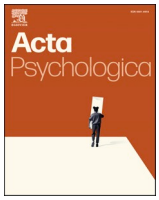
Acta Psychologica 265 (2026) 106711



Contents lists available at ScienceDirect

Acta Psychologica

journal homepage: www.elsevier.com/locate/actpsy



The effect of reading fluency strategies on improving primary school students' reading attitudes and their role in reducing reading anxiety☆

Emrah Kultas

Van Yuzuncu Yil University, Faculty of Education, Van, Turkey

ARTICLE INFO

Keywords:
Reading fluency
Reading attitude
Reading anxiety
Primary school students

ABSTRACT

Low reading attitudes may lead to distant behavior towards reading. Students who are reluctant to read and distance themselves from reading may also develop reading anxiety. It is possible to increase students' attitudes towards reading and reduce reading anxiety by making reading enjoyable. Reading fluency strategies can be effective in this sense. The main purpose of the present study is to examine the effect of reading fluency strategies on increasing reading attitudes and decreasing reading anxiety in primary school students. The quasi-experimental design model, one of the quantitative research methods, was preferred in the current study. The randomly determined research sample consists of 50 students in the experimental ($n = 25$) and control groups ($n = 25$). The age group of the research sample is 9. It was concluded that the reading fluency strategies increased the reading attitude level of the students. Reading fluency strategies are determinant in reducing reading anxiety.

1. Introduction

Reading skills are very important in educational life. Because reading skill affects and supports all learning activities (Dwie Agustiani, 2017). In addition, as Swalander and Taube (2007) stated, having good reading skills is also the key to success in school. What makes reading skills important is not only that it is a measure of success. Reading is also known as an activity with different purposes (Sukarni, 2019). Reading has multiple purposes such as getting information, criticizing, learning, and reading fast (Grabe & Stoller, 2020). The listed purposes show the importance of reading in different dimensions. In addition, increasing reading skills, enjoying reading, and encouraging the reader to enjoy reading are also important purposes of reading (Sainsbury, 2004). In particular, reading attitude, which is an important concept in the way of getting pleasure and enjoyment from reading, can be effective in increasing participation in the reading process. When participation in the reading process increases, vocabulary develops and the cognitive development process of reading comprehension begins. In this framework, fluency reading skills can increase the level of reading comprehension skills. Because there is evidence that there is a developmental relationship between reading comprehension skills and basic reading skills (word recognition, vocabulary, fluency) (Padeliadu & Antoniou, 2014).Children who understand what they read also develop a more positive attitude towards reading. Thus, reading attitude combined with reading ability leads to success (Martinez et al., 2008; Stanovich, 1986). In addition, the effect of reading anxiety on increasing participation in the reading process and improving reading attitude should also be taken into consideration. Because reducing the level of reading anxiety can increase reading attitude (Torudom & Taylor, 2017). The detailed presentation of reading attitude, fluency reading, and reading anxiety, which are important in developing reading skills, is important in the context of the information explained. In this study, the effects of reading fluency on primary school students' reading attitudes and reading anxiety are examined within the framework of Automaticity Theory (LaBerge & Samuels, 1974).

1.1. Reading attitude

Reading attitude is defined as a feeling system about reading that causes the learner to approach or avoid reading (Alexander & Filler, 1976). In addition, reading attitude can also be defined as the tendency to react positively or negatively to reading. In this process, students are likely to have a positive attitude towards subjects they find interesting and a negative attitude towards subjects they find uninteresting (Harris & Sipay, 1990). Of course, it is possible to increase the definitions of reading attitude. McKenna et al. (2012) state that the definitions of reading attitude vary and emphasize that the definitions generally focus on children's emotional reactions towards reading. In addition, it is as

☆ Author received no financial support for the research, authorship, and/or publication of this article.
E-mail address: emrahkultas@yyu.edu.tr.

https://doi.org/10.1016/j.actpsy.2026.106711
Received 3 November 2025; Received in revised form 17 March 2026; Accepted 17 March 2026
0001-6918/© 2026 Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

important to explain how to develop a reading attitude as it is to know what a reading attitude is and what it means. According to Johnson (1981), to develop a reading attitude, reading skills should be increased and improved. Reading attitude is also low in students with poor reading skills. Indeed, Wigfield and Asher (1984) express similar ideas. On the other hand, Mathewson (2004) states that reading attitude also increases reading skills. In other words, it is possible to say that there is a dynamic relationship between reading attitude and reading skills. Repeated reading activities to improve reading attitude can contribute to reading success. Kim (2016) also emphasizes the significant relationship between reading activities, strategies, and reading attitude. He points out that reading strategies and activities should be used to improve reading attitudes. Similarly, Yamashita (2013) emphasizes that regular reading activities can positively affect reading attitude and motivation. A positive attitude towards reading also supports reading success.

Developing a reading attitude is not limited to reading activities. In McKenna's (1994) reading attitude model, it is pointed out that in addition to actual reading experiences, the influence of parents and teachers is also effective. Swalander and Taube's (2007) study also draws attention to the fact that the abundance of reading materials and reading activities in the family are decisive in increasing reading attitude. Likewise, the role and importance of the teacher in reading attitude are also emphasized. Dwie Agustiani (2017) states that teachers should design appropriate learning materials and include fun reading activities to develop reading attitudes in students. Harris and Sipay's (1990) views are also valuable in this sense. According to them, reading attitude is influenced by the attitudes and behaviors of parents, peers, and teachers as well as children's self-perceptions, reading ability levels, and interests. It is possible to say that reading attitude increases with the activities in the reading process, the strategies applied, and the participation of teachers and parents.

1.2. Reading anxiety

Reading anxiety is a specific, situational phobia of the act of reading with physical and cognitive responses (Zbornik, 2001). Reading anxiety is also defined as an acute fear or anxiety about situations that require the processing of textual information (Ramirez et al., 2018). Anxiety is an emotion that disrupts the reading and learning process. The intensification of anxiety weakens children's skills and attention abilities (Jalongo & Hirsh, 2010). Therefore, anxiety manifests itself with some symptoms. Physical reactions to anxiety include adrenaline release (fight or flight reaction), sweating, trembling, feeling faint, heart palpitations, rapid breathing, 'butterflies' in the stomach, tension headache, abdominal pain and even vomiting. Cognitive responses to anxiety include an overwhelming sense of dread, impaired ability to pay attention, feelings of helplessness (Jalongo & Hirsh, 2010) low self-esteem, and expectations of humiliation. These physical and cognitive responses also interact. The child's thinking 'My hands are shaking' or 'I know my face is blushing' can be considered within the scope of reading anxiety. When the child is overwhelmed with emotions and worries (e.g., 'What if other children laugh at me?'), it leaves little cognitive reserve to cope with the task of decoding and understanding the pressure (Zbornik, 2001). As Lynch (2000) suggests, it is not unlikely that even reading, especially reading aloud, can be a source of anxiety for children. Moreover, if children feel both low control and high value for reading, they are likely to experience reading anxiety. For example, a poor reader who believes that being good at reading is important and that reading ability is immutable is likely to develop reading anxiety. However, a student who does not care about his/her reading success and thinks that his/her reading skill is unchangeable is unlikely to experience this (Barber et al., 2022). Therefore, it is possible to say that reading anxiety is also affected by various factors. The reasons that trigger reading anxiety listed by Shboul et al. (2013) are important in this respect (Table 1).

Table 1
Sources of reading anxiety.

Reading anxiety causes	Indicators
Text features	Unknown vocabulary
	Unfamiliar topic
	Unfamiliar culture
Personal factors	Afraid of making errors
	Worry about reading effects

The ways of coping with reading anxiety are as important as what anxiety especially reading anxiety is and what symptoms it shows. According to Zbornik (2001), both teachers and parents have important duties to reduce children's reading anxiety. If children give up quickly, it is necessary to try to arouse curiosity by identifying the child's interests and questions, encouraging reading efforts, and emphasizing the usefulness of reading. If children refuse to read, reading tasks should be structured in such a way that children can succeed. For this purpose, activities that relate to reading for pleasure can be planned. In addition, positive evaluations by the teacher can reduce anxiety. It is necessary to create a positive emotional climate in the classroom (Amsterlaw et al., 2009). Similarly, by working together and communicating with each other, new ideas can be tried, one's reading skills can be improved, and tension and anxiety can be reduced (Huang, 2012). Using various reading strategies in the classroom is also very effective in reducing reading anxiety (Lien, 2011; Marashi & Rahmati, 2017). In addition, children can be provided with opportunities to choose and discuss topics with someone they value and respect. And if children are afraid of performing reading tasks independently, different measures can be taken. In this context, the difficulty should be gradually increased starting from simple level readings. It is possible to increase children's self-confidence by pairing them with peers or teachers. The issues listed by Zbornik (2001) are important in dealing with reading anxiety. In particular, the points mentioned in the context of teachers and classroom activities are important.

1.3. Reading fluency

It is possible to explain fluency reading better by associating it with fluency speaking. Because there are similarities between fluency speech and fluency reading. Just as in fluency speech, accuracy, appropriate speed, and appropriate expression are expected in fluency reading. In fluency speech, people should speak with appropriate expressions and emphasize certain points. The volume should sometimes be raised and sometimes lowered. The intonation needs to be adjusted. Fluency reading is exactly like this (Rasinski, 2004). In this direction, it is possible to interpret fluency reading as a 'reading activity done as if speaking'. In fluency reading, readers read effortlessly because they recognize and read the words correctly (Cunningham & Stanovich, 1998). It is not enough for readers to read the words in the text correctly; they also need to read the words automatically (Rasinski, 2012). These issues constitute some elements of fluency reading. Fluency reading also includes elements such as the accuracy of the words in the text or correct decoding, automaticity, and prosody (Rasinski, 2004). Prosody in fluency reading includes rhythm, rise, fall, emphasis, and pauses during reading (Hirschberg, 2002). If automaticity is the link between fluency and word recognition, prosody completes that bridge by connecting fluency to comprehension (Rasinski, 2012). Students who reach a certain level of maturity in terms of vocabulary, automaticity, accuracy, and prosody in fluency reading are now likely to develop reading comprehension skills (Schwanenflugel et al., 2004). Because not being able to comprehend what is read is caused by the difficulty in word recognition. Therefore, word recognition is an important element of reading fluency (Rasinski, 2012). In such a scenario, if reading fluency is weakened, reading comprehension skills are also negatively affected (Rasinski et al., 2005). Because reading fluency is the source of reading

comprehension. Therefore, as presented by Rasinski (2012), there is a significant relationship between word recognition, accuracy, automaticity, and prosody, that is, fluency reading and reading comprehension (Fig. 1).

According to Hudson et al. (2005), fluency reading has an important effect on the development of reading proficiency. There are many ways to develop fluency reading skills. According to Rasinski (2012), it is possible to do extensive and deep reading with teacher guidance. Extensive reading is already a part of classroom reading education. It includes basic reading series and stories, and ensuring that real materials are read extensively. Discussions and strategies aimed at deepening what is read should be resorted to. Deep or repeated readings are less integrated into the school curriculum. Having students read short informative passages repeatedly may be included in this scope. Deep or repeated readings involve students rehearsing a text (script, song, poem, speech, etc.) for a day or several days and finally performing the text in front of an audience.

To develop fluency reading skills, it is also necessary to use different fluency reading strategies (Cotter, 2012). When fluency reading strategies are used effectively, especially with teacher support and activities, the infrastructure for reading comprehension skills can be built. Teachers can develop fluency reading skills by using fluency reading strategies such as repeated reading, echo reading, paired reading, and poetry reading in the classroom (DeWaard, 2012; Kesik & Polat, 2023). In addition, it should be noted that the use of song lyrics, alternative text types, and various scenarios improve fluency reading skills (Rasinski et al., 2016). Scripts are at the forefront of the reading theater strategy. Similarly, Paige (2011) emphasizes that the class's choral reading improves fluency. This strategy allows students to be repeatedly exposed to a reading passage for a week. In this case, it is important to include fluency reading strategies in the activities to be carried out in the classroom. Teachers should determine who is not fluency. Then, they should decide what kind of education they will plan for the children in this context and present it to the readers (Hudson et al., 2005). Fluency reading strategies can also be included in these plans.

From a psychological perspective, this study is fundamentally based on Automaticity Theory (LaBerge & Samuels, 1974) and cognitive efficiency perspectives inherent in this theory. According to Automaticity Theory, as lower-level reading processes such as word recognition and decoding become automated, cognitive resources can be directed more efficiently to higher-level reading processes. Reducing cognitive load during reading is closely associated with lower anxiety levels and more positive affective responses to reading. Within this theoretical framework, reading fluency is considered not only a technical reading skill but also a fundamental psychological mechanism influencing students' reading attitudes and reading anxiety. From the perspective of Automaticity Theory, the development of reading fluency directly affects not only cognitive performance but also students' affective responses to reading. As lower-level reading processes become automatic, the cognitive load experienced during reading decreases, contributing to students perceiving reading as less challenging and more manageable. The reading process becoming more fluent and less effortful lowers students' anxiety levels towards reading and facilitates the development of more positive attitudes towards reading. In this context, reading attitude and reading anxiety can be considered two related affective constructs shaped through a common psychological mechanism via reading fluency.

Although various reading interventions targeting decoding, vocabulary, or reading comprehension may contribute to students' reading development, the present study focuses specifically on reading fluency because of its direct connection to affective reading outcomes. From an automaticity perspective, fluency-oriented interventions influence students' reading attitudes and reading anxiety by reducing cognitive load and increasing processing efficiency during reading. Therefore, reading fluency constitutes a particularly relevant entry point for examining changes in students' affective responses to reading.

Reading attitude is an important reading skill. It is understood that increasing participation in reading, developing fluency reading skills, and reducing reading anxiety levels are important in developing reading attitudes. First of all, teachers have important responsibilities in increasing the level of reading attitudes. Teachers should design appropriate reading materials to change students' negative attitudes against their positive attitudes towards reading. Similarly, they need to be more sensitive to creating fun reading activities and strategies (Dwie Agustiani, 2017). In addition, it is also important for teachers to use fluency reading strategies and activities in the classroom. Because there is a significant relationship between reading attitude and fluency reading. Students' reading attitudes can improve with fluent reading practices (Lee, 2014). Reading attitude is an important explanatory factor of fluency reading (Mihandoost, 2012). Therefore, fluency reading strategies and activities are valuable in this respect. With fluency reading, students' vocabulary, and correct and prosodic reading skills develop later. As Kim (2015) also said, reading comprehension skills also develop with fluency reading.

With fluency reading, students who understand what they read can enjoy and enjoy reading as an elements of their reading attitude. As their reading comprehension skills improve, reading anxiety begins to decrease (Yurianti, 2022) and reading attitudes also improve (Rasinski, 2012). In students who develop fluency reading skills and enjoy reading, the level of prejudice against reading may decrease. In other words, fluency reading activities that will increase the level of reading attitude can also reduce the level of reading anxiety. Indeed, Estrada-Madronero (2019) draws attention to this relationship and offers explanations that students' disinterest or distance from reading may decrease with fluency reading activities. She emphasizes that students' anxiety towards reading may disappear with fluency reading. Indeed, other studies reveal the existence of this relationship between fluency reading and reading anxiety (Katzir et al., 2018). Thus, fluency reading activities and strategies can increase reading attitudes on the one hand and reduce reading anxiety on the other. Therefore, fluency reading is very important. However, teachers have different duties in this process. According to Estrada-Madronero (2019), if teachers provide a supportive, warm, and friendly classroom environment where non-threatening and non-shameful reading activities are implemented, and non-intimidating

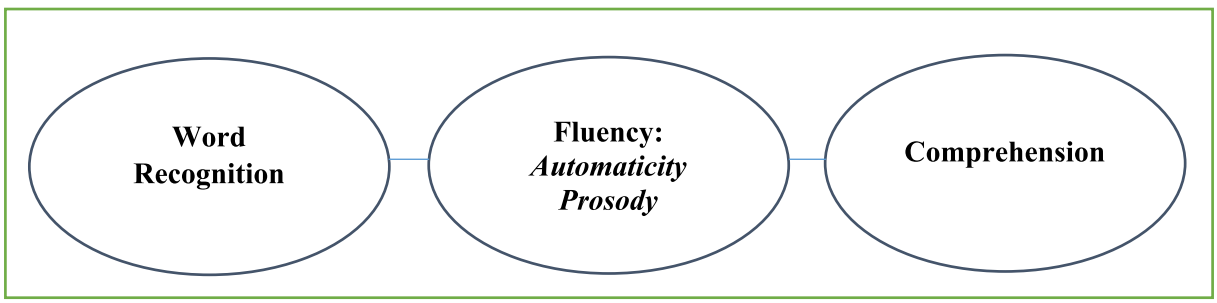


Fig. 1. A critical bridge in reading.

texts are used, reading anxiety can decrease. Fluency reading develops in students who control their anxiety. In addition, increasing fluency in reading already reduces anxiety in students (Yamaç & Çeliktürk Sezgin, 2018). Therefore, the negativities that students may encounter in the reading process should be eliminated. Thus, the development of negative attitudes towards reading and the subsequent development of smell anxiety should be prevented (Melanlıoğlu, 2014).

From this theoretical perspective, reading fluency can be considered a central mechanism that links cognitive processes with affective outcomes in reading. As lower-level reading processes become more automatic, the cognitive load experienced by students decreases, which may contribute to reduced reading anxiety and the development of more positive attitudes towards reading. Therefore, interventions targeting reading fluency are expected to influence not only students' reading performance but also their affective characteristics. Based on this framework, the present study aims to examine the effects of reading fluency strategies on primary school students' reading attitudes and reading anxiety.

1.4. Current study

The current study was conducted on 9-year-old fourth-grade primary school students. Increasing the level of reading attitudes in primary school students constitutes the starting point and one of the goals of the study. Therefore, as emphasized by Saracho and Dayton (1989), studies examining the reading attitudes of young children are very important. Because one of the goals of early reading education should be to ensure that young children develop positive attitudes. In addition, the high level of reading anxiety in primary school students reveals the importance of increasing the level of reading attitudes. Ramirez et al. (2018) suggest that reading anxiety can be a unique emotional obstacle in a child's early education, indicating that the primary school level is critical. Emotional obstacles can negatively affect interest in reading as a component of reading attitude. In primary school students, difficulties related to reading in particular can cause anxiety, tension, and stress (Grills et al., 2014). Thus, negative attitudes towards reading may emerge. In this context, reducing reading anxiety and increasing the level of reading attitudes becomes important. It may be possible to develop reading attitudes and reduce reading anxiety with fluency reading activities. There is a greater need for studies that address these relationships between reading attitude, anxiety, and fluency reading, especially at the primary school level. The lack of a study in the literature that examines this relationship at the primary school level is striking. Indeed, most of the studies in the international literature that address these relationships between reading attitude, anxiety, and fluency reading have generally been conducted on students who are acquiring a second language or learning a foreign language. It is also noteworthy that the studies do not include reading attitudes (Al-Obaydi et al., 2024; Tysinger et al., 2010). These shortcomings make the current study important and valuable. Because the current study also examined the relationships between reading attitude, fluency reading, and reading anxiety together. In addition, unlike studies in the international literature, the sample of the current study is not students learning a foreign language. Students who experience reading anxiety in the teaching of their mother tongue and have low reading attitudes constitute the study group of the current study. Piccolo et al. (2022) also draw attention to this issue and deficiency, emphasizing that individuals can also experience reading anxiety in their mother tongue. Therefore, the current study is also in an important position in terms of the target audience it focuses on. In this respect, the study can fill an important gap in the international literature. On the other hand, no studies have been found in the national literature that examines the relationships between reading attitude, reading anxiety, and fluency reading in the context of primary school students together (Baki, 2017; Kandemir, 2020; Yamaç & Çeliktürk Sezgin, 2018). Therefore, the current study has an original value in terms of filling an important gap at the national level. In the current study, the main objective is to improve the reading attitude level of fourth-grade primary school students in the mother tongue through fluency reading activities. Similarly, contributing to increasing the level of reading attitude by reducing reading anxiety through fluency reading activities constitutes an important aim. In line with these objectives, answers to the following questions were sought;

1. Is there a significant difference between the experimental and control groups in terms of post-test scores of reading attitude and reading anxiety?
2. After controlling for pre-test scores, is there a significant difference between the experimental and control groups in terms of adjusted post-test scores of reading attitude and reading anxiety?
3. Is there a significant change within the experimental and control groups between pre-test and post-test scores in reading attitude and reading anxiety?

2. Methods

2.1. Research design

In the current study, a quasi-experimental design with pretest-posttest control group was used among quantitative research methods. The main purpose of experimental research is to test the cause-and-effect relationship between the independent variable and the dependent variable (Büyüköztürk et al., 2019). The purpose of using an experimental design in this study is to test whether using reading fluency strategies while doing reading activities with students in the classroom environment affects students' reading attitudes and reading anxiety. The quasi-experimental design with pretest-posttest control group used in the research process is as shown in Fig. 2:

2.2. Study group

This study was conducted in Van province in the spring semester of the 2023–2024 academic year. Van, one of Turkey's 30 metropolitan cities, is a city with a population of over one million and receives continuous migration from neighboring cities. Van province has 1553 educational institutions and nearly 20 thousand teachers. There are 310 thousand students in basic and secondary education. The average number of students per classroom is 25 and the schooling rate is over 90% (Van MEM, 2024). The study group of the research consisted of a total of 50 students, 25 in the experimental group and 25 in the control group, who were studying in the 4th grade in one of the schools in İpekyolu district of Van province. Each of the eight 4th grade classes in the school was given a number from 1 to 8, and then two classes were randomly selected by lot, one of which was the experimental group and the other was the control group. Therefore, simple random sampling method, one of the probability sampling methods, was used in the process of determining the experimental and control groups.

In the present study, participants were randomly assigned to the experimental and control groups. In addition, pre-test comparisons revealed no significant differences between the groups in terms of reading attitude and reading anxiety scores, indicating baseline equivalence. Although reading ability and non-verbal intelligence were not measured separately, the random assignment procedure and baseline equivalence on the main outcome variables support the comparability of the groups prior to the intervention. Furthermore, all participants were drawn from the same grade level and school context, which may have reduced potential variability related to instructional and developmental factors (Table 2).

There were 16 female and 9 male students in the experimental group and 14 female and 11 male students in the control group. While 64% of the students in the experimental group were female and 36% were male, 56% of the students in the control group were female and 44% were male. Of the 50 students who participated in the research process, 30

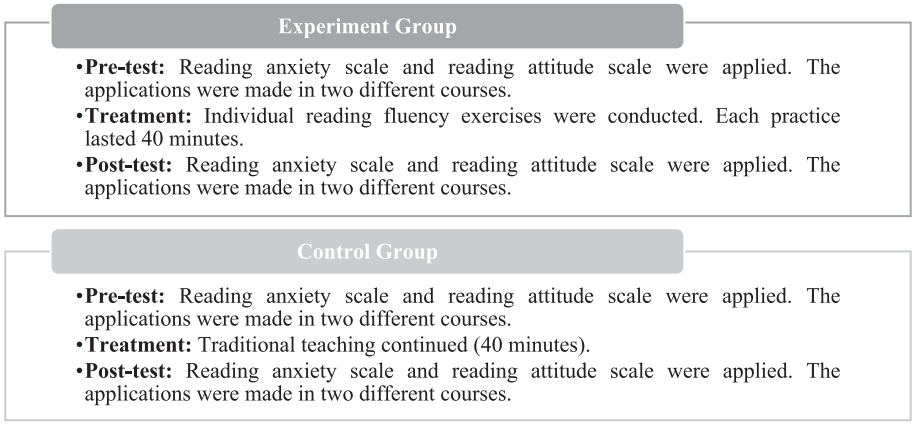


Fig. 2. Experimental process design.

Table 2
Gender distribution of the students participating in the study.

Group	Gender	*f*	%	Total
Experimental	F	16	64	25
	M	9	36	
Control	F	14	56	25
	M	11	44	
Total	F	30	60	50
	M	20	40	

(60%) were female and 20 (40%) were male. In the process of selecting the relevant school for the research, attention was paid to its easy accessibility and convenient location in terms of labor, time and transportation. Therefore, the convenience sampling method was preferred in choosing the school in question. The experience of the teachers in the classes determined as the experimental and control groups is similar and has been 15 years. There are no students with special education needs in either class.

In this study, a power analysis was performed using G*Power 3.1 software to evaluate the adequacy of the sample size for an ANCOVA model comparing two groups with one covariate controlled. The analyses were conducted using the "ANCOVA: Fixed effects, main effects and interactions" option under the F tests family. The significance level was set at $\alpha = 0.05$, statistical power $(1–\beta) = 0.80$, and effect size $f = 0.40$ (large effect size). The model included two groups and one covariate. Based on these parameters, the analysis showed that a minimum of 47 participants were required, and the power value obtained for the current sample size was found to be above 0.80.

2.3. Data collection tools

2.3.1. Attitude scale towards reading

In order to measure students' reading attitudes, the 'Attitude Towards Reading Scale', developed by McKenna and Kear (1990) and adapted into Turkish by Kocaarslan (2016), was used. The Reading Attitude Scale, prepared as a four-point Likert type (very happy, a little happy, a little sad, very sad), consists of two subscales. The first 10 items of the scale, which consists of 20 items, measure reading attitudes for recreational purposes, while the last 10 items measure reading attitudes for academic purposes. Confirmatory factor analysis was performed for the construct validity of the scale and it was understood that the findings supported the two-factor structure in the study. The Cronbach Alpha coefficient of the Turkish form of the scale was found to be 0.88 and as a result of the adaptation studies, the Turkish version of the Reading Attitude Scale was found to be valid and reliable.

One of the purposes of choosing this scale for measuring students' attitudes towards reading is that the adaptation studies are suitable for the level of the student group. The use of the cartoon character 'Garfield' in the scale is another purpose of choosing this scale. It was predicted that this would positively affect the attention and interest of the students in the process of filling in the scale.

2.3.2. Reading anxiety scale

Within the scope of this research, the 'Reading Anxiety Scale' developed by Çeliktürk and Yamaç (2015) was used to determine students' reading anxiety levels. The Reading Anxiety Scale, prepared as a five-point Likert type (always, most of the time, sometimes, rarely, never), consists of 29 items. As a result of the validity and reliability studies on the scale, the Cronbach's Alpha value of the scale was found to be 0.95. As a result of the exploratory factor analysis applied to determine construct validity, it was determined that the scale consisted of 29 items and a single-factor structure (Çeliktürk & Yamaç, 2015).

The high validity and reliability values of the scale, the fact that it is unidimensional and that it is suitable for the level of students were effective in the preference of this scale.

2.4. Procedure

2.4.1. Implementation process

The implementation process of the research consists of two stages: planning and implementation. The planning phase consists of the processes of determining the experimental and control groups, informing the students, informing A and B teachers about the process, determining the texts to be used and creating a study plan. The implementation phase consists of carrying out weekly activities in the experimental group and administering the pre-test and post-test to both groups.

All students in the experimental and control groups, determined as the sample, were interviewed in the classroom environment and were informed about the research topic and process. It was stated that participation in the research was voluntary and those who did not want to participate would not be included in the research process. All students from both groups stated that they volunteered to participate in the research.

Teachers A and B, the teachers of the experimental and control group classes, were interviewed by the researchers. Detailed information was given about the purpose of the research, what was expected from them in the process, how long the research would take, which scales would be applied when, and reading fluency strategies. Experimental group teacher A was also informed about how many weeks the research would last, which strategies would be used for how many lesson hours in which week, and what to pay attention to when using each strategy. The implementation was carried out for 2 lesson hours, 2 days a week, between 1 April and 17 May 2024. The implementation lasted 7 weeks in total, including the introduction-information, pre-test and post-test

application weeks.

2.4.2. Text determination process

Text types and texts suitable for the strategies used each week were decided together by the classroom teacher and the researchers. Poetry was preferred for the choir reading strategy, a theater text was preferred for the reader theater strategy and informative or narrative texts were preferred for the other strategies. The texts were selected from the 4th grade primary school Turkish textbook published by the Ministry of Education. While selecting the texts, care was taken to ensure that the texts were appropriate to the level of the students and that they were texts that the students had not encountered before. During the selection process of the texts, opinions were taken from four experts, including two field expert academics and two classroom teachers.

2.4.3. Control group practices

Control group students continued their reading activities and studies according to the texts and activities in the 4th grade primary school Turkish textbook. Together with their classroom teachers, they continued to process the text and do post-text activities from where they left off, in accordance with the Ministry of National Education (MEB) Primary School 4th Grade Turkish curriculum. No procedure was applied to the control group other than pre-test and post-test measurements.

2.4.4. Data collection process

The data of the research was collected in the spring semester of the 2023–2024 academic year. Before applying the relevant scales in order to determine the attitudes towards reading and reading anxiety levels of the students in the experimental and control groups, it was explained how to fill out the Attitude Scale towards Reading and what each of the Garfield visuals meant. In addition, how to fill out the Reading Anxiety Scale was explained to both groups separately by marking on the board. Then, the "Reading Attitude Scale" and "Reading Anxiety Scale" were applied to both groups by the researchers. The data obtained from these measurements constituted the pre-test scores of the students in both groups.

Starting from the third week of the research, two different reading fluency strategies were applied to the experimental group students every week for four weeks (Table 3). In the relevant weeks, each strategy was used for two lesson hours and the points to be taken into consideration in the implementation of these strategies in reading studies were followed.

Table 3
Experimental operation process.

Week/ group	Experimental	Control	Test/treatment
1.	Dating Information about the process	Dating Information about the process	
2.	Attitude scale towards reading Reading anxiety scale	Attitude scale towards reading Reading anxiety scale	Pre-test
3.	• Repeated reading • Choral reading	Ministry of Education	Reading fluency strategies
4.	• Resonator (echo) reading • Shared reading	Primary school 4th grade Turkish curriculum	
5.	• Reader theaters • Child-centered reading intervention		
6.	• Paired (witd a peer) reading • Choral reading		
7.	Attitude scale towards reading Reading anxiety scale	Attitude scale towards reading Reading anxiety scale	Post-test

Particular attention was paid to the participation of all students in the process and students were given constant feedback and corrections. Following the four week reading fluency strategies process applied to the experimental group, the "Reading Attitude Scale" and "Reading Anxiety Scale" were re-applied in the last week to determine the reading attitudes and reading anxiety levels of the students in both groups. The data obtained from these measurements constituted the posttest scores of the students in both groups. During the pretest and posttest process, students were given two class hours to fill out the scales. (40 + 40 min). After the Attitude Towards Reading Scale was marked and completed by the whole class, the Reading Anxiety Scale was distributed and they were asked to fill it out.

Pre-test data were obtained by making the first measurement before the process for the groups determined as the sample of the research. After the pre-test was applied to both groups, no different practices were carried out with the control group students, while reading studies were carried out with the experimental group students for 4 weeks (two days a week, two hours of practice) using reading fluency strategies. At the end of these procedures, a post-test was applied to both groups.

In the first week, repeated reading and choral reading strategies were used during reading activities with the experimental group students. For repeated reading, an informative text that they had not read before was selected from the Primary School 4th grade Turkish textbook. The teacher read the text first and the students followed. Then the teacher read the text repeatedly until the students were fluent. During the reading process, the teacher listened to the students in turn and corrected their misreadings by giving immediate feedback. For choral reading, a poem from the textbook that had not yet been covered was selected. The class was divided into 3 groups and one group read each stanza of the poem as a chorus. The stanzas read by the groups were changed during the process.

In the second week, echo and shared reading strategies were used. After explaining to the students what echo reading was, the teacher read the text that week and the students followed the text simultaneously and read aloud. As the teacher read, the students echoed by reading. The teacher paid attention to emphasis, punctuation and intonation during reading. This process was repeated several times. In shared reading, a narrative text suitable for the level of the students was identified. Before reading the text, the teacher talked to the students about the title and visuals of the text and brought their prior knowledge to the reading environment. Then, the teacher read the text in accordance with the emphasis, intonation and punctuation marks, and the students followed. The sections/paragraphs of the text were also distributed to the students, and when it was their turn, they read the text as the teacher read it. Finally, conversations and discussions were held based on the text read.

In the third week, reader theaters and child-centered reading intervention strategies were used. For the reader's theater, a text with a protagonist and a lot of dialog was selected from the textbook. The roles were distributed to the students in advance and they were asked to prepare. After the teacher's sample reading, each student read when his/her role arrived. The teacher gave feedback to the students by paying attention to emphasis, intonation, gestures and facial expressions. Care was taken to ensure that each student took a role. During the child-centered reading intervention process, various visuals were shown to the class so that everyone could see them. The class was divided into groups and each group member was asked what they understood from the visuals and asked to say what came to their minds. What was said was noted down by a scribe. The students then read what was written and made corrections. After intensive reading, they created a meaningful text and read it in chorus in the presence of the class.

In the fourth and last week, paired reading and choral reading strategies were used. In the paired reading process, the class was divided into groups of two and the groups were asked to choose a text of their choice. When selecting the groups, care was taken to ensure that one of the group members had better reading skills. While the partner with better reading skills read, the other one followed the reading and the

reading process. After the reading was over, the roles were reversed and the one with poor reading skills read while the other followed him/her. During the process, reading errors were corrected immediately and feedback was given. In choral reading, a new poem in the textbook that had not yet been covered was selected. The class was divided into 3 groups and each group read each stanza of the poem in chorus. The stanzas read by the groups were changed during the process. Finally, the whole poem was read by the whole class in chorus.

2.5. Data analysis

In the analysis of the data obtained in the research, percentage and frequency calculations were used to examine the distribution of all students participating in the research according to their gender. Analysis of the data was carried out via SPSS. To examine the conformity of scores to normality, the Shapiro-Wilk test is used if the group size is less than 50 (Büyüköztürk, 2016; Kalaycı, 2010). Since the group size was 25, the Shapiro-Wilk test was used to examine the suitability of the data obtained in the pre-test and post-test scores to normal distribution according to groups. Independent sample t-test was used to determine whether there was a significant difference between the groups and paired-sample t-test was used to determine whether there was a significant difference between the pre-test and post-test scores of the groups. When the pre-test scores of the experimental and control group students were checked, ANCOVA (analysis of covariance) was applied in order to observe the change between the reading attitude and reading anxiety post-test scores. The assumptions of ANCOVA were met before the application. In other words, the distribution of the scores of the dependent variable was normal in both applications and the variances of the scores of the dependent variable were homogeneous. ANCOVA provides greater statistical power because it reduces the error variance. In addition, in cases where there are differences between the groups at the beginning of an experiment, providing a reduction in the bias in the experiment is another advantage of ANCOVA (Büyüköztürk, 2016). Before ANCOVA was applied, the homogeneity of the groups was tested with the Levene Test. As a result of the Levene Test, it was found that the groups were homogeneous according to the corrected post-test scores of reading attitude [$F(0.030) = 0.863$, $p > .05$] and reading anxiety [$F(0.064) = 0.801$, $p > .05$]. Given the pre-test–post-test control group design of the study, ANCOVA was considered the primary inferential analysis to examine group differences on post-test scores while controlling for pre-test scores. Independent-samples *t*-tests were conducted to examine baseline equivalence between groups, and paired-samples t-tests were used to describe within-group changes across time.

Eta-squared ($\eta 2$) correlation coefficient, which is an effect size statistic, was used to compare average scores and interpret test results. Eta-squared shows how effective the independent variable is on the dependent variable. Eta-squared, called effect size, takes values between 0.00 and 1.00. An eta-square value between 0.01 and 0.06 is interpreted as a small effect size, an eta-square value between 0.06 and 0.14 is interpreted as a medium effect size and an eta-square value of 0.14 and above is interpreted as a large effect size (Cohen, 1988). Based on the eta-square value, the magnitude of the effect of reading fluency strategies', which is the independent variable of the study, on the dependent variables 'students' reading attitude' and 'students' reading anxiety' was determined.

2.6. Validity and reliability

In the research, attention was paid to using valid and reliable measurement tools, obtaining opinions from field experts during the selection of texts, mentioning the research stages and processes in detail, and reporting the obtained data in detail. Before the research, permission was obtained from the relevant institutions and teachers, the research process was explained to the students in detail and it was stated that participation was voluntary and that the process would not have a positive or negative impact on the course grades. Experimental and control groups were determined by random selection method and these groups consisted of students from the same school. Before the scales were filled in by the students, sample markings were made by the researchers in order to eliminate areas and issues that were not understood. In order to avoid any problems during the process, activities and practices were carried out under the control of the researchers. In order to prevent participant loss, participants' attendance at school and participation in activities were regularly checked.

3. Results

3.1. Reading attitude

Since the group size was 25, the Shapiro-Wilk test was used to examine the suitability of the data obtained from the students' reading attitude pre-test and post-test scores to normal distribution. The results obtained at this point are given in Table 4.

According to Table 4, it can be seen that the results of the groups' recreational reading attitude posttest (0.052), academic pretest (0.105), academic posttest (0.124) and total posttest (0.493) are $p > .05$. These data show a normal distribution. Since the results of the recreational reading attitude pretest (0.001) and total pretest (0.002) were $p < .05$, the skewness and kurtosis results of these tests were also examined. It is seen that the skewness and kurtosis values of the tests below 0.05 and all the tests are between +1.5 and − 1.5. Tabachnick and Fidell (2013) stated that tests with skewness and kurtosis values between +1.5 and − 1.5 showed normal distribution. Therefore, based on these results, it can be said that all data show normal distribution.

Since the reading attitude pretest and posttest scores showed normal distribution, the independent samples t-test was used to determine whether there was a significant relationship between the groups' pretest and posttest scores, and the results are shown in Table 5.

When we look at the reading attitude pre-test scores of the experimental and control group students in terms of sub-dimensions and total score in Table 5, it is seen that there is no significant difference between the results in both sub-dimensions and the total ($t(48) = -0.821$; 1.075; 0.125 $p > .05$). Looking at the pre-test average scores, the recreational reading dimension (experiment = 30.84; control = 31.88), the academic reading dimension (experiment = 30.68; control = 29.36) and the total (experiment = 61.52; control = 61.24) average scores are quite close to each other. These results show that the groups were equivalent to each other in terms of attitude levels towards reading before the experimental procedure.

Looking at the post-test data, it is seen that there is a significant difference between the reading attitude post-test total scores of the experimental and control group students ($t(48) = 3.226$, $p < .05$). It was concluded that there was a significant difference in favor of the experimental group in the recreational reading dimension ($t(48) = 2.434$, $p < .05$) and the academic reading dimension ($t(48) = 3.600$, $p < .05$).

When Table 5 is examined, it is seen that the reading attitude post-test total score average of the experimental group students ($M = 67.24$) increased by nearly 6 points and the students' attitude levels towards reading increased between both measurements. At the same time, it is seen that the levels of recreational reading attitude and

Table 4
Shapiro-Wilk test results of reading attitude pretest-posttest scores.

Scale	Test	Statistic	*SD*	Skewness	Kurtosis	*p*
Recreational	Pre-test	0.911	50	−0.984	0.414	.001
	Post-test	0.955	50	−0.658	−0.046	.052
Academic	Pre-test	0.962	50	−0.273	−0.494	.105
	Post-test	0.963	50	−0.319	−0.780	.124
Total	Pre-test	0.919	50	−0.661	−0.264	.002
	Post-test	0.979	50	−0.277	−0.576	.493

Table 5
t-Test results of the groups' reading attitude pretest-posttest scores.

Test	Scale	Group	n	*M*	S	*SD*	*t*	*p*
Pre-test	Recreational	E	25	30,84	5,02	48	−0.821	.416
		C	25	31,88	3,85			
	Academic	E	25	30,68	4,23	48	1.075	.288
		C	25	29,36	4,45			
	Total	E	25	61,52	8,34	48	0.125	.901
		C	25	61,24	7,47			
Post-test	Recreational	E	25	33,52	3,39	48	2.434	.019
		C	25	30,44	5,33			
	Academic	E	25	33,72	4,67	48	3.600	.001
		C	25	28,64	5,28			
	Total	E	25	67,24	7,56	48	3.226	.002
		C	25	59,48	9,35			

academic reading attitude increased by approximately 3 points each. It is seen that the posttest average of the control group students' reading attitude ($M = 59.48$) decreased by approximately 2 points compared to the first measurement, and the students' attitude levels towards reading decreased between the two measurements. It is also seen that there is a decrease of more than 1 point in the average score of the sub-dimensions. Therefore, based on these findings, it can be said that there is a positive relationship between the use of reading fluency strategies in reading activities and students' attitude levels towards reading.

To examine post-test differences between the experimental and control groups while controlling for pre-test scores, ANCOVA was conducted. The results are presented in Table 6.

It is seen that there is a significant difference between the posttest mean scores of the control and experimental groups, corrected according to the pretests ($F = 17.146$, $p < .01$, $\eta 2 = 0.267$). According to the t-test conducted between the corrected posttest scores of the groups, the posttest mean scores of the students in the experimental group ($M = 67.88$) are higher than the posttest mean scores of the students in the control group ($M = 59.48$). These findings are in favor of the experimental group. The level of reading attitude is better in the experimental group students. The effect size of the experimental procedure applied to the groups on reading attitude was calculated as $\eta 2 = 0.267$. This result shows that 26% of the change in the dependent variable is due to the applied methods. An eta-squared value of 14 and above is considered as a large effect size (Cohen, 1988).

Paired-samples t-test was used to determine whether there was a significant difference between the groups' pre-test and post-test scores, and the results are shown in Table 7.

When Table 7 is examined, it is seen that there is a significant change in the total scores of the experimental group students regarding their attitude levels towards reading after the reading fluency strategies used in the process ($t(24) = -4.19$, $p < .05$). When looked at in terms of the sub-dimensions of the attitude towards reading scale, it is seen that the post-test score of the recreational reading attitudes of the experimental group students increased by approximately 3 points compared to the first measurement and there was a significant difference in favor of the post-test ($t(24) = -2.67$, $p < .05$). It is seen that the other sub-dimension, academic reading attitude post-test score, increased by more than 3 points compared to the first measurement and there was a significant difference in favor of the post-test ($t(24) = -3.79$, $p < .05$). It is seen that the reading attitudes of the experimental group students increased after the use of reading fluency strategies. In other words, using reading fluency strategies in reading activities can positively affect students' attitudes towards reading.

Table 6
ANCOVA results according to the post-test scores of the students in the experimental and control groups on the Reading Attitude Scale.

Source of variance	Sum of squares	*SD*	Mean of squares	*F*	*p*	*η2*
Pretest	834.013	1	834.013	17.286	.000*	0.263
Group	851.068	1	851.068	17.146	.000*	267
Error	2332.867	1	49.635			
Total	206,806.000	47				

When we look at the differentiation of the control group students' attitude scores towards reading in the first measurement and the last measurement, it can be seen that there is no significant change in terms of total score and academic reading attitude ($t(24) = 0.70$; 1.33, $p > .05$). Contrary to these results, there is a significant difference between both measurements in terms of recreational reading ($t(24) = 2.12$, $p < .05$). When the average scores in the sub-dimensions and general (total) data are examined, it is seen that the last measurement scores decreased compared to the first measurement. Therefore, it was concluded that the attitudes of the control group students, to whom no procedure was applied in the experimental process, towards reading decreased in the process.

Since there was a significant change in the reading attitude scores of the experimental group students between the two measurements, the eta-square ($\eta 2$) value was examined to determine the effect size of this change.

According to what is given in Table 8, the eta-square value of the recreational reading sub-dimension is 0.518, the eta-square value of the academic reading sub-dimension is 0.784, and the eta-square value of the attitude towards reading in general is 0.889. Since the eta-square values obtained are greater than 0.14, the significant change between the attitude scores of the experimental group students towards reading has a large effect size (Cohen, 1988). In other words, the reading fluency strategies applied to the experimental group students during the experimental process were able to significantly increase the students' attitudes towards reading.

3.2. Reading anxiety

The Shapiro-Wilk test was used to determine the suitability of the data obtained regarding the reading anxiety levels of the experimental and control groups to normal distribution and the results are shown in Table 9.

Looking at Table 9, it can be seen that the pre-test (0.151) and post-test (0.169) results of the experimental group and the pre-test (0.924) and post-test (0.512) results of the control group are $p > .05$. Based on these results, it can be said that the scores are normally distributed.

Since the reading anxiety pre-test and post-test scores provided a normal distribution, the independent samples t-test was used to determine whether there was a significant relationship between the groups' pre-test and post-test scores, and the results are shown in Table 10.

Looking at Table 10, it is seen that there is no significant difference between the reading anxiety pre-test scores of the experimental and control group students ($t(48) = -0.201$, $p > .05$). Looking at the pre-test average scores, it can be seen that the scores of the experimental group ($M = 66.20$) and the control group ($M = 67.32$) are close to each other.

Table 7
t-Test results of the groups' reading attitude pretest-posttest score differences.

Group	Scale	Test	n	*M*	S	*SD*	*t*	*p*
E	Recreational	Pre-test	25	30,84	5,02	24	−2.67	.013
		Post-test	25	33,52	3,39			
	Academic	Pre-test	25	30,68	4,23	24	−3.79	.001
		Post-test	25	33,72	4,67			
	Total	Pre-test	25	61,52	8,34	24	−4.19	.000
		Post-test	25	67,24	7,56			
C	Recreational	Pre-test	25	31,88	3,85	24	2.12	.044
		Post-test	25	30,44	5,33			
	Academic	Pre-test	25	29,36	4,45	24	0.70	.489
		Post-test	25	28,64	5,28			
	Total	Pre-test	25	61,24	7,47	24	1.33	.194
		Post-test	25	59,48	9,35			

Table 8
Effect size results of reading attitude posttest scores.

Dimension	η	$\eta 2$
Reading for recreational purposes	0.719	0.518
Reading for academic purposes	0.886	0.784
Attitude towards reading (total)	0.943	0.889

Table 9
Shapiro-Wilk test results of reading anxiety pretest-posttest scores.

Group	Test	Statistic	*SD*	*p*
E	Pre-test	0.940	25	.151
	Post-test	0.943	25	.169
C	Pre-test	0.982	25	.924
	Post-test	0.965	25	.512

Table 10
t-Test results of the groups' reading anxiety pretest-posttest scores.

Test	Group	n	*M*	S	*SD*	*t*	*p*
Pre-test	E	25	66,20	21,41	48	−0.201	.842
	C	25	67,32	17,85			
Post-test	E	25	57,76	18,25	48	−2.082	.043
	C	25	70,40	24,24			

These results indicate that the groups were equivalent in terms of reading anxiety levels before the experimental procedure.

Looking at the post-test data, it is seen that there is a significant difference between the reading anxiety post-test scores of the experimental and control group students ($t(48) = -2.082$, $p < .05$). It is seen that the average reading anxiety post-test score of the experimental group students ($M = 57.76$) decreased by approximately 10 points and the students' reading anxiety levels decreased between both measurements. It is seen that the post-test average of the control group students' reading anxiety ($M = 70.40$) increased by approximately 3 points compared to the first measurement, and the students' reading anxiety levels increased between the two measurements. Therefore, based on this finding, it can be said that there is a positive relationship between the use of reading fluency strategies in reading activities and students' reading anxiety levels.

To examine post-test differences between the experimental and control groups while controlling for pre-test scores, ANCOVA was conducted. The results are presented in Table 11.

It is seen that there is a difference between the post-test reading anxiety mean scores of the control and experimental groups, which are corrected according to the pretests ($F = 4.129$, $p < .01$, $\eta 2 = 0.081$). According to the t-test conducted between the corrected post-test scores of the groups, the post-test reading anxiety mean scores of the students in the experimental group (X = 57.76) are lower than the post-test reading mean scores of the students in the control group ($M = 67.32$). These findings are in favor of the experimental group. The reading anxiety level of the students in the experimental group is lower. The effect size of the experimental procedure applied to the groups on reading anxiety was calculated as $\eta 2 = 0.081$, that is, medium-sized. An eta-squared value of $\eta 2 = 0.06$ and above is evaluated as medium-level (Cohen, 1988). This result shows that 0.08% of the change in the dependent variable is due to the applied methods. In other words, the effect of the applied fluency reading methods in reducing reading anxiety is not very good, but it is medium-level.

Table 11
ANCOVA results according to the post-test scores of the students in the experimental and control groups on reading anxiety.

Source of variance	Sum of squares	*SD*	Mean of squares	*F*	*p*	$\eta 2$
Pretest	8506.987	1	8506.987	55.990	.252	0.544
Group	627.364	1	627.364	4.129	.048*	0.081
Error	7141.013	1	151.936			
Total	212,353.000	50				

Paired-samples t-test was used to determine whether there was a significant difference between the groups' pre-test and post-test scores, and the results are shown in Table 12.

When Table 12 is examined, it is seen that there is a significant change in the reading anxiety scores of the experimental group students after the reading fluency strategies used in the process ($t(24) = 2.67$, $p < .05$). It is seen that the reading anxiety of the experimental group students decreased after the use of reading fluency strategies. In other words, using reading fluency strategies in reading activities can eliminate reading anxiety in students.

When we look at the difference in the first measurement and last measurement reading anxiety scores of the control group students, it can be seen that there is no significant change ($t(24) = -1.01$, $p > .05$). It was concluded that the reading anxiety of the control group students, to whom no procedure was applied during the experimental process, increased further during the process.

Since there was a significant change in the reading anxiety scores of the experimental group students between the two measurements, the eta-square ($\eta 2$) value was examined to determine the effect size of this change.

According to what is given in Table 13, the eta-squared value was

Table 12
t-Test results of reading anxiety pretest-posttest score differences.

Group	Test	n	*M*	S	*SD*	*t*	*p*
E	Pre-test	25	66,20	21,41	24	2.67	.013
	Post-test	25	57,76	18,25			
C	Pre-test	25	67,32	17,85	24	−1.01	.321
	Post-test	25	70,40	24,24			

Table 13
Effect size results of reading anxiety posttest scores.

	η	$\eta 2$
Post-test	0.951	0.905

found to be 0.905. Since the eta-square value obtained is greater than 0.14, the significant change between the reading anxiety scores of the experimental group students has a large effect size (Cohen, 1988). In other words, the reading fluency strategies applied to the experimental group students during the experimental process were able to significantly reduce the students' reading anxiety.

4. Discussion

Whether reading fluency strategies are effective in developing reading attitude and reducing reading anxiety in primary school students was questioned within the scope of the current research. As a result of the experimental procedures, it was revealed that the reading attitude level increased and reading anxiety decreased in the students in the classes where reading fluency strategies were used.

4.1. Reading fluency and reading attitude

There is a significant difference between the post-test total scores of the experimental and control group students in all dimensions. It is possible to interpret this result as the use of reading fluency strategies increased the attitude levels of primary school students towards reading. According to the measured eta-square effect size value, the reading fluency strategies applied to the experimental group students in the experimental process were able to increase the students' attitudes towards reading to a great extent. On the other hand, it was revealed that there was no positive development in the reading attitude levels of the students in the control group in which traditional methods/strategies were used instead of reading fluency strategies, but rather a regression. It is significant that reading fluency strategies improved the reading attitude level of the students. This finding actually shows a certain level of parallels with the findings of Martinez et al. (2008). In addition to these similarities, the present findings extend previous research by providing experimental evidence at the primary school level in a mother tongue context. While many studies examining reading fluency and reading attitude have focused on older students or second-language learners, the current study demonstrates that fluency-based interventions can positively shape reading attitudes during the early years of formal education. The sentences emphasized by Martinez et al. (2008) for reading attitude are very important. According to this, reading attitude is a determining factor in reading achievement. The fact that the relationship between reading attitude and reading achievement is dynamic contributes to academic achievement in the following grade levels. What is meant by dynamic relationship is that reading attitude also improves reading fluency (Shin & Ahn, 2006; Yamashita, 2013). Therefore, improving reading attitude is to invest in reading achievement and academic achievement. From a theoretical perspective, this relationship can be explained by Automaticity Theory (LaBerge & Samuels, 1974), which posits that as lower-level reading processes become automatic, reading requires less cognitive effort. This reduction in cognitive load may increase students' enjoyment of reading and contribute to more positive reading attitudes. One of the ways to improve reading attitude is to use various reading fluency strategies in the classroom according to the results of the current study. Similarly, as Heathington (1994) states, developing and sustaining reading fluency is one of the important roles of teachers. In the present study, the fact that poetry reading, reading theater, repeated reading, choral reading, peer-assisted reading fluency activities implemented under the guidance of the teacher improved reading attitude reveals the importance of teachers' roles. As a matter of fact, Smith's (2008) study supports the result of the current study and reveals that reading theater, one of the reading fluency strategies, improves reading attitude. Similarly, Wilfong (2018) discovered that repeated reading of poems improves students' reading attitudes.

It has been clearly demonstrated through experimental studies that it is possible to develop students' reading attitudes with reading fluency practices (Lee, 2014). He emphasizes that in an environment where reading attitudes develop, students' self-confidence also develops and it becomes possible to enjoy reading. Miller et al. (2010) also confirms these developments. He states that this process is reflected positively in peer relations in particular and that students' self-esteem increases. It is understood that the positive results of reading fluency strategies are of course not limited to developing reading attitudes. It is possible to increase the number of studies showing that reading fluency strategies develop reading attitudes and have positive reflections on students and the classroom climate. According to these results, it is not really difficult for teachers to develop reading attitudes in students. In order to develop reading attitudes, the teacher must constantly use reading fluency strategies with constant support and guidance. It is also possible to say that reading proficiency will increase and even academic success will develop over time as the level of reading attitudes increases. The fact that the activities will reflect positively on both students and classes has a separate value.

4.2. Reading fluency and reading anxiety

When the post-test data in the current study are examined, it is seen that there is a significant difference between the reading anxiety scores of the experimental and control group students. Although fluency reading activities have an effect on reducing reading anxiety, this effect can be interpreted as a medium effect. It was concluded that the reading anxiety post-test average score of the experimental group students decreased by approximately 10 points and the students' reading anxiety levels decreased between both measurements. It was concluded that the reading anxiety post-test average of the control group students increased by approximately 3 points compared to the first measurement and the students' reading anxiety levels increased. It is possible to say that the reading anxiety of the experimental group students, in whom reading fluency strategies were used, decreased. According to the measured eta-square effect size value, the significant change between the reading anxiety scores of the experimental group students has a large effect size. However, the medium effect size observed in the ANCOVA results suggests that reading anxiety is a multifaceted construct influenced not only by fluency skills but also by classroom climate, teacher practices, and individual emotional factors. This finding highlights the complexity of reading anxiety and suggests that fluency interventions may be most effective when combined with supportive instructional environments. It is possible to say that there is a relationship between reading fluency and reading anxiety (Katzir et al., 2018). Consistent with these findings, the present study provides experimental support for the relationship between reading fluency and reading anxiety. Unlike correlational studies that report associations between these variables, the current study demonstrates that fluency-based interventions can lead to a measurable reduction in reading anxiety levels. Anxiety towards the act of reading begins especially in the primary school years of the students. It is inevitable for students who have problems in areas such as reading fluency, reading aloud and reading comprehension in their educational activities to experience anxiety towards the act of reading (Çeliktürk & Yamaç, 2015). In addition, as children tend to avoid anxiety during reading, fluency in reading may occur. Thus, the level of success in reading also increases (Grills-Taquechel et al., 2013). In this context, it is possible to say how important a key anxiety is in reading performance. The important thing here is to eliminate the factors that will create anxiety during reading. For this, the teacher has responsibilities. Reading fluency strategies can be effective in reducing anxiety in the reading environment. In fact, Hamzadayı and Batmaz (2022) also state

that reading fluency positively affects the affective characteristics towards reading.

Various research results have shown that reading fluency strategies are also effective in reducing reading anxiety. It is an important finding that reader theaters reduce reading anxiety and eliminate reading errors. It is possible that reader theaters, along with the positive emotions experienced during reading, make students enjoy reading and reduce boredom and anxiety related to reading (Hautala et al., 2022). Doing repeated reading activities in different roles increases reading performance and reduces reading anxiety (Cao & Huang, 2011). In fact, the current study also revealed that reading fluency strategies such as repeated reading, choral reading, reader theaters, peer reading, and poetry reading reduce reading anxiety. Students' reading proficiency also improves with reading fluency strategies. Reading anxiety also decreases with strong reading skills (Petrus & Shah, 2020). Developing reading fluency skills can also reduce reading anxiety. The reader's failure to become automatic in word recognition and the anxiety of reading all the words without making any mistakes will lead to a decrease in reading speed and deterioration of general reading skills. In other words, not having reading fluency skills can create anxiety in reading (Samuels, 1979). As a result, teachers need to be more sensitive to their students' general anxiety and probably especially to their reading anxiety. It is possible for teachers to create a more relaxed environment to eliminate the effects of reading anxiety on reading performance (Macdonald et al., 2021). Increasing students' reading proficiency (fluency, speed, word recognition, comprehension, etc.) in the periods when reading activities begin and during reading activities, and making reading behavior enjoyable can help students feel more comfortable and less anxious before and during reading (Kandemir, 2020). In addition, including reading fluency strategies in their programs can be effective in reducing students' reading anxiety. Reading fluency strategies can also increase the level of interest and attitude towards reading. Overall, the findings of the present study contribute to the existing literature by demonstrating that reading fluency strategies simultaneously support both affective dimensions of reading, namely reading attitude and reading anxiety. By examining these variables together within an experimental design at the primary school level, this study addresses an important gap in both national and international research and provides evidence for the early implementation of fluency-based reading interventions.

5. Conclusion

The present study examined the effects of reading fluency strategies on primary school students' reading attitudes and reading anxiety through an experimental design. The findings demonstrated that fluency-based reading activities significantly improved students' reading attitudes and reduced their reading anxiety levels. In particular, students who participated in structured fluency interventions showed more positive affective responses to reading compared to those in the control group. These results suggest that reading fluency strategies play an important role not only in supporting cognitive reading skills but also in fostering positive emotional experiences related to reading. Overall, the study highlights the value of incorporating fluency-based practices into primary school reading instruction to support students' affective development during early literacy education.

5.1. Limitations

The data of the study is limited to the data collected with quantitative research methods. The fact that face-to-face interviews were not conducted with fourth-grade primary school students and their teachers is a limitation. Similarly, the use of two scales in the evaluation of student performance is another limitation. In addition, the sample size of the study is relatively small ($n = 50$), which may limit the generalizability of the findings. Although the sample size meets the minimum requirements for the statistical analyses conducted, the results should be interpreted with caution. A small sample size may reduce statistical power and limit the detection of smaller effect sizes. However, the large effect sizes obtained in this study suggest that the intervention had a meaningful impact on the dependent variables. Furthermore, the participants in each group were selected from single classes, and only one experimental group was compared with one control group. This may limit the external validity of the findings. The research findings are also limited to fourth-grade primary school students, and the data collected in 2024.

5.2. Recommendations

Reading fluency strategies can be used more intensively in classroom activities in primary schools. The use of reading fluency strategies in the classroom can increase reading attitude levels and reduce reading anxiety levels. Therefore, when implementing reading fluency activities, situations such as teacher pressure and grading habits that may cause reading anxiety should be avoided. Teachers can be trained to develop reading fluency skills in students. Researchers can investigate the relationship between reading fluency skills, reading comprehension, and reading anxiety. Action research can be conducted to develop reading fluency skills.

CRediT authorship contribution statement

Emrah Kultas: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The author declares that he has no conflict of interest.

Data availability

Data will be made available on request.

References

Alexander, J. E., & Filler, R. C. (1976). *Attitudes and reading.* International Reading Association.

Al-Obaydi, L. H., Rahul, D. R., & Pikhart, M. (2024). The effect of online oral reading on reading comprehension, reading anxiety, and classroom anxiety among EFL learners. *Education and Information Technologies, 29*, 2841–2855. https://doi.org/10.1007/s10639-023-11950-y

Amsterlaw, J., Lagattuta, K., & Meltzoff, A. (2009). Young children's reasoning about the effects of emotional and physiological states on academic performance. *Child Development, 80*(1), 115–133. https://doi.org/10.1111/j.1467-8624.2008.01249.x

Baki, Y. (2017). The effect of anxiety and attitudes of secondary school students towards reading on their reading habits: A structural equation modeling. *Education and Science, 42*(191), 371–395. https://doi.org/10.15390/EB.2017.7223

Barber, A. T., Klauda, S. L., & Wang, W. (2022). Reading anxiety, engagement, and achievement: A comparison of emergent bilinguals and English monolinguals in the elementary grades. *Reading Research Quarterly, 57*(1), 353–376. https://doi.org/10.1002/rrq.398

Büyüköztürk, Ş. (2016). *Sosyal bilimler için veri analizi el kitabı.* Pegem Akademi.

Büyüköztürk, Ş., Çakmak, E., Akgün, Ö., Karadeniz, Ş., & Demirel, F. (2019). *Eğitimde bilimsel araştırma yöntemleri.* Pegem Akademi.

Cao, M., & Huang, L. (2011). Improving oral fluency through readers theater in the EFL classroom a GET innovation in China. In D. Jin, & S. Lin (Eds.), *Vol. 129. Advances in multimedia, software engineering and computing vol. 2. A. Advances in intelligent and soft computing.* Springer. https://doi.org/10.1007/978-3-642-25986-9_55.

Çeliktürk, Z., & Yamaç, A. (2015). İlkokul ve ortaokul öğrencileri için okuma kaygısı ölçeğinin geliştirilmesi: geçerlik ve güvenirlik çalışması. *İlköğretim Online, 14*(1), 97–107.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Cotter, J. (2012). *Understanding the relationship between reading fluency and reading comprehension: Fluency strategies as a focus for instruction.* St. John Fisher University.

Cunningham, A., & Stanovich, K. (1998). What reading does for the mind. *American Educator, 22*(1–2), 8–15.

DeWaard, J. (2012). *Effective reading strategies to increase reading fluency*. Northwestern College (Unpublished master thesis).
Dwie Agustiani, I. W. (2017). The correlation between students' reading attitude and their reading comprehension achievement. *English Community Journal, 1*(2), 75–85.
Estrada-Madronero, J. C. (2019). English reading anxiety in relation to the oral reading fluency of grade 11 students. *International Linguistics Research, 2*(1), 20–30. https://doi.org/10.30560/ilr.v2n1p20
Grabe, W., & Stoller, F. (2020). *Teaching and researching reading* (3rd ed.). Routledge.
Grills, A., Fletcher, J. M., Vaughn, S., Barth, A., Denton, C. A., & Stuebing, K. K. (2014). Anxiety and response to reading intervention among first grade students. *Child & Youth Care Forum, 43*, 417–431. https://doi.org/10.1007/s10566-014-9244-3
Grills-Taquechel, A. E., Fletcher, J. M., Vaughn, S. R., Denton, C. A., & Taylor, P. (2013). Anxiety and inattention as predictors of achievement in early elementary school children. *Anxiety, Stress, and Coping, 26*(4), 391–410. https://doi.org/10.1080/10615806.2012.69196
Hamzadayı, E., & Batmaz, Ö. (2022). A review of factors affecting reading comprehension. *Ege Journal of Education, 23*(2), 190–209. https://doi.org/10.12984/egeefd.1105439
Harris, A. J., & Sipay, E. R. (1990). *How to increase reading ability. A guide to developmental and remedial methods*. Longman.
Hautala, J., Ronimus, M., & Junttila, E. (2022). Readers' theater projects for special education: A randomized controlled study. *Scandinavian Journal of Educational Research, 67*(5), 663–678. https://doi.org/10.1080/00313831.2022.2042846
Heathington, B. A. (1994). Affect versus skills: Choices for teachers. In E. Cramer, & M. Castle (Eds.), *Fostering the love of reading: The affective domain in reading education*. International Reading Association.
Hirschberg, J. (2002). Communication and prosody: Functional aspects of prosody. *Speech Communication, 36*(1–2), 31–43. https://doi.org/10.1016/S0167-6393(01)00024-3
Huang, Q. (2012). Study on correlation of foreign language anxiety and English reading anxiety. *Theory and Practice in Language Studies, 2*(7), 1520–1525. https://doi.org/10.4304/tpls.2.7.1520-1525
Hudson, R. F., Lane, H. B., & Pullen, P. (2005). Reading fluency assessment and instruction: What, why, and how? *The Reading Teacher, 58*(8), 702–714. https://doi.org/10.1598/RT.58.8.1
Jalongo, M. R., & Hirsh, R. A. (2010). Understanding reading anxiety: New insights from neuroscience. *Early Childhood Education Journal, 37*, 431–435. https://doi.org/10.1007/s10643-010-0381-5
Johnson, L. S. (1981). Naturally acquired learned helplessness: The relationship of school failure to achievement behavior, attributions, and self-concep. *Journal of Educational Psychology, 73*, 174–180.
Kalaycı, Ş. (2010). *SPSS uygulamalı çok değişkenli istatistik teknikleri*. Asil Yayın.
Kandemir, A. (2020). *İlkokul öğrencilerinin okur benlik algısı ve okuma motivasyonunun okuma kaygısı ile ilişkilerinin incelenmesi*. Kırıkkale Üniversitesi (Unpublished master thesis).
Katzir, T., Kim, Y. G., & Dotan, S. (2018). Reading self-concept and reading anxiety in second grade children: The roles of word reading, emergent literacy skills, working memory and gender. *Frontiers in Psychology, 9*, 1180. https://doi.org/10.3389/fpsyg.2018.01180
Kesik, C., & Polat, İ. (2023). The effect of poetry reading studies based on reading strategies on reading fluency skills. *E-International Journal of Educational Research, 14*(1), 313–329. https://doi.org/10.19160/eijer.1226393
Kim, H. (2016). The relationships between Korean University students' reading attitude, reading strategy use, and reading proficiency. *Reading Psychology, 37*(8), 1162–1195. https://doi.org/10.1080/02702711.2016.1193581
Kim, Y. G. (2015). Developmental, component-based model of reading fluency: An investigation of predictors of word-reading fluency, text-reading fluency, and reading comprehension. *Reading Research Quarterly, 50*(4), 459–481. https://doi.org/10.1002/rrq.107
Kocaarslan, M. (2016). "Garfield" görselli 1-6. sınıflar için okumaya yönelik tutum ölçeğinin türkçe uyarlama çalışması. *Ilkogretim Online, 15*(4), 1217–1233.
LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology, 6*(2), 293–323. https://doi.org/10.1016/0010-0285(74)90015-2
Lee, Y. (2014). Promise for enhancing children's reading attitudes through peer reading: A mixed method approach. *The Journal of Educational Research, 107*(6), 482–492. https://doi.org/10.1080/00220671.2013.836469
Lien, H. Y. (2011). EFL learners' reading strategy use in relation to reading anxiety. *Language Education in Asia, 2*(2), 199–212.
Lynch, J. J. (2000). *A cry unheard: New insights into the medical consequences of loneliness*. Bancroft Press.
Macdonald, K. T., Cirino, P. T., Miciak, J., & Grills, A. E. (2021). The role of reading anxiety among struggling readers in fourth and fifth grade. *Reading & Writing Quarterly, 37*(4), 382–394. https://doi.org/10.1080/10573569.2021.1874580
Marashi, H., & Rahmati, P. (2017). The effect of teaching reading strategies on EFL learners' reading anxiety. *International Journal of Research in English Education (IJREE), 2*(2), 43–52. https://doi.org/10.18869/acadpub.ijree.2.2.43
Martinez, R. S., Arıcak, O. T., & Jewell, J. (2008). Influence of reading attitude on reading achievement: A test of the temporal-interactıon model. *Psychology in the Schools, 45*(10), 1010–1022. https://doi.org/10.1002/pits.20348
Mathewson, G. (2004). Model of attitude influence upon reading and learning to read. In R. B. Ruddel, & N. J. Unrau (Eds.), *Theoretical models and processes of reading* (pp. 1431–1461). International Reading Association.
McKenna, M. C. (1994). Toward a model of reading attitude acquisition. In E. H. Cramer, & M. Castle (Eds.), *Fostering the life-long love of reading: The affective domain in reading education* (pp. 18–40). International Reading Association.
McKenna, M. C., Conradi, K., Lawrence, C., Jang, B. G., & Meyer, J. P. (2012). Reading attitudes of middle school students: Results of a U.S. survey. *Reading Research Quarterly, 47*(3), 283–306. https://doi.org/10.1002/rrq.021
McKenna, M. C., & Kear, D. J. (1990). Measuring attitude toward reading: A new tool for teachers. *The Reading Teacher, 43*(9), 626–639. http://www.jstor.org/stable/20200500.
Melanlıoğlu, D. (2014). Impact of metacognitive strategies instruction on secondary school. *Education and Science, 39*(176), 107–119. https://doi.org/10.15390/EB.2014.3540
Mihandoost, Z. (2012). Relationship between motivation, self-concept, attitude and fluency of elementary school students. *Life Science Journal, 9*(4), 4055–4063. https://www.lifesciencesite.com/lsj/life0904/604_13412life0904_4055_4063.pdf.
Miller, D., Topping, K., & Thurston, A. (2010). Peer tutoring in reading: The effects of role and organization on two dimensions of self-esteem. *British Journal of Educational Psychology, 80*, 417–433. https://doi.org/10.1348/000709909X481652
Padeliadu, S., & Antoniou, F. (2014). The relationship between reading comprehension, decoding, and fluency in Greek: A cross-sectional study. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 30*(1), 1–31. https://doi.org/10.1080/10573569.2013.758932
Paige, D. (2011). 16 minutes of "eyes-on-text" can make a difference: Whole class choral reading as an adolescent fluency strategy. *Reading Horizons, 51*, 1–15. https://scholarworks.wmich.edu/reading_horizons/vol51/iss1/3.
Petrus, S. L., & Shah, P. M. (2020). Relationship between reading anxiety, reading strategies and language competence of rural ESL secondary learners. *Creative Education, 11*(2), 126–142. https://doi.org/10.4236/ce.2020.112010
Piccolo, L. R., Giacomoni, C. H., Julio-Costa, A., Oliveira, S., Zbornik, J., Haase, V. G., & Salles, J. F. (2022). Reading anxiety in L1: Reviewing the concept. *Early Childhood Education Journal, 45*(4), 537–543. https://doi.org/10.1007/s10643-016-0822-x
Ramirez, G., Fries, L., Gunderson, E., Schaeffer, M. W., Maloney, E. A., Beilock, S. L., & Levine, S. C. (2018). Reading anxiety: An early affective impediment to children's success in reading. *Journal of Cognition and Development, 20*(1), 15–34. https://doi.org/10.1080/15248372.2018.1526175
Rasinski, T. V. (2004). Assessing reading reading fluency. https://files.eric.ed.gov/fulltext/ED483166.pdf.
Rasinski, T. V. (2012). Why reading fluency should be hot! *The Reading Teacher, 65*(8), 516–522. https://doi.org/10.1002/TRTR.01077
Rasinski, T. V., Padak, N. D., McKeon, C. A., Wilfong, L. G., Friedauer, J. A., & Heim, P. (2005). Is reading fluency a key for successful high school reading? *Journal of Adolescent & Adult Literacy, 49*(1), 22–27. https://doi.org/10.1598/JAAL.49.1.3
Rasinski, T. V., Rupley, W. H., Paige, D. D., & Nichols, W. D. (2016). Alternative text types to improve reading fluency for competent to struggling readers. *International Journal of Instruction, 9*(1), 163–178. https://files.eric.ed.gov/fulltext/EJ1086966.pdf.
Sainsbury, M. (2004). Children's attitudes to reading. *Education Review, 17*(2), 49–54.
Samuels, S. J. (1979). The method of repeated reading. *The Reading Teacher, 32*, 403–408.
Saracho, O. N., & Dayton, C. M. (1989). A factor analytic study of reading attitudes in young children. *Contemporary Educational Psychology, 14*(1), 12–21. https://doi.org/10.1016/0361-476X(89)90002-7
Schwanenflugel, P., Hamilton, A., Kuhn, M., Wisenbaker, J., & Stahl, S. (2004). Becoming a fluency reader: Reading skill and prosodic features in the oral reading of young readers. *Journal of Educational Psychology, 96*(1), 119–129. https://doi.org/10.1037/0022-0663.96.1.119
Shboul, M. M., Ahmad, L. S., Nurdin, M. S., & Rahman, Z. (2013). Foreign language reading anxiety in a Jordanian EFL context: A qualitative study. *English Language Teaching, 6*(6), 38–56.
Shin, I. C., & Ahn, B. K. (2006). The effects of different types of extensive reading materials on reading amount, attitude and motivation. *English Teaching, 61*(1), 451–466.
Smith, D. M. (2008). *Readers theatre: Its effectiveness in improving reading fluency, student motivation, and attitudes toward reading among second-grade students*. The Pennsylvania State University (Unpublished doctoral thesis).
Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21*(4), 360–407.
Sukarni, S. (2019). Reading attitude and its influence on students' reading comprehension. *Edukasi: Jurnal Pendidikan Dan Pengajaran, 6*(1), 193–204. https://doi.org/10.19109/ejpp.v6i1.2935
Swalander, L., & Taube, K. (2007). Influences of family based prerequisites, reading attitude, and self-regulation on reading ability. *Contemporary Educational Psychology, 32*(2), 206–230. https://doi.org/10.1016/j.cedpsych.2006.01.002
Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics*. Allyn and Bacon.
Torudom, K., & Taylor, P. (2017). An investigation of reading attitudes, Motivaiton and reading anxiety of EFL undergraduate students. *LEARN Journal: Language Education and Acquisition Research Network, 10*(2), 47–70.
Tysinger, J. A., Tysinger, P. D., & Diamanduros, T. D. (2010). The effect of anxiety on the measurement of reading fluency and comprehension. *Georgia Educational Researcher, 8*(1), 1–15. https://doi.org/10.20429/ger.2010.080102
Van İl Milli Eğitim Müdürlüğü. (2024). 2023-2024 eğitim-öğretim yılı istatistikleri. https://van.meb.gov.tr/.
Wigfield, A., & Asher, S. (1984). Social and motivational influences on reading. In P. Pearson, R. Barr, M. Kamil, & P. Mosenthal (Eds.), *Handbook of reading research* (pp. 423–452). Longman.
Wilfong, L. (2018). Building fluency, word-recognition ability, and confidence in struggling readers: The poetry academy. *Reading Teacher, 62*(1), 4–13. https://doi.org/10.1598/RT.62.1.1

Yamaç, A., & Çeliktürk Sezgin, Z. (2018). Relationships among fourth graders' reading anxiety, reading fluency, reading motivation, and reading comprehension. *Education and Science, 43*(194), 225–243. https://egitimvebilim.ted.org.tr/index.php/EB/article/view/7555/2771.

Yamashita, J. (2013). Effects of extensive reading on reading attitudes in a foreign language. *Reading in a Foreign Language, 25*(2), 248–263.

Yurianti, R. (2022). The correlation among students' reading motivations, anxiety, and comprehension during the Covid 19 pandemic. In *Proceedings of the 5th INACELT (international conference on english language teaching)* (pp. 128–138). Institut Agama Islam Negeri (IAIN) Palangka Raya Indonesia. https://e-proceedings.iain-palangkaraya.ac.id/index.php/INACELT/article/view/711/723.

Zbornik, J. (2001). Reading anxiety manifests itself emotionally, intellectually. Today's School Psychologist. http://www.lkwdpl.org/schools/specialed/zbornik3.htm.