. The school was made up of eight 3rd grade classes, with sizes ranging from 15-20 students. Students from each of the classes participated in the study. As reading skills are expected to be developed at the 3rd grade level, the study group consisted of students from this grade level (Chall, 1983; Seçkin Yılmaz and Baydık, 2017). To determine which students would participate in the study, the 3rd grade teachers were asked to specify students that met the following conditions:

a) Not diagnosed with language and speech disorder, mental deficiency, visual and/or hearing impairment, learning disability,
b) Speaks Turkish as their native language and no other language is spoken at home,
c) Did not have long periods of absence from school,
d) Started 1st first grade after being 66 months of age,
e) Has the ability to read at the level of text reading.

Reading fluency and reading comprehension skills of all the students who met these criteria were assessed individually. During the assessment, a 3rd grade level narrative text and reading comprehension questions regarding the text, which followed the Informal Reading Inventory developed by Karasu, Girgin and Uzuner (2013), were utilised. The following steps were taken in creating the study groups:

1. Identifying students with and without difficulties in reading comprehension: The data regarding the reading speed and reading comprehension scores of 128 students were used to form the study group. The assessment results were entered into SPSS 24. The descriptive statistics regarding the reading comprehension scores of the group were examined and the distribution of the scores was found to be normal. Taking into consideration the opinion of an assessment and evaluation specialist, the students with a score below half a standard deviation of the mean reading comprehension score were determined to comprise the group with difficulties in reading comprehension (n=33), while those with a score above half a standard deviation of the mean score comprised the group without difficulties in reading comprehension (n=42). The remaining 53 students in the group were excluded from the study.
2. Identifying students with and without difficulties in reading fluency: The distribution of the students reading speed was initially determined according to their having any difficulty in reading comprehension or not. As a result, three students with extreme reading speed scores were excluded from the group. Following the initial analysis, it was determined that the reading speed of the group had a normal distribution. The students with a score below half a standard deviation of the mean reading speed score

comprised the group with difficulties in reading fluency (*n*=24), while those who were above half a standard deviation of the mean score comprised the group without difficulties in reading fluency (*n*=28). The remaining 23 students were excluded from the study.

In this way, a total of 52 students were identified: a) those with difficulties in reading comprehension and reading fluency (*n*=9), b) those with difficulties in reading comprehension but no difficulty in reading fluency (*n*=10), c) those without difficulty in reading comprehension but with difficulties in reading fluency (*n*=15), or d) those without difficulty in reading (*n*=18).

Data Collection Tools

In the first stage of this study, data regarding students' reading were collected, and in the second stage data regarding their language skills were gathered. For the purpose of data collection, a narrative text and reading comprehension questions related to the text (Karasu et al., 2013), Phonological Awareness Assessment Procedures, Rapid Naming Test (Ergül and Demir, 2016), Non-word Repetition List (Akoğlu and Acarlar, 2014), and the Turkish Test of School-Age Language Development (Topbaş and Güven, 2017) were utilised.

Narrative text

In the collection of data related to reading skills, a narrative text titled "Ömer ve Güvercin" *(Ömer and Pigeon)* a 3rd grade level text, along with ten open-ended reading comprehension questions related to this text, which are in the Informal Reading Inventory (Karasu et al., 2013), were used. Information on the readability of this text is provided in Table 1.

Table 1. *Features related to the readability of "Ömer ve Güvercin"*

Title of the Story	Number of Words	Number of T-Units	Average Length of T-units	Number of Sentences	Clause index	Number of Different Words	Word Difference Score
Ömer ve Güvercin	174	26	6,69	53	2,03	118	6,32

The text was presented to the students on a white A4 size sheet of paper with 1.5 line spacing and 14 point size (MEB, 2007) "Comic Sans MS" font. Four of the reading comprehension questions were textual open-ended questions with the answers clearly provided in the text and the other four were textual closed-ended questions requiring an inference while the last two were knowledge and experience questions that required the reader to combine his/her experiences with the information stated in the text. When the students answered the textual open-ended questions correctly as stated in the text, they received a score of 10. If a part of the answer was incorrect but clearly contained accurate information about an event in the text, the answer was given half of the full score. If the answers provided to the textual closed-ended questions expressed the answer in the text, they were given a full score. If they did not express the full answer in the text, but there was a relationship between the text and their answer, they were given half of the full score. If the answers to the knowledge experience questions consisted of the student's knowledge and experience combined with the information in the text, they were also scored in full.

Phonological awareness assessment procedures

In this study, "Phonological Awareness Assessment Procedures" developed by the researchers was utilised to assess phonological awareness skills. While forming the procedures for this study, the researchers reviewed the related literature and identified the skills used in the assessment of phonological awareness. These skills were then ranked from easy to difficult. For each skill, instructions were specified, examples were written, and words to be utilised in the assessment were determined. Afterwards, opinions from six specialists in fields related to this research topic were obtained in relation to ranking the procedures' according to difficulty level, suitability of the

procedures for the purpose, suitability of the instructions and examples according to age level, suitability of the words in regards to age level, suitability of the selected words, suitability of the syllable structures of the words, and suitability of the syllables used in the items. Two of the specialists work in the area of reading skills for special education and two others work in the area of language skills for special education, while the final two specialized in speech and language therapy. When the specialists' opinions were garnered, the above-mentioned criteria were listed and the specialists were asked to rate these criteria between 1 and 3 (1-not appropriate, 2-appropriate, 3-very appropriate). In line with the corrections and suggestions received from the specialists (one of the specialists suggested a correction regarding the rank of the skills in relation to difficulty level). Following the specialists recommendations the procedures were updated accordingly.

These updated procedures assessed the following skills: identifying the first sounds in words (8 items), identifying the final sounds in words (8 items), combining sounds (finding words by combining the sounds the researcher provided) (8 items), separating the given word into sounds (8 items), saying the newly created word after discarding the first or final sound of the given word (8 items), finding a word that starts with the given sounds (4 items), finding a word that ends with the given sound (4 items), and changing sounds (creating a new word by changing a sound in the given word) (3 items). There were 51 items at these updated procedures. The students received a "1" for the items they could complete and a "0" for the items they were unable to complete.

Rapid Naming Test

In this study, the Rapid Naming Test developed by Ergül and Demir (2016) was utilised to assess the students' rapid automatized naming skills. The Rapid Naming Test is a norm-based test that evaluates the naming skills of kindergarten and elementary school students with normal development whose native language is Turkish.

The Rapid Naming Test is comprised of colour, object, letter, and number subtests. In each subtest, the items are presented in mixed order. The subtests consist of five lines and a total of 50 items; 10 items per line. While implementing the test, the participants were asked to name the items as quickly as possible from left-to-right without skipping, and their test completion time as well as the number of errors they produced; if any, was recorded. The participant's test completion time created what was considered their test performance. Rapid Naming Test is a valid and reliable test with confirmed content validity.

Non-word Repetition List

The Non-word Repetition List (Akoğlu and Acarlar, 2014) was used in this study to assess phonological short-term memory. This list was developed to evaluate the phonological STM capacities of Turkish-speaking children aged 3-9 years old. The Non-word Repetition List consisted of 36 non-words, including 8 with one syllable, 8 with 2 syllables, 8 with 3 syllables, 9 with 4 syllables, and 3 non-words with only consonants, and there were a total of 210 phonemes in these non-words.

The list was applied to 152 children (75 girls, 77 boys) aged 3-9 years old, and the inter-observer reliability for 47% of the data was determined to be 92.4%. The correlation analyses, however, revealed that the number of correctly produced phonemes, the number of incorrectly produced phonemes, the number of incorrectly produced consonants, the number of incorrectly produced vowels, phoneme deletion mistakes, the number of correctly produced one-two-three and four-syllable words, and the number of correctly produced consonant groups have a significant correlation with the student's age. In addition, the number of mistakes decreases when the age of the student increases.

Turkish Test of School-Age Language Development

In this study, the Turkish Test of School-Age Language Development (Topbaş and Güven, 2017) was utilised to assess the oral language skills of students. This test is a Turkish adaptation of the Test of Language Development, Primary (TOLD-P: 4; Hammill and Newcomer, 2008).

TOLD-P, which is a standard test, is intended for children in the age group of 4 years 0 months to 8 years 11 months. This test, which aims to measure the receptive and expressive language skills of school-age children in basic language knowledge components, consists of 9 subtests: Picture vocabulary, relational vocabulary, expressive vocabulary, sentence comprehension, sentence repetition, morpheme completion, distinguishing words, phonemic analysis, and word pronunciation.

During the process of adapting the test into Turkish, sample data from 1252 people in 23 cities throughout 7 regions of Turkey were collected in order to check the validity and reliability of the test. Different demographic characteristics such as age, gender, ethnicity, disability status, family's education, and income status were taken into consideration in order to maintain sample diversity, and the entirety of the test sample was included in the validity and reliability process. In the reliability process, alpha coefficient and test-retest correlation coefficient were calculated for all subtests, and all the coefficients met the minimum accepted level. The test was reported to be reliable for clinical and educational use.

In the validity process of the test, three types of measurements were provided: Content, criteria, and structure validity. The results from the conventional item analysis and differential item function analysis showed that the test had minimum bias for gender criterion (a total of 8 items for all the subtests) and minimum accepted level for item discrimination. Correlation of the test results with TELD (*Turkish Adaptation of the Test of Early Language Development*) and Wechsler Intelligence Scale for Children (WISC-R) was checked for criterion or prediction validity. Lastly, for construct validity, the test results' relation with the chronological age and subtests was checked, the relation among the composite scores was analysed, and analyses were performed for the factor analysis to separate sub-groups of the test. Overall the results revealed that the test was a statistically valid instrument (Güven, 2014).

Data Collection

After obtaining the necessary permission for the implementation of this study from the Turkish Ministry of National Education, permissions were also received from the parents of the participating students. In a quiet room of the school, having a table and two chairs, all the assessments were conducted individually with the students who volunteered to participate in the study and whose parents' had provided permission. The students were taken from their classes for the implementation of the study and returned to their classes by the researcher following the completion of their study process. Prior to the study beginning, a short conversation was held with each student and information regarding the study was provided to her/him so that s/he could become familiar with the environment as well as the researcher.

The data collection in relation to the reading skills, which is the first stage of the study, was conducted in March 2017 and took approximately 7 to 12 minutes. The students' readings and their answers to the reading comprehension questions were recorded with a voice recorder. After the data on reading skills were collected, their reading speed and reading comprehension scores were calculated by listening to the voice recordings. An independent second-rater recalculated the mean reading speed and reading comprehension scores of 30% of the students (38 students) and inter-rater reliability was calculated. Kendall's Coefficient of Concordance (W), which is a non-parametric statistical technique, was used in this calculation (Yelboğa and Tavşancıl, 2010). The inter-rater reliability was determined to be .97 and p = .00 for the mean reading speed, and .96 and p = .00 for the mean reading comprehension.

The data collection in relation to phonological processing and language skills, which is the second stage of the study, was conducted in April and May 2017. First, the phonological processing skills of each student were assessed. The assessment of phonological awareness skills took 10 to 12 minutes and the assessment of rapid automatized naming was 4 minutes while the assessment of phonological short-term memory took 3 minutes. The phonological processing skills were assessed in the same session successively. During the breaks, short conversations were held with the students. During the assessments, voice recordings were taken. An independent second-rater listened to 30% of the voice recordings and 16 students were re-scored

for the scores obtained from the phonological awareness assessment and Non-word Repetition List. Kendall's Coefficient of Concordance (W), which is a non-parametric statistical technique, was utilised in this calculation. The inter-rater reliability was calculated as .94 and p = .00 for phonological awareness, .93 and p = .00 for the Non-word Repetition List. On the next day following the assessment of students' phonological processing skills, their oral language skills were assessed. The oral language skills were assessed in one session which lasted 30 to 45 minutes.

Data Analysis

The "Statistical Package for Social Sciences (SPSS) 24" was used for the data analysis of this study. In the interpretation of the findings, .05 was taken as the significance level. As the results obtained from the groups did not demonstrate a normal distribution, the Kruskall Wallis H-Test was utilised to determine whether the groups' scores regarding phonological processing and oral language skills differed and between which groups the difference occurred.

RESULTS

In this part of the study, which aimed to examine the language skills of students with and without reading difficulties comparatively, the findings obtained as a result of the data analysis are presented under the headings related to the study variables.

Findings of Phonological Processing Skills

The findings related to phonological processing skills were studied according to the following headings: Phonological awareness, RAN and phonological STM assessments.

Findings of phonological awareness skills

The results of the Kruskal Wallis H-Test, which was performed to compare the groups' scores obtained from the phonological awareness procedures, are provided in Table 2.

Table 2. *Kruskal Wallis H-Test results for the comparison of the groups' phonological awareness scores*

Variable	Group	N	$\overline{X}$	SD	Mean Rank	d.f.	X^2	*p*	Meaningful Difference
Identifying the first sounds in words	1	9	6.33	2.29	21.28	3	4.27	.23	-
	2	10	6.90	2.13	29.40				
	3	15	6.46	2.03	23.40				
	4	18	7.44	1.46	30.08				
Identifying the final sounds in words	1	9	7.44	.88	21.28	3	4.27	.23	-
	2	10	7.20	1.32	29.40				
	3	15	6.67	1.88	23.40				
	4	18	7.67	.77	30.08				
Combining sounds	1	9	6.00	1.41	18.72	3	4.88	.00*	3-4
	2	10	7.30	1.06	32.55				
	3	15	5.93	1.49	18.43				
	4	18	7.39	.98	33.75				

*p<.05

Note: Group 1: With difficulties in reading comprehension and reading fluency, Group 2: With difficulties in reading comprehension, but without any difficulty in reading fluency, Group 3: Without any difficulty in reading comprehension, but with difficulties in reading fluency, Group 4: Without any reading difficulty.

Table 2. *Kruskal Wallis H-Test results for the comparison of the groups' phonological awareness scores (Table 2 cont.)*

Variable	Group	n	$\overline{X}$	SD	Mean Rank	d.f.	X^2	*p*	Meaningful Difference
Separating the word into sounds	1	9	5.78	2.05	25.72	3	16.33	.00*	3-4
	2	10	6.10	2.18	28.70				
	3	15	3.67	2.53	14.77				
	4	18	7.22	.94	35.44				
Discarding sounds from words	1	9	6.22	1.86	17.11	3	26.12	.00*	1-2, 1-4, 2-3, 3-4
	2	10	8.00	-	37.50				
	3	15	5.93	1.87	15.70				
	4	18	7.64	.38	34.08				
Finding a word that starts with the given sounds	1	9	3.33	.87	17.72	3	13.42	.00*	1-2, 1-3
	2	10	4.00	-	29.50				
	3	15	3.87	.35	26.17				
	4	18	4.00	-	29.50				
Finding a word that ends with the given sounds	1	9	1.56	1.13	12.89	3	21.68	.00*	1-2, 1-4, 2-3, 3-4
	2	10	3.60	.52	35.20				
	3	15	2.07	1.39	18.87				
	4	18	3.50	.86	34.83				
Changing sounds	1	9	2.33	.87	27.33	3	7.85	.04*	3-4
	2	10	2.40	.97	29.45				
	3	15	1.80	.94	18.33				
	4	18	2.61	.50	31.25				
Total phonological awareness	1	9	39.00	5.10	16.56	3	26.32	.00*	1-4, 2-3, 3-4
	2	10	45.50	4.35	31.90				
	3	15	36.53	7.76	14.37				
	4	18	47.72	3.10	38.58				

*p<.05

Note: Group 1: With difficulties in reading comprehension and reading fluency, Group 2: With difficulties in reading comprehension, but without any difficulty in reading fluency, Group 3: Without any difficulty in reading comprehension, but with difficulties in reading fluency, Group 4: Without any reading difficulty.

The findings demonstrated that there were meaningful differences among the groups for scores obtained from the phonological awareness procedures other than identifying the first and final sounds in words and total sound identifying. The significant difference between groups 3 and 4 in the skills of combining sounds, separating the word into sounds and changing sounds was in favour of group 4 without difficulties in reading fluency. Group 1 was less successful at the skill of finding a word that starts with the given sounds than groups 2 and 3. It was recognised that the skills that separated all the groups with or without difficulties in reading fluency were the skills of discarding sounds from words and finding a word that ends with the given sounds. At these skills, groups 2 and 4 without difficulties in reading fluency were more successful than groups 1 and 3 with difficulties in reading fluency. In the total score of phonological

awareness, group 4 without difficulties in reading fluency was statistically significant in regards to being more successful than group 1 with difficulties in reading fluency. Although the mean score of group 2 without difficulties in reading fluency was higher than that of group 1 with difficulties in reading fluency, the score difference between the two groups was not statistically significant.

Findings on rapid automatized naming skills

The results of the Kruskal Wallis H-Test performed to compare the rapid automatized naming times of the groups are provided in Table 3.

Table 3. *Kruskal Wallis H-Test results for the comparison of the groups' rapid automatized naming time*

Variable	Group	n	$\overline{X}$	SD	Mean Rank	d.f.	X^2	*p*	Meaningful Difference
Naming Objects	1	9	55.22	11.10	38.06	3	23.89	.00*	1-4, 3-4
	2	10	43.00	3.63	23.00				
	3	15	53.93	11.42	36.47				
	4	18	40.94	4.39	14.36				
Naming Colours	1	9	54.11	10.65	37.72	3	20.12	.00*	1-4, 3-4
	2	10	42.50	6.62	24.15				
	3	15	51.07	10.46	35.00				
	4	18	39.51	5.28	15.11				
Naming Letters	1	9	34.55	6.00	44.06	3	27.67	.00*	1-2, 1-4, 3-4
	2	10	22.20	5.57	19.95				
	3	15	28.33	5.14	33.90				
	4	18	20.44	3.12	15.19				
Naming Numbers	1	9	32.22	5.00	38.78	3	27.78	.00*	1-4, 2-3, 3-4
	2	10	25.30	5.16	20.95				
	3	15	32.07	4.25	37.77				
	4	18	22.89	3.20	14.06				

*p<.05

Note: Group 1: With difficulties in reading comprehension and reading fluency, Group 2: With difficulties in reading comprehension, but without any difficulty in reading fluency, Group 3: Without any difficulty in reading comprehension, but with difficulties in reading fluency, Group 4: Without any reading difficulty.

When Table 3 is examined; it can be recognised that group 4 without reading difficulties completed the parts for naming objects, colours, letters, and numbers in a significantly shorter time than groups 1 and 3 with difficulties in reading fluency. Group 2 without difficulties in reading fluency completed the part for naming letters in a significantly shorter time than group 1 with difficulties in reading fluency and the part for naming numbers, did so in a meaningfully shorter time than group 3 with difficulties in reading fluency.

Findings on phonological STM performances

The results of the Kruskal Wallis H-Test performed to compare the phonological STM performances of the groups are shown in Table 4.

Table 4. *Kruskal Wallis H-Test results for the comparison of the groups' phonological STM scores*

Variable	Group	n	$\overline{X}$	SD	Mean Rank	d.f.	X^2	*p*	Meaningful Difference
Number of phonemes produced correctly	1	9	189.78	7.84	10.94	3	17.38	.00*	1-2, 1-4
	2	10	199.00	8.32	34.40				
	3	15	196.00	4.01	22.13				
	4	18	200.00	4.17	33.53				
Phoneme changing	1	9	18.67	6.80	42.28	3	16.73	.00*	1-2, 1-4
	2	10	9.70	5.08	18.90				
	3	15	12.93	3.83	30.13				
	4	18	9.61	3.81	19.81				

*p<.05

Note: Group 1: With difficulties in reading comprehension and reading fluency, Group 2: With difficulties in reading comprehension, but without any difficulty in reading fluency, Group 3: Without any difficulty in reading comprehension, but with difficulties in reading fluency, Group 4: Without any reading difficulty.

When Table 4 is analysed, it can be recognised that groups 2 and 4 without difficulties in reading fluency produced more phonemes correctly and made less number of phoneme changing errors than group 1 with difficulties in reading fluency. Similarly, when the mean scores and mean ranks were examined, it was revealed that groups 2 and 4 without difficulties in reading fluency produced more phonemes correctly and produced fewer number of phoneme changing errors than group 3 with difficulties in reading fluency, but the difference among the groups was not statistically significant.

Findings of Oral Language Skills

The findings related to the students' oral language skills were studied according to the following headings regarding vocabulary and grammar.

Findings on vocabulary

Vocabulary was assessed with the subtests of picture-vocabulary, relational vocabulary and word description. The results of the Kruskal Wallis H-Test performed to compare the groups' vocabulary scores are provided in Table 5.

Table 5. *Kruskal Wallis H-Test results for the comparison of the groups' vocabulary*

Variable	Group	N	$\overline{X}$	SD	Mean Rank	d.f.	X^2	*p*	Meaningful Difference
Picture-vocabulary	1	9	26.00	2.83	9.78	3	31.25	.00*	1-3, 1-4, 2-3, 2-4
	2	10	27.40	2.60	13.90				
	3	15	31.07	1.49	30.33				
	4	18	32.00	.84	38.67				
Relational vocabulary	1	9	17.00	6.40	10.39	3	33.24	.00*	1-3, 1-4, 2-3, 2-4
	2	10	19.00	5.33	11.00				
	3	15	29.40	1.55	34.00				
	4	18	29.89	1.60	36.92				

*p<.05

Note: Group 1: With difficulties in reading comprehension and reading fluency, Group 2: With difficulties in reading comprehension, but without any difficulty in reading fluency, Group 3: Without any difficulty in reading comprehension, but with difficulties in reading fluency, Group 4: Without any reading difficulty.

Table 5. *Kruskal Wallis H-Test results for the comparison of the groups' vocabulary (Table 5 cont.)*

Variable	Group	n	$\overline{X}$	SD	Mean Rank	d.f.	X^2	*p*	Meaningful Difference
Word description	1	9	21.78	4.47	9.67	3	36.78	.00*	1-3, 1-4, 2-3, 2-4
	2	10	23.10	4.58	10.35				
	3	15	32.93	1.49	33.07				
	4	18	33.78	1.55	38.42				

*p<.05

Note: Group 1: With difficulties in reading comprehension and reading fluency, Group 2: With difficulties in reading comprehension, but without any difficulty in reading fluency, Group 3: Without any difficulty in reading comprehension, but with difficulties in reading fluency, Group 4: Without any reading difficulty.

When Table 5 is analysed, it can be recognised that the groups' picture-vocabulary, relational vocabulary, and word description scores differ significantly. In all the sub-dimensions of vocabulary, groups 3 and 4 without difficulties in reading comprehension were more successful than groups 1 and 2 with difficulties in reading comprehension.

Findings on grammar

In this study, grammar skills were approached in two dimensions: syntax and morphology.

Findings on syntax

The results of the Kruskal Wallis H-Test, which was performed with the aim of comparing the scores from the sentence comprehension and sentence repetition subtests applied to assess the groups' syntax skills, are provided in Table 6.

Table 6. *Kruskal Wallis H-Test results for the comparison of the groups' syntax skills scores*

Variable	Group	n	$\overline{X}$	SD	Mean Rank	d.f.	X^2	*p*	Meaningful Difference
Sentence comprehension	1	9	22.33	1.66	8.00	3	32.32	.00*	1-3, 1-4, 2-3, 2-4
	2	10	23.90	2.02	14.45				
	3	15	27.27	.80	33.43				
	4	18	27.50	.79	36.67				
Sentence repetition	1	9	20.00	2.70	7.61	3	36.95	.00*	1-3, 1-4, 2-3, 2-4
	2	10	22.80	4.99	12.50				
	3	15	31.60	2.32	32.33				
	4	18	33.11	1.97	38.86				

*p<.05

Note: Group 1: With difficulties in reading comprehension and reading fluency, Group 2: With difficulties in reading comprehension, but without any difficulty in reading fluency, Group 3: Without any difficulty in reading comprehension, but with difficulties in reading fluency, Group 4: Without any reading difficulty.

When Table 6 is analysed, it can be recognised that the groups' scores in relation to their sentence comprehension and sentence repetition skills differ. In syntax skills, groups 3 and 4 without difficulties in reading comprehension were more successful than groups 1 and 2 with difficulties in reading comprehension.

Findings on morphology

Their morphological knowledge was assessed through a morphological completion task and the results of the Kruskal Wallis H-Test, which was applied to compare the scores regarding the morphological completion subtest, are provided in Table 7.

Table 7. *Kruskal Wallis H-Test results for the comparison of the groups' morphological completion scores*

Variable	Group	n	$\overline{X}$	SD	Mean Rank	d.f.	X^2	*p*	Meaningful Difference
Morphological completion	1	9	25.89	2.37	8.11	3	32.44	.00*	1-3, 1-4, 2-3, 2-4
	2	10	28.40	3.81	14.05				
	3	15	34.20	1.42	33.50				
	4	18	34.55	.86	36.78				

*p<.05

Note: Group 1: With difficulties in reading comprehension and reading fluency, Group 2: With difficulties in reading comprehension, but without any difficulty in reading fluency, Group 3: Without any difficulty in reading comprehension, but with difficulties in reading fluency, Group 4: Without any reading difficulty.

When Table 7 is examined, it can be recognised that the groups' morphological completion scores differ. In the morphological completion, groups 3 and 4 without difficulties in reading comprehension were more successful than groups 1 and 2 with difficulties in reading comprehension.

DISCUSSION and CONCLUSION

In this study, the aim was to examine the language skills of students with reading difficulties in comparison to their peers without reading difficulties. For this purpose, the students were first divided into two groups according to their reading comprehension performance, for example, those with and those without difficulties in reading comprehension. Then, these two groups were divided in two again according to their reading fluency performance, and four groups were created. When the groups were examined, the first group consisted of students who had difficulties in reading comprehension and reading fluency, the second group consisted of students who had difficulties in reading comprehension but not in reading fluency, and the third group consisted of students who had no difficulty in reading comprehension, but had difficulties in reading fluency, while the fourth group consisted of students who had no reading difficulties.

In the literature, it is stated that reading fluency and reading comprehension are two important dimensions of reading and that phonological processing skills are related to reading fluency while oral language skills are related to reading comprehension. Therefore, in this study, language skills were studied in two dimensions, which included phonological processing and oral language skills.

Phonological Processing Skills

The first phonological processing skill examined in this study was phonological awareness. The findings revealed that the total phonological awareness score separated the students with and without difficulties in reading fluency. The students with difficulties in reading fluency had difficulties in their phonological awareness skills and did not earn as high of scores as their peers who could read fluently. Another remarkable finding in this study was that phonological awareness skills could not distinguish reading comprehension difficulties. As it is stated in the literature, this situation indicates that phonological awareness does not affect reading comprehension (Cain, Oakhill and Bryant, 2000); however, it affects reading fluency (Katzir et al., 2010). This finding suggests that phonological awareness should also be supported in literacy intervention programs for students with reading difficulties.

When phonological awareness skills are considered one-by-one, it can be recognised that all the students earned high scores in the skills of identifying the first and final sounds in words, and the performance of the students with and without RD does not differ in these skills. This finding caused us to consider that the skills of identifying sounds were easy for the students. Although it was recognised that some of the groups were different in combining sounds, separating the words into sounds, finding a word that starts with the given sound and changing sounds, the skills that can separate all of the groups were the skills of *discarding sounds from words and finding a word that ends with the given sound.* This may be a result of phonological awareness skills developing with reading acquisition and being related to reading (Acarlar, Ege and Turan, 2002).

It is known that students with advanced phonological awareness can more easily establish the letter-sound relation and can read words accurately by utilising phonological analysis (Catts and Hogan, 2003). However, phonological awareness skills' effect on identifying individual differences in reading achievement for languages with a transparent spelling system such as Turkish is reported to disappear after learning to read (Leppänen, Niemi, Aunola and Nurmi, 2006). This situation is explained by the fact that letter-sound harmony in languages with a transparent spelling system is one-to-one, students learn all of the letter sounds within the early period, and they are normally able to start reading fluently by establishing letter-sound relationships quickly and easily (Hulme and Snowling, 2009; Öney and Durgunoğlu, 1997). Contrary to information in the literature, this study's findings revealed that the total phonological awareness score is an important evaluation tool in distinguishing reading difficulties, such as in languages which are non-transparent even at the 3rd grade level (Caravolas, Volin and Hulme, 2005; Furnes and Samuelson, 2009; Nikolopoulos, Goulandris, Hulme and Snowling, 2006).

Another phonological processing skill assessed in this study was rapid automatized naming. The results revealed that students with difficulties in reading fluency – even if they were successful in reading comprehension – failed at rapid automatized naming. The previous studies show that students with difficulties in reading fluency are slower in the tasks of object, colour, letter, and number naming than their peers with no difficulties in reading (Abolafya, 2008; Bakır, 2007; Georgiou, Parrila and Papadopoulos, 2008).

Although it is known that readers who can read fluently produce a higher number of rapid automatized naming than those with reading difficulties; cognitive processes under rapid automatized naming skills and how this skill is related to reading are not fully understood. Some researchers argue that the procedures used during reading and naming are similar to each other. According to these researchers, in both rapid automatized naming and reading, certain names need to be retrieved, processed and produced in order (Georgiou et al., 2013). This enables readers to recognise words automatically, especially when they are successful in quickly retrieving phonological information when reading aloud.

Longitudinal studies have revealed that rapid automatized naming skills during the preschool period predict reading success among school-age children (Furnes and Samuelsson, 2011; Høien-Tengesdal and Tøannessen, 2011) as well as distinguish the reading difficulties of these children (Bakır, 2007; Abolafya, 2008; Demirtaş, 2017). It is stated that rapid automatized naming is a good measure for early identification of students with reading difficulties, especially in languages such as Turkish where the letter-sound relation is transparent (Georgiou et al., 2008; Georgiou, Parrila, Manolitsis, and Kirby, 2011).

The last phonological processing skill investigated in this study was phonological STM. This skill was assessed with non-word repetition and the number of phonemes produced correctly during the repetition task, were compared with the mistakes from phoneme changing. The groups without difficulty in reading fluency produced more phonemes correctly than the groups with difficulties in reading fluency. Similarly, the groups with difficulties in reading fluency made more mistakes in phoneme changing than the groups without difficulties in reading fluency. However, the most significant differences in both the number of phonemes produced correctly and the mistakes in phoneme changing were found between group 1 with difficulties in reading comprehension and reading fluency, and groups 2 and 4 without difficulties in reading fluency.

Although the phonological STM performance of group 3 that have no difficulty in reading comprehension but have difficulties in reading fluency was lower than the groups with fluent reading skills, the performance differences were not statistically significant.

The previous studies with Turkish-speaking students (Aksoy-Tercan et al., 2012; Kesikçi and Amado, 2005) indicate that students with difficulties in reading fluency are not as successful in their phonological STM as their peers without difficulties in reading fluency and also phonological short-term memory is correlated with reading fluency. Phonological STM has a facilitating effect on keeping the sound of each letter in mind while reading words as well as on forming words by combining sounds (Høien-Tengesdal and Tønnessen, 2011; Nithart et al., 2011; Shapiro et al., 2013). Students with limited phonological STM capacity have difficulties in reading fluency and this can be explained by the fact that they forget sounds and syllables and read words incorrectly because they have difficulty in remembering what they read during reading (Aksoy-Tercan et al., 2012).

In summary, the groups with difficulties in reading fluency were not as successful in phonological awareness, rapid automatized naming, and phonological STM skills as their peers without difficulties in reading fluency. These findings made us consider that the groups that have advanced phonological processing skills can read fluently by analysing words fast and accurately due to these skills.

Oral Language Skills

In this study, oral language skills were examined on the basis of vocabulary and grammar. Vocabulary was assessed in three ways: picture-vocabulary, relational vocabulary, and word description. In all the assessments, students who had difficulties in reading comprehension – independently from reading fluency – were unsuccessful compared to their peers without difficulties in reading comprehension. The previous studies also reveal that students with difficulties in reading comprehension are less successful at picture-vocabulary (Adlof and Catts, 2015; Duff, Reen, Plunkett and Nation, 2015; Nation et al., 2010), relational vocabulary (Nation et al., 2004), and word description (Nation et al., 2004; Nation et al., 2010; Nation and Snowling, 1998; Ricketts et al., 2007) than their peers without difficulties in reading comprehension.

Students who have no difficulty in reading comprehension are able to better understand what they read through their advanced vocabulary and can improve their skills by learning new words through reading (Ritketts et al., 2007; Verhoeven and Perfetti, 2011; Verhoeven and Leeuwe, 2008). On the other hand, students with poor vocabulary and difficulties in reading comprehension cannot draw inferences by using context clues during reading and cannot learn new words through reading, because of their limited skills (Cain, Oakhill and Elbro 2003; Nation et al., 2010; Verhoeven and Perfetti, 2011). For this reason, it is important to identify students with limited vocabulary and teach them independent vocabulary learning strategies as early as possible. By doing this the difference between these students and their peers in vocabulary and reading comprehension should not become too great and ultimately their language and reading performances will improve accordingly.

Another variable in this study was grammar, which was assessed through the fields of syntax and morphology. Syntax was examined with sentence comprehension and sentence repetition while morphological knowledge was evaluated through morphological completion tasks.

In the assessment of sentence comprehension and sentence repetition, students with difficulties in reading comprehension were not as successful as their peers without difficulties in reading comprehension. These findings are similar to those of studies with students whose mother tongue is English and who also experience reading difficulties (Adlof and Catts, 2015; Nation et al., 2004; Tong et al., 2013).

The students with advanced syntax skills can reach the meaning of words they do not know by using context clues during reading, can easily combine the information at the level of sentence and text, and can also correct their comprehension mistakes by monitoring whether or not they

understand what they read (Cain, 2007; Nation and Snowling, 2000; Oakhill et al., 2003). For students with difficulties in reading comprehension and syntax skills, the opposite is true.

Students with difficulties in reading comprehension were also not as successful in their morphological completion assessment as their peers without difficulties in reading comprehension. Within a limited number of studies in the literature it is demonstrated that students with difficulties in reading comprehension are not as successful in morphology as their peers with no difficulties in reading comprehension (Adlof and Catts, 2015; Nation et al., 2004).

Similar to syntax skills, students who are successful at morphological skills can better distinguish morphological borders, can read by distinguishing between the suffixes and roots of words easily and can reach the meaning of words (Bowers et al., 2010; Deacon and Kirby, 2004). For this reason, it is thought that identifying and supporting the grammatical structures that are not found in students with difficulties in reading comprehension will ultimately lead to supporting their reading comprehension skills.

In keeping with findings from past literature, this current study's findings indicated that students who had difficulties in reading comprehension also had difficulties in oral language skills. In addition, students who had poor oral language skills during school-age also had difficulties in reading comprehension. As a result, it appears there is a two-way relationship between oral language skills and reading comprehension: Difficulties in oral language skills affect reading comprehension while at the same time difficulties in reading comprehension affect oral language skills. Students who have difficulties in reading comprehension read less and prefer simple texts when they read. These students, who read less and are exposed to simple texts, cannot easily improve their language skills through reading (Catts and Kamhi, 2005; Nation et al., 2010). Importantly, students who have difficulties in reading comprehension and whose language skills are behind that of their peers can ultimately improve their language and reading comprehension skills through intervention (Bowers et al., 2010; Gilliam and Gilliam, 2016; Solís, Scammacca, Barth and Roberts, 2017). For these reasons, assessment of language skills and improvement in areas found to be difficult for both preschool and school-age students are important for the support of their oral language and reading comprehension skills development.

To summarise, first of all, in this study students' reading skills were assessed, their difficulties in reading were determined, and these reading difficulties were examined in three groups. These groups were comprised of students a) with difficulties in reading comprehension and reading fluency, b) with difficulties in reading comprehension, but without any difficulty in reading fluency, or c) without any difficulty in reading comprehension, but with difficulties in reading fluency. In the second stage of the study, phonological processing and oral language skills of the groups with RD were examined comparatively among themselves as well as with the group without RD. The findings revealed that students with difficulties in reading fluency – independently from their reading comprehension achievements – also had difficulties in phonological processing skills, and students with difficulties in reading comprehension – independently from their reading fluency performances – also had difficulties in oral language skills. This study is the first study – within the scope of the available resources – in which reading difficulties of Turkish-speaking students are comprehensively grouped and the reading-related phonological processing and oral language skills of the groups were assessed. The findings of this study are thought to be important in terms of revealing the language characteristics of students with different types of RD. In prospective studies, it is recommended that the same study be repeated but at different grade levels and with more participants, the relation between language and reading skills be examined longitudinally, and the language interventions' effects on literacy and the literacy interventions' effect on language for students with RD be studied.

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