Education and Science

Original Article

Early Release 1-26

Determining the Factors Playing a Role in Low Reading Achievement *

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Abstract

The primary aim of this study is to identify the characteristics of 5th-grade students who are low reading achievers and reasons behind low reading achievement. This study was carried out with a total of 944 students by using a correlational model, one of the quantitative research approaches, and convenience sampling and criterion sampling methods. Various instruments were utilized in the study, including the Reading Comprehension Achievement Test composed of open-ended items, the rubric, Student Survey, the Perseverance Scale, the Test Anxiety Scale, the Scale for Attitude toward School, The Exposure to Bullying Scale, the Achievement Motivation Scale, the Perceived Academic Self-Efficacy Scale, the Learned Helplessness Tendency Scale, and an interview form.

Given the results achieved from the Reading Comprehension Achievement Test, responses from students with low reading achievement were predominantly blank, incorrect, and irrelevant responses. Survey results revealed significant differences in the distribution of educational opportunities between low and high-achieving students. The results achieved in this study indicated that demographic, cultural, economic, and affective characteristics explaining the achievements of low and high- high-achieving students were distinct. While gender, number of siblings, and the targeted graduation level significantly predicted the reading test scores of low- achieving students, only the targeted graduation level was a significant predictor in the high- achieving group. Examining affective characteristics, the reading scores of low-achieving students were significantly predicted by their learned helplessness tendencies and attitudes towards school. Only the perceived academic self-efficacy was significant in high- achieving students.

Interviews conducted to determine the reasons for students' low achievement revealed that students struggled with responding to items requiring higher-level thinking, were not accustomed to answering open-ended items, and attempted to respond to open-

Keywords

Student achievement
Low achievement
Reading comprehension
Latent regression
Learned helplessness
Attitude towards school
Academic self-efficacy

Article Info

Received: 03.06.2023
Accepted: 02.06.2024
Published Online: 05.24.2024

DOI: 10.15390/EB.2024.12657

* This article is derived from Neslihan Tuğçe Özyeter's PhD dissertation entitled " Determination of the factors predicting low reading achievement by explanatory item response theory", conducted under the supervision of Ömer Kutlu.

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ended items as if they were multiple-choice items. Based on these findings, it is recommended to take measures to balance certain socioeconomic and psychological variables that affect achievement in both low and high- achieving groups. Additionally, due to the distinct characteristics of these two groups, it is essential to tailor solution proposals in future studies according to these differences.

Introduction

Considering the results of large-scale national and international assessment practices conducted in Türkiye since the 2000s, an increase in the number of low-performing students in the fundamental skills measured by tests draws attention as a significant educational problem (OECD, 2014, 2017, 2019). One of the international large-scale test applications, the Programme for International Student Assessment (PISA), indicates that 2. proficiency level is the basic level and represents the cognitive competencies that enable students to actively and productively engage in life (Serder & Ideland, 2016). Various definitions related to low-performing students can be found in the literature. Vann and Abraham (1990) referred to those, who learn more slowly than their peers, as low-performing ones. Additionally, Wen and Johnson (1997) stated that students, who spend more time on learning but achieve lower scores than their peers, are considered low-performing students.

The results of the PISA 2012 indicated that over a quarter of the students from Türkiye participating in the assessment failed to reach the basic proficiency level in at least one of the fields of reading, science, or mathematics (OECD, 2014). Low student performance is a problem for all countries and economies because there are individuals completing formal education or leaving formal education without acquiring the basic proficiency level in all countries. Table 1 provides the distribution of low-performing students in PISA 2015 and 2018 for both Türkiye and Singapore, a country known for its success. The primary objective of this comparison is to examine the percentage of students at the basic proficiency level in the field of reading comprehension in a country that excelled, such as Singapore, and compare it with the rates found in Türkiye. Singapore can be considered as a reference point for the prevalence of students in the low-achieving group in Türkiye.

Table 1. Distributions to Low Proficiency Levels of Türkiye and Singapore in PISA 2015 and 2018

		Low Proficiency (%)		
		Science Literacy	**Mathematics Literacy**	**Reading Skills**
2015	TR	44.5	51.4	40.0
	SNG	9.6	7.6	11.1
2018	TR	25.2	36.7	26.1
	SNG	9.0	7.1	11.2

Reference: OECD, 2018. (TR=Türkiye; SNG=Singapore)

Examining Table 1, it can be seen that, in the 2015 PISA scores achieved in Türkiye, the percentage of the students with low performance is at least 40% for each learning domain. Despite Türkiye's efforts to improve its performance in 2015 PISA scores and reduce the proportion of students with low performance in PISA 2018, the results indicate that a significant number of students still fall within the low-performance category. An important point drawing attention for Singapore is the low proportion of students exhibiting low performance. Reducing the proportion of low performing students should be considered an effective way to enhance the overall performance of the education system (OECD, 2016). A high-performing education system can contribute to educating individuals capable of advancing society and the economy, as an abundance of low-achievement students suggests individuals lacking fundamental competencies in social and societal contexts (Meyer, 1977). In such a scenario, the long-term societal and economic growth of the country will suffer considerably. According to an estimation made using PISA data, taking necessary steps to elevate individuals with low performance to the basic level can potentially mitigate many of the long-term economic losses for these countries (OECD, 2016).

This study focuses on reading comprehension because it lays the foundation for other learning processes and is a skill that is essential for individuals in their daily lives, even if they do not pursue formal education. Reading is the structuring of information with the help of prior knowledge for a specific purpose (Meneghetti, Carretti, & De Beni, 2006). Kirby (2007) emphasized the complexity of this skill, whereas Snow (2002) highlighted that understanding what one reads involves factors in three different areas (reader, text, and reading activity). Nation and Norbury (2005) noted that the process of extracting meaning from a text incorporates numerous cognitive processes, ranging between the identification of letters/words and the interpretation of the message based on an individual's worldview. Traditional approaches defined reading and understanding as the decoding and recognition of letters. Even though decoding and recognizing letters and words are necessary and important for reading, they do not guarantee comprehension. It is emphasized that decoding and recognition are necessary for understanding but they are not sufficient. True comprehension requires blending the decoded words with the individual's worldview (Meneghetti et al., 2006).

Bloom (1995) emphasized that the reading comprehension skill positively influences lifelong learning. Reviewing the literature, it can be seen that there are consistently positive and strong correlations between students' levels of reading comprehension and their academic achievements (Ateş, 2008; Bayat, Şekercioğlu, & Bakır, 2014; Bruininks, & Mayer, 1979; Çiftçi, 2007; Dalton, Gliessman, Guthrie, & Rees, 1966; Fanelli, 1952; Furchner, 1951; Kutlu, Altıntaş, Özyeter, Alpayar, & Kula-Kartal, 2019; Kutlu, Yıldırım, Bilican, & Kumandaş, 2011; Preston & Botel, 1952; Reavis, 1927; Townsend, 1947; Traxler, 1939; Vilenius-Tuohimaa, Aunola, & Nurmi, 2008). In addition to enhancing academic success, reading comprehension is very important for improving individual's success in daily life thanks to its contribution to intellectual (thinking in abstract terms) and actual (being aware of and following current affairs) knowledge (Mullis, Martin, Kennedy ve Foy, 2007). Individuals with developed reading comprehension skills contribute to the intellectual growth and economic prosperity of society. Examining low achievement in children, who constitutes a future for the society, is prioritized given the fact that societies with under developed reading skills may not progress and cannot generate cultural and economic wealth. Investigating low achievement in children of this age will allow for the measures to address this issue. Thus, students with inadequate reading comprehension skills can be improved and this will contribute to the future of society.

Within the context of this study, it was necessary to define low-achieving students. In this research, a low-achieving student is defined as one, who scores 29.25 or lower on the reading comprehension achievement test administered. The process of determining this score is explained in the following sections. All determinations regarding the causes of low reading comprehension achievement were made based on this group.

Reasons for Low Achievement

Examining the literature on why students exhibit low academic achievement, various factors related to school and educational policies (Bempechat, 1999; Mac Iver and Balfanz, 1999; OECD, 2016), biological factors (Barch et al., 2016; Kweom et al., 2022; Zacharopoulos et al., 2021), and psychological, socio-economic, and cultural factors (Aikens & Barbarin, 2008; Berlinski, Galiani, & Gertler, 2009; Chakrabarty & Saha, 2014; Fortin, Oreopoulos, & Phipps, 2015; Ginther & Pollak, 2004; Udoh, 2012) can be identified. The present study focuses on the psychological, socio-economic, and cultural variables that contribute to students' low achievement.

Scientific studies reported relationships between students' academic achievements and demographic characteristics (gender, number of siblings, educational expectations, preschool education status, socioeconomic levels, etc.) (Aikens & Barbarin, 2008; Barnett, 1995; Berlinski et al., 2009; Currie, 2001; Destin, Richman, Varner, & Mandara, 2012; Fortin et al., 2015; Marcenaro-Gutierrez, Lopez-Agudo, & Ropero-García, 2018; Matthews, Ponitz, & Morrison, 2009). In addition to demographic variables, some psychological characteristics are associated with low student achievement (Alderman, 2004; Alexander, Entwisle, & Horsey, 1997; Bernardi, 2014; DiPrete & Eirich, 2006; Hao, Hu, & Lo, 2014). In this study, demographic characteristics such as gender, number of siblings, having a computer and

a link to internet, having a room and study desk, the number of books at home, daily reading time and the targeted graduation status, and psychological characteristics including learned helplessness, academic self-efficacy, achievement motivation, test anxiety, perseverance, attitude toward school, exposure to bullying, and academic expectations are considered in explaining students' low achievement. To achieve this aim, the study addresses the following questions:

1. How is the distribution of answers given by students with low and high reading achievement to items in the reading comprehension test?
2. Is there a significant difference in the opportunities available to students with low and high reading achievement?
3. Do students' demographic characteristics (gender and number of siblings), socio-economic characteristics (having a room, having a desk, a link to internet, and having a computer), and sociocultural characteristics (number of books at home, daily reading time and targeted graduation level) significantly predict their low and high reading comprehension achievements?
4. Do variables which are attitude toward school, achievement motivation, test anxiety, academic self-efficacy, learned helplessness, perseverance and exposure to bullying significantly predict students' low and high reading achievement?
5. How do students with low reading achievement form incorrect and irrelevant answers to open-ended items?

Significance of the Study

Working with a group of students exhibiting low academic achievement in Türkiye is of great importance. As highlighted in the problem statement, Türkiye has a significantly large low-achieving group. The lack of necessary academic knowledge and skills in this group for the preservation of natural life and the continuation of social life will lead to challenges in the socio-economic and cultural development of the Turkish nation. Identifying the reasons that hinder low-achieving students from achieving high-level learning is anticipated to prompt societal decision-makers to contemplate solutions. This, in turn, will enable decision-makers to implement long-term individual, economic, and societal measures contributing to societal development. Similarly, it is crucial to identify variables associated with low reading achievement for the well-being of individuals. Studying on this group is essential for elevating our students' reading achievement to basic and advanced levels and protecting them from individual disadvantages resulting from low achievement. In the context of this study, if the relationship between demographic characteristics, socio-economic and sociocultural characteristics, attitudes toward school, achievement motivation, test anxiety, academic self-efficacy, learned helplessness, perseverance, and exposure to bullying can be determined, then preventive, regulatory, and developmental measures can be taken related to these variables. These measures will not only elevate our students out of the low-achieving group but will also benefit us individually and socially in advancing.

In addition, it is believed that this study will serve as a source for future studies. Knowing the characteristics of low-achieving students and identifying characteristics associated with their achievements will contribute to the relevant literature and shed light on a significant issue in Türkiye. This study will guide the steps to be taken regarding students with low achievement. Understanding the psychological and demographic characteristics behind students' low achievement will provide information on what needs to be done for them to achieve high success. Thus, it is thought that regulatory, transformative, or corrective measures can be taken concerning variables responsible for low achievement in students.

Method

Study Type

This study was designed using the correlational model, which is a quantitative research approach. Correlational studies aim to identify relationships between variables and predict potential outcomes or situations based on these relationships (Fraenkel & Wallen, 2009). The research is concerned with determining the predictive variables that play a role in the low reading achievement. Within this scope, the objective is to identify the demographic and psychological characteristics leading students to give incorrect, irrelevant, and blank answers in the Turkish reading comprehension achievement test.

Study Group

Groups of students with low and high scores on the reading comprehension test was formed in this research. Students with high scores were considered as the reference group. A two-stage approach was adopted in selecting the study group. The convenience sampling method was used in selecting the cities where data would be collected, aiming to achieve maximum savings in time, effort, and workforce (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz, & Demirel, 2014). Accordingly, Ankara and Kocaeli, the researcher's residing cities, were selected. In the second step, the schools were selected from Ankara and Kocaeli by using purposeful sampling, one of the non-random sampling methods. Purposeful sampling is a sampling design where observation units with specific qualities are selected (Büyüköztürk et al., 2014). Academic success of schools were considered as criteria for study group. The study group consisted of schools in Mamak, Etimesgut, and Çankaya districts in Ankara province and in İzmit and Gölcük districts in Kocaeli province. Data were collected from 5th grade students in these schools. The choice of 5th grade students for the study group was motivated by the significant turning point in their reading comprehension skills at this grade. As reported by Gomez and Gomez (2007), students begin the reading process for learning starting from the 4th grade. Therefore, the 5th grade is an age when students begin reading to understand, transitioning to more abstract learning. It is also an early age at which measures can be taken for students showing low achievement. Hence, the present study was carried out with 5th grade students (aged 9-10), as detailed in Table 2.

Table 2. Demographic Characteristics of the Study Group

Variables	Low Achieving Group		High Achieving Group		Total Group	
	n	%	n	%	n	%
Gender						
Female	235	41.2	201	53.9	436	46.2
Male	336	58.8	173	46.1	508	53.8
Maternal Education Level						
No education	7	1.2	2	0.5	9	1.0
Primary School Graduate	71	12.4	39	10.5	110	11.7
Secondary School Graduate	74	13.0	38	10.2	112	11.9
High School Graduate	116	20.3	88	23.6	204	21.6
College Graduate	84	14.7	82	22.0	166	17.6
Missing	219	38.4	124	33.2	343	36.3
Paternal Education Level						
No education	4	0.7	5	1.3	9	1.0
Primary School Graduate	35	6.1	15	4.0	50	5.3
Secondary School Graduate	74	13.0	32	8.6	106	11.2
High School Graduate	147	25.7	85	22.8	232	24.6
College Graduate	83	14.5	104	27.9	187	19.8
Missing	228	39.9	132	35.4	360	38.1

As can be seen in Table 2, there is a slight difference in the distribution of low- and high-achieving students in terms of gender. The low-achieving group has a higher number of male students, while the high-achieving group has a higher number of female students. In terms of parental education level, the majority of parents in the low-achieving group have education levels up to and including middle school, while in the high-achieving group, there is a prevalence of parents with no education beyond high school.

Furthermore, to investigate the reasons for low achievement, a group of 70 students with low achievement was selected, and interviews were conducted regarding reasons for incorrect and irrelevant answers. The selection criteria for interviewees included obtaining a score of 29.25 or below on the reading comprehension achievement test.

Data Collection Tools

Within the scope of the study, the reading comprehension achievement test, rubric, student survey, perceived academic self-efficacy scale, learned helplessness tendency scale and interview form were utilized.

Reading Comprehension Achievement Test: In developing the test, the four-level classification used in the Progress in International Reading Literacy Study (PIRLS) (Mullis, Martin, & Sainsbury, 2016) was utilized. According to this classification, comprehension processes based on reading involve *focusing on and retrieving explicitly stated information*, *making straightforward inferences*, *interpreting and integrating ideas and information*, and *evaluating and critiquing content and textual elements* (Mullis et al., 2016). The most cognitively straightforward process is focusing on and retrieving explicitly stated information, whereas the most complex process involves evaluating and critiquing the content and textual elements. Eight open-ended items, related to the reading text, were developed considering this classification. The 1st and 2nd items in the achievement test measure focusing on and retrieving explicitly stated information, the 3rd and 4th items are making simple inferences, the 5th and 6th items are interpreting and integrating ideas and information, and finally the 7th and 8th items evaluating and critiquing content and textual elements.

The exploratory factor analysis of the developed reading comprehension achievement test ($\chi 2/df=3.98$; $p<0.05$; RMSEA=0.073; CFI=0.95; TLI=0.93; SRMR=0.081) and confirmatory factor analysis ($\chi 2/df=3.78$; $p<0.05$; RMSEA=0.085; CFI=0.95; TLI=0.93; SRMR=0.052) results confirmed that the achievement test measures the reading comprehension skill. A rubric was developed to score the open-ended items, consisting of the most correct, partially correct, incorrect, blank, and irrelevant answer categories. The reliability coefficient calculated through single-rater scoring is 0.87. Inter-rater reliability was calculated by using the concordance coefficient suggested by Miles and Huberman (1994). Student papers used in the reliability calculation by a single rater were scored by another rater. The concordance between the researcher's first and second scoring and the rater's first and second scoring was calculated as 0.78 and 0.82, indicating high consistency in rubrics.

Standard Setting: To identify low-achieving students within this study, a cut off score was required. The Extended Angoff method was used for setting the cut off. Accordingly, students scoring 29.25 points or less out of 100 total points on the achievement test are considered low-achieving students, whereas those scoring higher are taken as the reference group and designated as high-achieving.

The standard-setting study based on the Extended Angoff method took 1 day. The application process for the standard-setting group was explained, the PIRLS classification and indicators underlying the items were introduced, and sample items were presented. During the standard setting, panelists were asked to determine the highest possible score a low-achieving student could receive on the relevant item. This application was initially conducted individually, and in cases with significantly different ratings, group discussions were held to make decisions.

Student Survey

The first section of the student survey consists of items aiming to obtain information about students' demographic and cultural characteristics. The second section measures students' psychological attributes.

Attitude Towards School: Derived from the PISA 2012 application, this scale comprises eight items. The reliability for the Turkish implementation of this structure is 0.59 for learning outcomes and 0.80 for learning activities (OECD, 2014).

Perseverance: This scale which was used in the PISA 2015 consists of a total of five items. The reliability coefficient for the Turkish implementation of this psychological attribute is 0.80 (OECD, 2017).

Test Anxiety: Utilized in the PISA 2015, this scale consists of five items. The Cronbach's Alpha internal consistency coefficient for the Turkish 2015 application is 0.83 (OECD, 2017).

Achievement Motivation: Employed in the PISA 2015, this scale comprises five items. The Cronbach's Alpha internal consistency coefficient for the Turkish implementation is 0.84 (OECD, 2017).

Exposure to Bullying: This scale, utilized in the PISA 2018, consists of six items. The Cronbach's Alpha internal consistency coefficient for the PISA 2018 Turkish implementation is 0.81 (OECD, 2019).

Academic Expectation: This construct was measured with a single item in the PISA 2018 Türkiye. In this study, the relevant item was adapted for 5th grade students and used. Responses to the item were gathered from 15-year-olds in original study and categorized from high school graduation onwards. For the middle school students of this study, categories were initiated from middle school graduation. Within the scope of the study, students' academic expectations were measured by asking about the highest educational level they aimed to complete.

Academic Self-Efficacy

The Children's Perceived Academic Self-Efficacy Scale developed by Jinks and Morgan (1999) and adapted to Turkish culture by Özyeter and Kutlu (2022) was utilized for the measurement of academic self-efficacy. This scale consists of thirty items and has three sub-dimensions, specifically designed to measure the perceived academic self-efficacy of middle school students. Given the results of the adaptation study, the factor structure of the original scale was preserved for middle school students in Türkiye ($\chi 2/sd$= 2.33; RMSEA=0.06; CFI=0.90; TLI=0.90). The moderate to high-level relationships obtained between students' grades in the fall and spring semesters and their scores on the Children's Perceived Academic Self-Efficacy Scale constitute evidence of criterion validity for the scale. Considering the results of the validity study carried out on group differences, statistically significant differences were found between lower and upper groups in students' grades for the fall and spring semesters. The reliability estimations for the scale were calculated using Cronbach's Alpha and McDonald's Omega techniques. Accordingly, the Cronbach's Alpha coefficient for the total score is 0.91, and the McDonald's Omega coefficient is 0.96. The highest score that can be obtained from the scale is 120 and the lowest score is 30. A higher score indicates higher academic self-efficacy, while a lower score indicates lower academic self-efficacy.

Learned Helplessness

In harmony with the theory developed by Abramson, Seligman, and Teasdale (1978), researchers constructed 14 items written in line with the theory were grouped into three dimensions by exploratory factor analysis as predicted (Kutlu & Özyeter, 2023). These sub-dimensions are causal attribution styles. Three items are in the global-specific attribution style, six in the internal-external attribution style, and finally, five in the stable-unstable attribution style. In negative situations, external, unstable, and specific reasons receive 1 point, while internal, stabile, and global reasons receive 0 points. In positive situations, internal, unstable, and global reasons receive 1 point, while external, stable, and specific reasons receive 0 points. Higher total scores on the scale indicate an increase in the student's tendency toward learned helplessness.

The confirmatory factor analysis results with middle school students supported the proposed three-dimensional structure of the scale ($\chi 2/sd=1.27$; $p>0.05$; RMSEA=0.036; CFI=0.95; TLI=0.94). The reliability estimation of the scale was calculated through McDonald's Omega. According to this, the reliability of the total score of the scale was calculated as 0.91 in the first study group and 0.89 in the second study group. When the item-total score correlations are examined, it is noteworthy that all correlations are positive and statistically significant. Even if one item shows low correlation, the scores of other items correlate moderately with the total test score. Valid and reliable results can be obtained using the scale.

Interview Form

Other instrument used in data collection within the scope of the study is the interview form. Structured interview form was developed by the researchers. The purpose of developing the structured interview form is to reveal the cognitive processes behind the answers students give to the items in the reading comprehension achievement test. In other words, it is to determine their response behaviors. In the interview form, there are seperate questions for each item in the reading comprehension achievement test. Opinions on the language, appropriateness to the age level, and relevance to the purpose of the interview form were obtained from two Turkish language teachers working at the relevant age level and a measurement and evaluation specialist. Turkish language teachers expressed their opinion that the language and expression of the interview form are suitable for the age level and class level. The measurement and evaluation specialist provided suggestions to gather more detailed information during the interview. The form was finalized based on the feedback from the expert group. A detailed instruction was written to standardize the data collection process for each and different students and implemented.

Reliability and Validity of Data Collection Tools

Descriptive statistics of the data collection instruments are presented in Table 3.

Table 3. Descriptive Statistics of Data Collection Tools for the Study Group

Scales	$\bar{x}$	ss	Skewness	Kurtosis
Reading Comprehension Achievement Test	19.61	12.40	.22	-.70
Test Anxiety Scale	12.31	3.71	.01	-.51
Achievement Motivation Scale	16.55	3.10	-1.29	1.85
Attitude towards School Scale	26.87	4.01	-.92	1.13
Perseverance Scale	16.09	2.83	-.49	.17
Exposure to Bullying Scale	9.16	4.04	1.60	2.25
Perceived Academic Self-efficacy Scale	92.02	12.71	-.62	.96
Learned Helplessness Tendency Scale	9.29	1.89	-.65	.47

Skewness and kurtosis values obtained from the employed measurement tools can be observed in Table 3. During confirmatory factor analysis, the nature of the variables was considered, and estimation was conducted by using WLSMV. This method does not assume the normal distribution of scores. Confirmatory factor analysis fit indices for the data collection instruments used in the study group are provided in Table 4.

Table 4. Confirmatory Factor Analysis Results for Data Collection Tools of the Study Group

Scales	χ^2/df	RMSEA	CFI	TLI
Reading Comprehension Achievement Test	2.96	0.05	0.99	0.98
Test Anxiety Scale	2.96	0.08	0.98	0.95
Achievement Motivation Scale	2.52	0.07	0.99	0.98
Attitude towards School Scale	3.01	0.08	0.98	0.97
Perseverance Scale	1.51	0.02	0.99	0.99
Exposure to Bullying Scale	1.77	0.05	0.98	0.95
Perceived Academic Self-efficacy Scale	2.77	0.07	0.91	0.90
Learned Helplessness Tendency Scale	1.25	0.03	0.95	0.93

Given the fit values presented in Table 4, it can be seen that the constructed models demonstrate a moderate to good fit with the data. When examining standardized path coefficients of the scales, factor loadings range between .47 and .73 for the reading comprehension achievement test, from .43 to .80 for the test anxiety scale, from .42 to .88 for the achievement motivation scale, from .42 to .84 for the attitudes towards school scale, from .66 to .74 for the perseverance scale, from .54 to .90 for the exposure to bullying scale, from .30 to .89 for the perceived academic self-efficacy scale, and from .47 to .86 for the learned helplessness tendency scale. WLSMV was chosen as the estimation method. The preference for this estimation method can be explained by the categorical nature of response categories in social sciences. Modifications were made to the achievement test and perceived academic self-efficacy scales, which consisted of closely related expressions. Covariances were drawn between items measuring advanced reading performance in the achievement test and expressions in the perceived academic self-efficacy scale that belonged to the same subscale and were semantically close. The reliability values of the instruments used for the study group are presented in Table 5.

Table 5. Reliability Estimations for Data Collection Tool of the Study Group

Scales	Cronbach Alfa	McDonalds' Omega
Reading Comprehension Achievement Test	0.70	0.72
Test Anxiety Scale	0.74	0.75
Achievement Motivation Scale	0.77	0.77
Attitude towards School Scale	0.76	0.78
Perseverance Scale	0.75	0.77
Exposure to Bullying Scale	0.80	0.80
Perceived Academic Self-efficacy Scale	0.91	0.87
Learned Helplessness Tendency Scale	-	0.89

Given the reliability estimations in Table 5, it can be seen that all reliability estimations are higher than the cutoff points recommended by George and Mallery (2003). The reason for the lower reliability estimations for the study group when compared to the original reliability values is the homogeneity of the study group in terms of age. The measurement tools used here yielded reliable results.

For the validity and reliability analyses of the interview form, it was presented to experts' opinions. Experts were asked to provide their opinions on the appropriateness of interview form for the student's class and age level, as well as appropriateness in terms of language and expression characteristics. Necessary adjustments were made based on feedback received from experts.

Data Collection

Before starting the data collection process, ethical approval and administration permissions, which are necessary for the present study, were obtained from Ankara University, Ankara Provincial Directorate of National Education, and Kocaeli Provincial Directorate of National Education. The data were collected by the researcher during the spring semester of 2020-2021, and the data collection process

continued until the end of the fall semester of 2021-2022. The process of application, completed in a total of two class hours, included the administration of the Reading Comprehension Achievement Test and Learned Helplessness Tendency Scale in the first session, and the Perceived Academic Self-Efficacy Scale and Student Survey in the second session. The researcher managed the implementation process in all sessions, and uniform instructions were provided to all classes to ensure standardization.

To examine the response processes of low-achieving students to open-ended items, a group of students with low reading achievement was initially identified. On the day following the implementation, these students were brought together in an empty classroom at a suitable time, and the purpose of the meeting was explained to them. During these meetings, their responses to the reading comprehension achievement test were shown to them, and their views and cognitive processes regarding why and how they generated these responses were explored. Accordingly, for each item in the reading comprehension achievement test, students were asked to provide an analysis of how they answered in their minds. Explanatory examples were provided for illustration purposes.

Data Analysis

Microsoft Excel, SPSS 22, and Mplus programs were used for estimating the validity and reliability of the instruments used in the present study.

Before data analysis, the dataset was examined for missing values. No missing values were found in the achievement test. The distribution of missing data in scales measuring psychological attributes was examined using the MCAR test. The distribution of missing data was found to be random. Due to the low rate of missing data (not exceeding 5%) and the reliability of measurement tools being at or above .70, the literature suggests imputing missing data through mean imputation (Schafer & Graham, 2002). In this study, missing data were imputed based on the mean.

For the analysis of the first sub-objective of the study, the distribution of student responses across response categories was examined using SPSS 22.0 and Microsoft Excel. For the second sub-objective, the significance of the difference between the two percentages was tested using the Z-test (Akhun, 1982) through Microsoft Excel. Latent regression analysis, specifically Exploratory Item Response Theory (IRT) models, was employed to determine whether demographic characteristics and socioeconomic and cultural variables are explanatory for the low and high reading achievement, as well as attitudes towards school, achievement motivation, test anxiety, academic self-efficacy, learned helplessness tendency, perseverance, and exposure to bullying. Latent regression is person explanatory model from explanatory item response theory models. The choice of latent regression analysis in this study is driven by its relevance to the specific characteristics and group under investigation. The group with low reading achievement in this study constitutes a narrow range in terms of reading comprehension achievement scores. In this study, students scoring 29.25 points and below on the reading comprehension achievement test were included in the group with low reading achievement. This situation reduces the variance in the dependent variable, which is the score for low reading achievement. Traditional regression techniques based on classical test theory model the total score, therefore, cannot yield successful results in the already limited variance. Thus, a technique based on Item Response Theory, specifically using students' response patterns (scores from reading comprehension achievement test items) to estimate their abilities, was preferred.

Before running the IRT model, assumptions of unidimensionality, monotonicity, and invariance of the dataset were checked. Following the confirmation of these assumptions, to decide which model fits the data better, data structure was taken into account and partial credit and generalized partial credit models were applied. Parameters related to the reading comprehension achievement test were estimated in both the partial credit model and the generalized partial credit model. As these models are nested, the estimated model parameters (AIC, -2LL, χ^2) were compared. Accordingly, the fit value of the generalized partial credit model (AIC=7489.057, BIC=7632.521) is significantly lower than the fit values of the partial credit model (AIC=7491.557, BIC=7604.589) ($\chi^2(7)=16.5$; $p<0.05$). Thus, the generalized partial credit model was used for estimations. The third and fourth sub-objectives were

addressed using the R program, where analyses were conducted with the ltm package (Rizopoulos, 2006) and mirt package (Chalmers, 2012).

The fifth sub-objective of the study is to investigate the reasons behind students' incorrect and irrelevant responses to open-ended items in the reading comprehension achievement test. For this purpose, interviews were conducted with a selected group of students using a structured interview form. Students' perspectives on how they provided incorrect or irrelevant answers for each item were determined. Findings from the interviews were reported using the students' own sentences.

Limitations

The limitation of this study is related to the study group. In the process of selecting the study group, entrance exam scores for the High School Transition Exam (LGS) were requested from Ministry of National Education (MoNE) to identify groups with low and high academic achievement. However, the Ministry of National Education did not disclose this information. Consequently, the schools attended by low and high-achieving students were determined based on the opinions of teachers and administrators.

Definitions

Low-achieving student: Within the scope of this study, the group exhibiting low performance consists of students who scored 29.25 or below on the administered reading comprehension achievement test, which was graded on a scale of 100. In determining this cutoff score, low-achieving group was considered to provide answers to the reading comprehension achievement test that were farthest from correct, including incorrect, empty, and irrelevant responses.

High-achieving student (Reference group): In the context of this study, high-achieving students are those who scored above 29.25 on the administered reading comprehension achievement test, graded on a scale of 100. This group primarily comprises students providing the furthest correct response and is referred to as the reference group in this study.

The Most Correct Answer: An exemplary response that accurately and fully describes the structure and scope measured by the item.

Partially Correct Answers: Responses that, while not as comprehensive as the correct response, partially cover the measured structure and scope.

Blank answer: The absence of a written response regarding the scope and structure measured by the item.

Incorrect response: A response containing information that is internally correct but not suitable for the scope the item aims to measure.

Irrelevant response: Responses that are nonsensical, fabricated, and unrelated to the scope and content measured by the item.

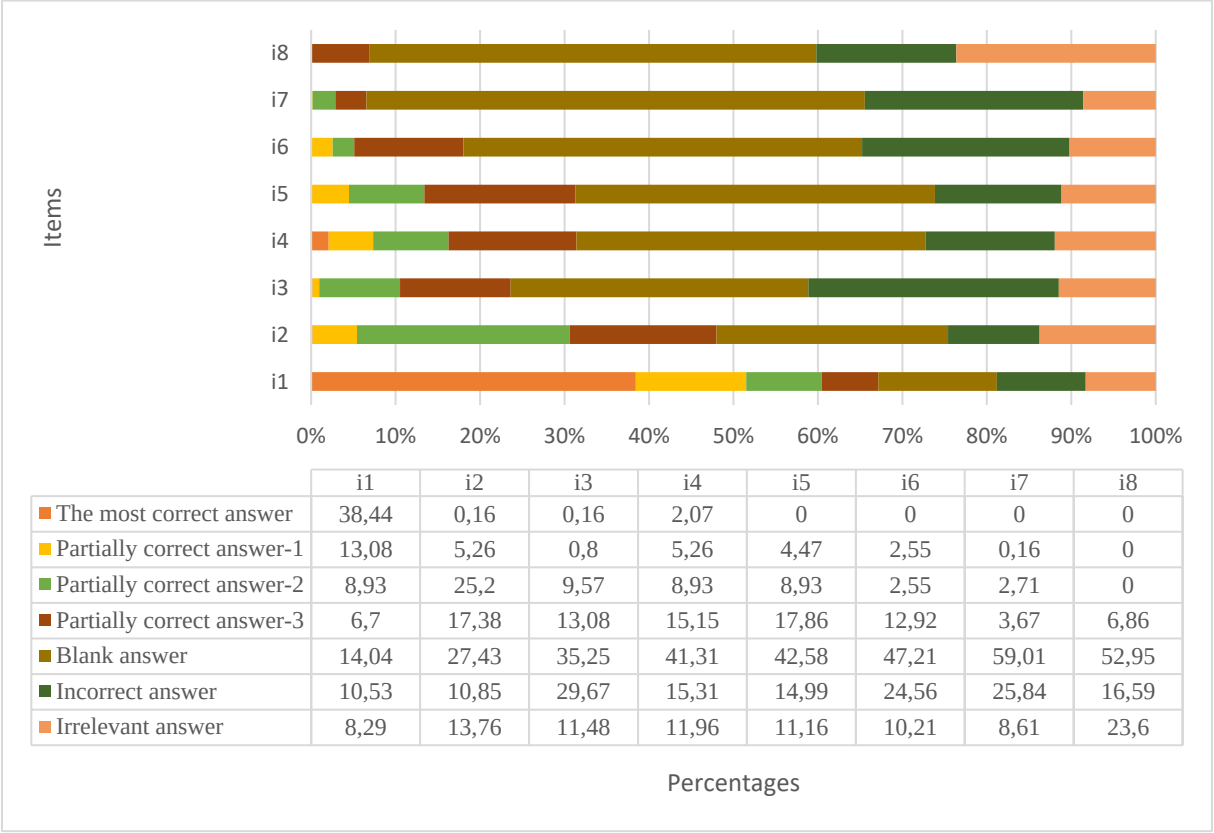
Ethics Committee Approval

The ethical approval for this study was obtained from the Ethics Committee of Ankara University. Permissions for implementation were secured from the Ministry of National Education through approvals obtained from the Ankara and Kocaeli Provincial Directorates of National Education.

Findings

Findings on the First Research Question

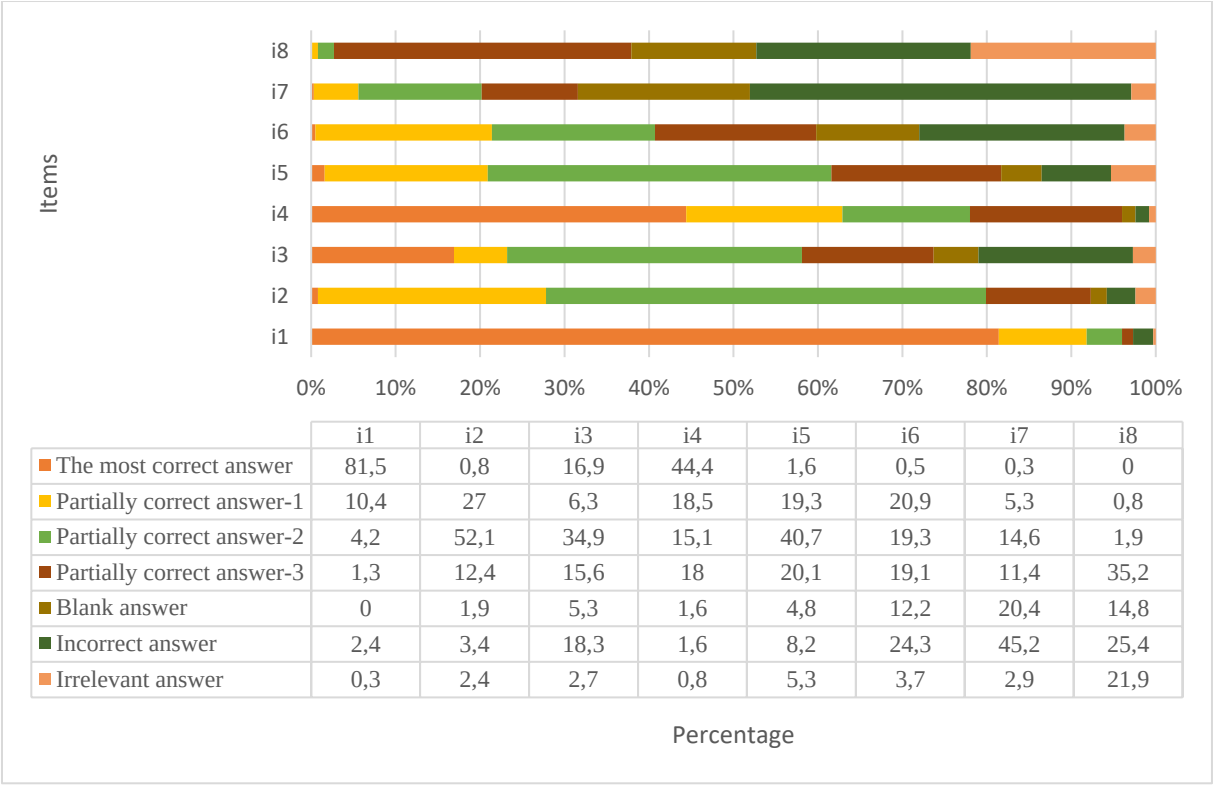
In this study, the first research question is how the distribution of responses to items on the reading comprehension achievement test varies among students based on their achievement groups. The distribution for the low-achieving group is as presented in Figure 1.



	i1	i2	i3	i4	i5	i6	i7	i8
The most correct answer	38,44	0,16	0,16	2,07	0	0	0	0
Partially correct answer-1	13,08	5,26	0,8	5,26	4,47	2,55	0,16	0
Partially correct answer-2	8,93	25,2	9,57	8,93	8,93	2,55	2,71	0
Partially correct answer-3	6,7	17,38	13,08	15,15	17,86	12,92	3,67	6,86
Blank answer	14,04	27,43	35,25	41,31	42,58	47,21	59,01	52,95
Incorrect answer	10,53	10,85	29,67	15,31	14,99	24,56	25,84	16,59
Irrelevant answer	8,29	13,76	11,48	11,96	11,16	10,21	8,61	23,6

Figure 1. Distributions of Answers to the Reading Comprehension Achievement Test for Low-Achieving Students

Upon examination of Figure 1, as expected, the rates of providing correct answers by low-achieving students are notably low. When considering all items collectively, students predominantly cluster around the partially correct answers, particularly in partially correct answer-2 and partially correct answer-3. Analyzing answers to items representing the third and fourth levels, it is observed that the rate of correct answers is quite low, while the rates of leaving items unanswered, providing incorrect answers, and offering irrelevant answers are high. Another noteworthy aspect about the answers is the frequency of blank answer. In the low-achieving group, the rates of leaving items unanswered increase in complex comprehension processes. Figure 2 illustrates the distributions of answer categories for high-achieving students.



	i1	i2	i3	i4	i5	i6	i7	i8
The most correct answer	81,5	0,8	16,9	44,4	1,6	0,5	0,3	0
Partially correct answer-1	10,4	27	6,3	18,5	19,3	20,9	5,3	0,8
Partially correct answer-2	4,2	52,1	34,9	15,1	40,7	19,3	14,6	1,9
Partially correct answer-3	1,3	12,4	15,6	18	20,1	19,1	11,4	35,2
Blank answer	0	1,9	5,3	1,6	4,8	12,2	20,4	14,8
Incorrect answer	2,4	3,4	18,3	1,6	8,2	24,3	45,2	25,4
Irrelevant answer	0,3	2,4	2,7	0,8	5,3	3,7	2,9	21,9

Figure 2. Distributions of Answers to the Reading Comprehension Achievement Test for High-Achieving Students

According to Figure 2, the rate of providing correct answers (including the most correct and partially correct answers) to items is highest at the first level (approximately 95%), and lowest at the fourth level (approximately 30%). When considering all items collectively, students are most concentrated around the partially correct answers, specifically in categories partially correct answer-1, partially correct answer-2, and partially correct answer-3. The lowest rates of correct answers are in the third and fourth levels of reading comprehension. High-achieving students' answers to third- and fourth-level items are primarily found in incorrect answers.

Findings on the Second Research Question

The second research question examines the significance of the differences in the percentages of opportunities available to students based on their achievement groups. The results are presented in Table 6.

Table 6. Significance of the Distribution of Educational Opportunities based on Achievement Groups

Opportunities	Low achieving group (%)	High achieving group (%)	SE_{Dif}	Z score
Opportunities at home				
Study desk	78.6	84.7	2.61	-2.34*
Room to study	71.3	78.8	2.91	-2.58**
Computer to study	49.2	59.9	3.32	-3.22**
Link to the internet	91.9	95.4	1.67	-2.10*
Classical books	75.4	82.8	2.74	-2.70**
Work of art	35.2	46.5	3.26	-3.47**
Supplementary books	75.0	79.3	2.81	-1.53
Number of books student owns				
1-50 book	56.4	49.2	3.34	2.16*
51-100 books	21.4	22.4	2.76	-0.36
101-150 books	7.5	10.4	1.88	-1.54
151-200 books	5.0	5.2	1.47	-0.14
201-250 books	5.0	6.0	1.51	-0.66
250 and more books	4.7	6.8	1.53	-1.37
Number of books at home				
1-50 books	49.7	36.7	3.34	3.89**
51-100 books	23.0	22.6	2.82	0.14
101-150 books	9.0	12.2	2.04	-1.57
151-200 books	6.1	8.4	1.72	-1.34
201-250 books	6.3	9.5	1.78	-1.80
250 and more books	5.8	10.6	1.80	-2.67**
Daily reading time				
Less than 1 hour	32.4	30.3	3.10	0.68
Between 1-2 hours	53.1	58.4	3.32	-1.60
Between 3-4 hours	11.0	8.8	2.01	1.09
More than 5 hours	2.5	2.1	1.01	0.40

*<0.05; **<0.01

Examining the significance of the percentage differences presented in Table 6, significant differences favoring the high-achieving group are found in the students' opportunities at home (excluding supplementary resource books). In this study, the variable of having supplementary resource books did not present any statistically significant difference between achievement groups.

When examining the number of books owned by students, it was observed that the percentage distributions are similar for both groups. The only statistically significant difference between groups is in the category of owning 1-50 books ($z=2.16$; $p<.05$). The low-achieving group has statistically significantly more books in the 1-50 category than the high-achieving group. No statistically significant differences were found in other categories. Clustering of low-achieving students with fewer than 50 books was noteworthy. While it is expected for high-achieving students to have more books, the percentages for having books are desired to be low for this category (1-50 books) and higher for number of books above 100. Looking at the table, the percentages of students with 151 or more books are approximately 15% for both low and high-achieving groups. A similar situation applies to the number of books in students' homes. Regarding the significance of percentages, there is a significant difference

favoring the low-achieving group for 1-50 books and favoring high-achievement students for 250 and above book counts. However, there is no significant difference in daily reading times between the groups.

Findings on the Third Research Question

The third aim of the study is to determine the demographic, cultural, and economic variables influencing students' low and high achievement. Latent regression results for the low-achieving group are provided in Table 7.

Table 7. Latent Regression Analysis Results for Demographic Variables of the Low-Achieving Group

Variables	Beta (St.)	Sd	t	p
Constant	-0.198	0.213	-0.929	0.353
Gender	**-0.126**	**0.058**	**-2.202**	**0.028**
Number of siblings	**-0.061**	**0.027**	**-2.251**	**0.025**
Having a computer	0.031	0.061	0.516	0.606
Having a room	-0.042	0.069	-0.611	0.541
Having a link to internet	0.144	0.105	1.364	0.173
Having a study desk	0.078	0.079	0.995	0.320
Number of books at home	0.099	0.056	1.747	0.081
Academic expectation	**0.073**	**0.033**	**2.226**	**0.026**

Examining Table 7, it can be seen that gender (t=-2.202; p<0.05), number of siblings (t=-2.251; p<0.05), and the educational level students aim to complete (t=2.226; p<0.05) are significant explanatory factors for low achievements. Thus, being male and having more siblings reduce a student's success, while aspiring to complete higher education increases success. Variables such as having a computer (t=0.516; p>0.05), having a separate room (t=-0.611; p>0.05), having a study desk (t=0.995; p>0.05), having a link to internet (t=1.364; p>0.05), and the number of books at home (t=1.747; p>0.05) do not play a role in the success of low-achievement students. Table 8 contains variables influencing the success of the high-achieving group.

Table 8. Latent Regression Analysis Results for Demographic Variables of the High-Achieving Group

Variables	Beta (St.)	Sd	t	p
Constant	-0.676	0.275	-2.455	0.015
Gender	0.011	0.064	0.175	0.861
Number of siblings	-0.011	0.040	-0.265	0.791
Having a computer	0.003	0.069	0.051	0.959
Having a room	0.071	0.087	0.821	0.412
Having a link to internet	-0.082	0.155	-0.529	0.597
Having a study desk	0.069	0.102	0.677	0.499
Number of books at home	0.049	0.066	0.740	0.460
Academic expectation	**0.162**	**0.041**	**3.967**	**0.000**

Examining Table 8, it was determined that only the variable of the educational level students aim to complete is significant (t=3.967; p<0.01) in explaining the success of the high-achieving group. As the educational level students aspire to increases, their reading achievements also increase. Gender (t=0.175; p>0.05), number of siblings (t=-0.265; p>0.05), owning a computer (t=0.051; p>0.05), having a separate room (t=0.821; p>0.05), having a link to internet (t=-0.529; p>0.05), having a study desk (t=0.677; p>0.05), and the number of books at home (t=0.740; p>0.05) did not play any significant roles in explaning reading achievement in the high-achieving group.

Findings on the Fourth Research Question

The latent regression results, which is the fourth aim of the study, for the determination of affective characteristics affecting students' low and high achievement in reading comprehension is presented only for low achieving group in Table 9.

Tablo 9. Latent Regression Analysis Results for Affective Variables of the Low Achieving Group

Variables	Beta (St.)	Sd	t	p
Constant	-0.422	0.301	-1.402	0.161
Test anxiety	-0.003	0.008	-0.341	0.733
Achievement motivation	0.009	0.010	0.876	0.381
Attitude towards school	**0.023**	**0.008**	**2.828**	**0.005**
Perseverance	-0.010	0.012	-0.845	0.398
Exposure to bullying	-0.004	0.007	-0.533	0.594
Perceived academic self efficacy	0.001	0.003	0.243	0.808
Learned Helplessness Tendency	**-0.030**	**0.013**	**-2.329**	**0.020**

As seen in Table 9, the variables that are learned helplessness tendency (t=-2.329; p<0.05) and attitude towards school (t=2.828; p<0.01) are the variables explaining success in the group with low reading achievement. Accordingly, as the learned helplessness tendencies of students in the low achieving group increase, their reading achievements decrease. In contrast, the situation is reversed for attitude towards school. The reading achievements of students also increase as the attitude scores towards school increase. The perceived academic self-efficacy (t=0.243; p>0.05), achievement motivation (t=0.876; p>0.05), test anxiety (t=-0.341), exposure to bullying (t=-0.533; p>0.05), and perseverance (t=-0.845; p>0.05) of students with low reading achievement do not play a significant role in explaining their achievements. Results regarding the significant affective characteristics explaining high reading achievement are presented in Table 10.

Table 10. Latent Regression Analysis Results for Affective Variables of the High Achieving Group

Variables	Beta (St.)	Sd	t	p
Constant	-0.562	0.415	-1.354	0.176
Test anxiety	-0.009	0.010	-0.959	0.338
Achievement motivation	0.014	0.012	1.146	0.252
Attitude towards school	-0.005	0.010	-0.473	0.637
Perseverance	-0.003	0.014	-0.223	0.823
Exposure to bullying	0.005	0.009	0.585	0.559
Perceived academic self efficacy	**0.008**	**0.003**	**2.380**	**0.018**
Learned Helplessness Tendency	-0.014	0.017	-0.827	0.409

As seen in Table 10, perceived academic self-efficacy (t=2.380; p<0.05) was effective in explaining the success of the group with high reading achievement. As students' perceived academic self-efficacy increases, their reading achievements also increase. However, achievement motivation (t=1.146; p>0.05), test anxiety (t=-0.959; p>0.05), exposure to bullying (t=0.585; p>0.05), learned helplessness tendency (t=-0.827; p>0.05), perseverance (t= 0.223; p>0.05), and attitude towards school (t=0.473; p>0.05) do not have an enhancing role in student achievement in the high achieving group.

Findings on the Fifth Research Question

The fifth aim of the study is to explore the incorrect and irrelevant response behaviors exhibited by students in the low-achieving group. The most common response behavior observed in this group is the direct reproduction of an expression found in the text as their answer. The frequently reiterated expressions obtained from student interviews are provided below:

S1 : "I read the text. I looked at the question. I wrote it down."

S5 : "I read the question, wrote the answer from the text."

S27 : "I searched in the text."

Despite variations in the cognitive processes measured by the items and whether the response was explicitly stated in the text, students in this group insisted on finding the answer within the text. In this context, the initial finding regarding the fifth sub-goal is that students demonstrated similar response behaviors for all items in the reading comprehension test, predominantly expressing "I looked for the answer in the text" or "I found it in the text" for each item.

Another group of response behaviors exhibited by students is answering the questions without reading the text or responding to the items after reading the text only once. Student expressions related to this behavior are as follows:

S16 : "I answered the question without reading the text."

S18 : "I read it once, wrote it down myself (from my own mind)."

This finding suggests potential deficiencies in the students' ability to successfully perform a given task, persist in completing a task despite obstacles, or finish a task with the desired standards. Another set of response behaviors is as follows:

S12 : "I wrote it down myself (from my own mind) with other information."

S33 : "I read from the text and added from my own (thoughts)."

S42 : "I made it up."

S48 : "I wrote from my daily life."

S51 : "I wrote what came to my mind."

The aforementioned response behaviors represent students' responses to different items with varied cognitive-levels.

Discussion, Conclusion, and Suggestions

Examining the responses of groups with low and high reading achievement in open-ended items, it was observed that the low-achievement student group provided considerably fewer correct answers on the reading comprehension achievement test. Within the category of incorrect answers, low-achievement students predominantly gave blank answers, whereas the high-achieving group provided the highest number of incorrect responses. Mullis et al. (2016) emphasized that items measuring different cognitive levels require distinct skills in the human mind. In other words, it is expected that the low-achieving group would provide fewer correct answers on items measuring cognitively complex reading comprehension processes. The important point here is the distribution of blank, incorrect, and irrelevant responses. The most frequently gathered response category for low-achievement students is blank answers. In contrast, for the high-achieving group, the most prevalent response category is incorrect responses. This situation, considering the performance associated with response categories, indicates a lack of learning in the low-achieving group, while in the high-achieving group, it suggests a deficiency in learning. In a study investigating why students struggle to answer extended-response open-ended items, Joshi (2021) revealed that students found these items challenging. The reason behind the difficulty, as stated by teachers, is that students only encounter these items in exams, and there is a

lack of in-class practice with these items. When evaluated based on the classification of PIRLS, the rates of low-achieving students reaching the most correct and partially-correct responses in finding implicit meanings, making inferences, applying them in daily life, and evaluating the language and elements of the text are lower, as expected. This finding is related to the inability of students in this group to perform well in complex cognitive processes.

Comparing the distributions of opportunities for students with low and high reading comprehension achievement, although there are statistically significant differences in the distributions of educational opportunities and the number of books, the percentages are quite close. This finding suggests that these two achievement groups are quite similar in terms of educational opportunities. The findings of studies demonstrating the positive impact of socioeconomic and cultural variables on student achievement (Battle & Lewis, 2002; Caldas & Bankston, 1997; Marks, Cresswell, & Ainley, 2006; Thomson, 2018; Tomul & Polat, 2013; Tomul & Savaşçı, 2012) are in parallel with the results of this study. Having tools and resources that facilitate a student's studying and learning is expected to enhance success.

Examining the predictive factors of students' low and high reading achievements by demographic, socioeconomic, and sociocultural characteristics, it was observed that these variables differ between two groups. The explanatory first variable for the low-achieving group is gender. In a report low-achieving groups, the OECD (2013) stated that in groups with low performance, there are more male students than female students. The role of gender in predicting student achievement has been highlighted in many studies in the literature (Conger & Long, 2010; Francis, 2000). Another predictive variable for the low-achieving group is the number of siblings. An increased number of siblings implies fewer economic resources per child that the family can allocate (Dinçer & Uysal-Kolaşin, 2009). This not only negatively affects the student's academic performance but also reduces the time and quality of parental involvement with their children (Chiu, 2007; Karwath, Relikowski, & Schmitt, 2014). The final variable is the level of education that students aim to complete, which is statistically significant for both groups. The discussion for this variable's impact on success in both groups can be attributed to the Self-Determination Theory (Ryan & Deci, 2018). According to the theory, individuals have cognitive and social aspects of self-belief regarding whether they can or cannot do something. The belief in self-ability, the teacher's belief in the student, and the family's views on student's competence enable the individuals to determine their own competence. In the context of this study, when students in the low reading achievement group believe that despite all their disadvantaged social, economic, and cognitive conditions, they can succeed, an increase in reading achievement scores will be observed. This finding is significant and is consistent with previous studies in the literature (Gordon, 1989; Li, Hu, Ge, & Auden, 2019; Nurmi, Aunola, Salmela-Aro, & Lindroos, 2003; Sturges, Maurer, Allen, Gatch, & Shankar, 2016). Another point of discussion arising from this finding is the role of students' goal orientation in their reading comprehension achievement. In this study group, if students with low reading achievement set a goal for themselves, despite their disadvantaged situations, this goal-setting will positively impact their reading comprehension scores, similar to the higher reading group. The importance of students having a goal becomes evident here. Students with goals, who believe in their abilities, can achieve an increase in reading comprehension scores despite their disadvantaged situations. At this point, Goal-Setting Theory which suggests that individuals perform their best when achievable, challenging, and measurable goals are set (Locke, 1968) also supports this finding. Goals lead individuals to perform task requirements and behave consistently over time (Schunk, 2001). Latham and Locke (2007) have noted that challenging goals lead individuals to better performance compared to situations with no goals. Studies in the literature also demonstrated a relationship between goal setting and academic success (Schmidt, Boraie, & Kassabgy, 1996; Schunk & Swartz, 1993), aligning with the results achieved in this study.

Examining which variables predict the low and high reading achievements of students, such as their attitudes towards school, achievement motivation, test anxiety, academic self-efficacy, learned helplessness, perseverance, and exposure to bullying, it was observed that these factors yield different outcomes for low and high achieving groups. Attitudes towards school and learned helplessness play a role in explaining student success in the low-achieving group, whereas the enhancing role of academic self-efficacy has been identified in the high-achieving group.

Positive relationships between attitudes towards school and academic achievement are documented in the literature (Cherif, Movahedzadeh, Adams, & Dunning, 2013; Rao, Moely, & Sachs, 2000). The relationship between learning and attitudes is important and meaningful. A student's positive attitude towards school indicates acceptance of their own identity in the school environment, enthusiasm for school learning, and a genuine interest in these learning experiences. Students who are accepted and harbor positive feelings toward the learning process are expected to achieve higher academic success. Low-achieving students are thus considered a disadvantaged group in this regard, and addressing this disadvantage is expected to have a positive impact on their achievements. Another variable explaining the variance in student success in the low-achieving group is the students' learned helplessness tendency. An increase in learned helplessness tendencies decreases success in the low-achieving group, while it does not show a significant relationship in the high-achieving group. Previous studies reported a negative relationship between learned helplessness and academic success (Canino, 1981; Filippello, Buzzai, Costa, Orecchio, & Sorrenti, 2020). A student experiencing learned helplessness believes they cannot succeed no matter what they do, deterring them from studying and making efforts. This finding aligns with expectations in the literature.

High- and low-achieving groups exhibit another characteristic that yields different outcomes: perceived academic self-efficacy. This phenomenon aligns with current literature (Goulão, 2014; Hwang, Choi, Lee, Culver, & Hutchison, 2016; Komarraju & Nadler, 2013; Köseoğlu, 2015; Motlagh, Amrai, Yazdani, altaib Abderahim, & Souri, 2011). The results reported in the study carried out by Rao et al. (2000) are related to students' self-perceptions. According to the findings of the study, the self-perceptions of low and high-achievement students differ. Self-perception has been identified as a significant predictor of mathematical achievement. At this point, it is meaningful that students in the high-achieving group hold beliefs in their ability to succeed academically, and this belief explains their high academic performance.

Examining the behaviors of students with low reading achievement in responding to open-ended items with incorrect and irrelevant answers, it can be observed that the response processes of low-achievement students can be categorized into three groups. Considering that these items measure different reading comprehension cognitive levels related to understanding the text, diverse response behaviors are expected when responding to items measuring different levels. Students' response behaviors become more diverse and differentiated as the cognitive processes measured by the items become more complex. However, in this study, students did not provide the expected correct answers. They predominantly answered the items by writing whatever came to their minds, making up information, or using information other than what was required. The findings of the fifth research question indicate that students were unable to demonstrate appropriate behaviors for the cognitive levels measured by the items and could not formulate responses. In Turkish education, commonly used items in classroom assessments measure the scope of the lesson (recall level). Even though students can easily answer items that require recalling information within the lesson, they struggle to respond to items that require the application of knowledge in new situations. Elmore (2005), in a previous study examining economically advantaged and disadvantaged schools, concluded that students in both types of schools predominantly used learning processes based on methodical knowledge focused on finding and recalling a specific solution rather than engaging in complex thinking processes such as understanding, analyzing, and reflecting. Elmore's (2005) study reported results in parallel with those achieved in this study. Students frequently exhibit behaviors such as generating responses from the text, leaving items non-responded, and making up answers when responding to items, which is also consistent with the study by Dermitzaki, Andreou, and Paraskeva (2008). Examining these findings in conjunction with the behaviors exhibited by low-achievement students when responding to items will

provide a clearer understanding of why students in the low-achieving group tend to accumulate in blank and irrelevant answers.

With this study, it can be concluded that recommendations, decisions, or instructional programs developed based on the findings achieved from high-achieving groups seem to fail providing a solution to the problem of low student achievement. The results of this study on students with low reading achievement indicate that the characteristics of low- and high-achieving groups are different. Therefore, educational, and affective processes need to be planned and implemented differently for these groups. In the low-achieving group, it is crucial to implement learning strategies and to take preventive measures to teach that group how not to while in the high-achieving group, emphasis should be placed on the behavior of providing incorrect answers. Certain characteristics inherited from the family also contribute to the imbalance between these two groups.

Another significant outcome of the study is the presence of variables that do not explain student success. When considering the reasons why affective characteristics such as perseverance and achievement motivation are not effective in explaining student success, it is worth considering that schools and teachers may not be making a concerted effort to develop these characteristics.

Based on the results achieved in this study, some recommendations can be offered to educators. The first suggestion pertains to increasing the use of open-ended items that assess students' higher-level thinking skills during in-class formative assessment processes. Providing effective feedback based on the information gathered from these items may also be feasible. Additionally, it is essential to adopt approaches and interventions within the classroom that target students' affective characteristics. Recommendations include implementing support and remediation programs in school guidance services that minimize the impact of disadvantaged backgrounds on students' experiences while enhancing their attitudes toward school and self-expectations.

A suggestion for researchers is related to the study group. The results reported in this study indicate that students with low- and high-performance do not share certain characteristics. Researchers are advised to take into account in their future studies that students in the low-achieving group may exhibit characteristics different from the general trend. It is recommended to conduct research to identify the specific traits of this particular group for a more nuanced understanding.

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