Examination of Individual and Environmental Factors Affecting Reading Comprehension with Structural Equation Model

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Abstract

This study aims to examine the individual and environmental factors affecting the reading comprehension level through the structural equation model. To test the research questions, the relational scanning model, one of the quantitative research methods, was adopted. The research was conducted in Ankara in the 2019-2020 and 2020-2021 academic years. The research group consists of 365 fourth-grade students and their parents. Reading comprehension scale, prosodic reading scale, reading attitude scale, reading motivation scale, vocabulary knowledge scale, meaningless word list (short-term memory) pre-knowledge test, and family effectiveness scale in creating reading culture were used in data collection. In the analysis of the data, the AMOS program was applied to create the structural equation model. According to the findings obtained from the structural equation model, all variables in the model are significant predictors of students' reading comprehension scores. Individual factors have higher predictive power than environmental factors. Among the individual elements, the variable with the highest predictive power was determined as "prior knowledge," and then "vocabulary", "Family participation in reading" was the variable with the highest predictive power among environmental factors. It is observed that the family income level significantly predicts reading comprehension. Among the environmental factors, the variable with the lowest predictive power is "parental education level". As a result, a model has been obtained that will help educators in the applications to be made, in which the factors affecting reading comprehension can be classified according to a specific structure and level of influence.

Keywords: Reading Comprehension, Structural Equation Model, Individual Factors, Environmental Factors

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INTRODUCTION

The learning experience begins with the ability to hear before birth and continues throughout life with various learnings. Hearing skill, which constitutes the first stage of language development, starts from the mother's womb. The baby, who gradually learns to distinguish sounds from the moment he arrives in the world, realizes that his wishes are met through sounds and begins to use the language skills in his environment actively. As a result, while some of the language learning occurs spontaneously in its natural environment, some of it is transferred to the individual on purpose. Among these learnings, "reading" is an acquired, complex process that is not naturally developed like most skills (Gooden, Carreker, Thornhill, & Joshi, 2007). Learning to read begins with the academic life for most individuals and can be assumed the first and basic skill from an educational perspective. Despite the dizzying pace of developments in today's world such as artificial intelligence, journey to Mars, and nanotechnology, the act of reading still maintains its feature of being the most basic and effective tool in acquiring information (Coşkun, 2002). Its characterization as a basic skill stems from the fact that reading is one of the most critical factors that predict the student's academic success (Basar, 2001). Like other ways of obtaining information, the reading skill changes shape by going through various stages throughout the individual's life. For instance, in the early periods when reading-writing studies were taught, the emphasis was on vocalizing the written symbols. Still, later, it was replaced by the effort to understand the text being read (Basaran, 2013a).

When the definitions related to reading are examined, it is seen that the concept of "comprehension" is generally agreed upon (Demirel, 1999; Akyol, 2008; Günes, 2009). Nevertheless, these definitions are primarily limited in explaining the concept of comprehension (Akyol, 2005). However, the relationship between reading and comprehension is in mutual interaction. In other words, an individual needs to be able to understand to read and to be able to read to understand (Demirel, 2011). Consequently, it is essential to examine the term "reading comprehension," which refers to these two concepts together. In the thread model, one of the definitions that deal with the concepts of reading and comprehension together, Scarborough (2001) defines the act of reading comprehension as a whole consisting of parts in itself, like many threads woven together. Pearson (2009), on the other hand, describes the concept of reading comprehension as a complex structure in which many factors interact. Reading comprehension is the individual's first interaction with the written material, then comprehending and structuring the meaning by combining his/her own pre-knowledge with the information in the text (Snow, 2002; Durkin, 1993). Duke and Carlisle (2001) describe the development of reading comprehension in two different stages. In the first of these stages, the aim is to acquire skills by acquiring alphabet knowledge. This stage does not show continuous improvement, it is also a stage that is learned in a certain period of time and has limits. Therefore, most of the individuals who receive reading education complete this stage. The main part that distinguishes reading comprehension from reading is the second stage, and this stage has no limits. It is infinite in line with the individual's capacity and desire. At this stage, the individual obtains and structures new information from each text he reads by using the alphabet knowledge he has obtained in the first stage.

The attention of problems with reading comprehension in our country can be associated with PISA results in particular. As a result of the practices carried out at regular intervals, it has been concluded that our country's students' reading comprehension levels are insufficient. The Progress in International Reading Literacy Study (PIRLS), on the other hand, found that Turkish students ranked 28th (average = 451 points) among 35 countries (average = 531 points) as a result of the study conducted with fourth-grade primary school students (PIRLS Report, 2001). The Turkish language has a letter and good harmony, and its writing is considered a transparent language. Accordingly, Turkish-speaking children's reading and spelling skills develop faster than English-speaking children's skills (Durgunoglu and Oney, 1997). Nevertheless, although there are no great difficulties in acquiring reading skills, the low performance of students when it comes to reading comprehension skills pushes many researchers to think and study this subject. As a matter of fact, according to Güleryüz's (1999) research, although the rate of reading comprehension at primary school level is 70% in developed countries, this rate is 40% in Turkey.

Ülper (2010) classifies the variables that affect reading comprehension in 3 groups.

1. Cognitive factors: Having knowledge about text structure (knowing story schemas), recognizing sounds, words, mastering sentence structures, prior knowledge, cultural knowledge, world knowledge.

2. Affective factors: Motivation of the reader to read the text.

3. Textual factors: The readability and semantic consistency of the text.

Gunning (2003) examined the factors affecting reading comprehension on three different bases.

1. Factors arising from the reader: Prior knowledge, basic language proficiency, analysis skills, high-level language skills, interest, motivation, purpose.

2. Factors originating from the text: Content, words, font and size, text type

3. Factors arising from the environment: collaborative environment, competitive environment, group, whole class.

Tompkins (2006) divided the factors affecting reading comprehension into two as reader and text-based factors.

1. Reader-based factors: prior knowledge, vocabulary, fluency, comprehension strategies, comprehension skills, motivation

2. Text based factors: Text type, text structure, text characteristics (literary quality, layout)

Özbay (2009), on the other hand, groups the factors affecting reading comprehension as individual and environmental factors.

1. Individual factors: Gender, language development, intelligence level, hearing, mental maturity, mobility adequacy.

2. Environmental factors: Teacher, family, circle of friends, school environment, library access, number of books.

Reading comprehension is a process that involves many sub-skills and takes place with the appropriate level of acquisition and use of each of these skills. Insufficient acquisition of these skills affects the reading comprehension level of the individual adversely. Although the reading comprehension skill is a process that can only be followed by measuring the performance of the student, the sub-skills that contribute to the development of this skill are fed by the teacher, the family, or the individual capacity of the child. Consequently, to solve the problem of "inability to understand what you read", first of all, the factors affecting the reading comprehension should be determined in detail, put in order of importance, and studies should be carried out to solve it by collaborating with the relevant components (family-school-student). Regarding the factors affecting reading comprehension, there are studies examining fluent reading (Baştuğ, 2012; Çayır, 2014), for example, the mother effect (Cengiz, 2010) or the use of metacognitive reading strategies (Bedir, 2018; Özdemir, 2017; Uysal, 2018), motivation (Yıldız, 2010; Çeliktürk Sezgin, 2015) or family effect (Altınkaynak, 2014) are also available in terms of factors in the literature. However, as in the examples around the world (Kim, Cho, & Park, 2018; Alonzo, Yeomans-Maldonado, Murphy, & Bevens, 2016; Cheng, & Wu, 2017).

However, a comprehensive study was not found in the literature review that reveals this structure and relationship in Turkey. Data showing which subcomponent is related to each other to

what extent or how they affect each other is limited or incoherent. This structure which consists of many components, the aim should be to determine which factor affects comprehension and to what extent. As a result, the present study aims to examine to what extent individual (vocabulary, prior knowledge, verbal working memory, prosodic reading, reading motivation, reading attitude) and environmental factors affect primary school fourth-grade students' reading comprehension levels and the relationship of these factors with each other through the Structural Equation Model.

Students' inability to understand what they read has been the subject of discussion by educators globally (Allington, 2002). In Turkey, just like all around the world, the importance of reading is especially emphasized in the primary education program, and there are efforts to solve the problem. However, it is also clearly seen in international exams that Turkish students' reading comprehension levels are insufficient. When it is examined in the context of the literature, it brings to mind whether the factors originating from students and families are related to reading comprehension, if there is a relationship, to what extent which variable is influential. To find the answers to these questions, addressing the factors as a whole and revealing the relationship between them will contribute to the studies to increase the level of reading comprehension in Turkey. There are several perspectives about the question "What are the components of reading comprehension?" However, regardless of the classification, it is crucial to determine the factors behind this failure for the education system to reach its goals. With the model introduced in the present study, it will be tried to determine which factors affecting reading comprehension are influential at what level. Students' reading comprehension skills are defined with all their elements in this context, and a kind of reading comprehension profiles are revealed. Just as the source of the disease is determined primarily through tests when visiting a doctor with a complaint, it will be possible to see which factor or factors cause the problem of not understanding what is read, which is the most critical factor on the academic failure of students, with the current study. Therefore, a contribution will be made to researchers who will develop a solution for the current problem in the future.

METHOD

Since this study aims to determine variables directly or indirectly affecting primary school fourth-grade students' reading comprehension levels, the research is descriptive and was designed in a relational survey model. While it is aimed to examine a situation that existed in the past or present as it is with the survey model, it is possible to describe the same situation comprehensively, comparatively, and correlational in the relational survey model (Karasar, 2002). Since the research center aims to determine the relationships between the variables, a Structural Equation Model was created to test the causal relationships. With structural equation modeling, which is a second-generation data analysis technique, it is possible to see many dependent and independent variables simultaneously and the relationship between these variables and to deal with a complex research problem comprehensively in a single process compared to simple statistical techniques (Anderson & Gerbing, 1988).

Purposeful sampling method was applied to determine the sample. In this method, the researcher determines his/her sample by choosing from the population in line with his/her purpose. For the data obtained in the study to be suitable for generalization and to reflect the general student population in Turkey, it has been paid attention to include different groups in terms of socio-economic and socio-cultural aspects. One of the proposed structural equation model variables is the relationship between family effect and reading comprehension, and it is included in the research in detail. The research group consists of fourth-grade students in two public and three private schools in Ankara and their families. In the study, in collecting data from fourth-grade students, it was assumed that students at this level had fluent reading skills, and their reading comprehension level started to increase. They could use several strategies (Veenman, Hout Wolters, & Afflerbach, 2006).

The demographic characteristics of the students participating in the application are given in Table 1.

Table 1. Demographic Characteristics of the Students Included in the Application

Variable	Categories	N	%
Gender	Female	189	51.8
	Male	176	48.2
	Total	365	100
School	State	309	84.7
	Private	56	15.3
	Total	365	100.0

According to Table 1, 51.8% of the students participating in the study are girls (189) and 48.2% are boys (176). When the type of school the students attend is examined, it is understood that 84.7% of them participate in public school (309) and 15.3% of them participate in private school (56).

Table 2. Demographic Characteristics of Parents Included in the Study

Variable	Categories	N	%
Financial status	Bottom	89	24.4
	Medium	162	44.4
	Top	114	31.2
	Total	365	100
Mother's Level of Education	Elementary School	36	9.9
	Secondary School	106	29.0
	High School	169	46.3
	Undergraduate	54	14.8
	Total	365	100
Father's Level of Education	Elementary School	8	2.2
	Secondary School	50	13.7
	High School	215	58.9
	Undergraduate	92	25.2
	Total	365	100

According to Table 2, 365 parents of students participated in the study. When the students' economic status was examined, there were 24.4% lower, 44.4% middle, and 31.2% upper economic. When the mother's education level was examined, it was determined that the least common group was those with primary school education with 9.9%, and the most common education level was high school education with 46.3%. When the father's education level was examined, the least encountered group was the primary school education level with 2.2%. The most common education level was the high school education level with 58.9%.

Table 3. Schools Where Data Was Collected From

School Name	School Type	N	%
A Primary School	State	267	73.15
B Primary School	State	42	11.5
A College	Private	25	6,843
B College	Private	16	4.38
C College	Private	15	4.10

When the type of school attended by the students in the study is examined, it is observed that there are two public and three private schools. 84.6% of the students go to state schools and 16.4% go to private schools. This rate is parallel to the private schooling rate across the country.

During the research process, data were collected through 9 different scales. Information about the scales is as follows:

Prosodic Reading Scale: It was developed by Bastug and Keskin (2013).   The scale consists of 15 items, and the highest score obtained from the scale is 60. Students who get half of the total score are considered prosodically sufficient. Confirmatory factor analysis and reliability analysis were performed before the application.

Meaningless Word List: The abbreviated version of the list of meaningless word repetitions created by Akcakaya, Dogan, Gurkan, and Yucel (2018) was applied to determine the verbal working memory. The 36 non-words created for Turkish were rearranged as 1-4 syllables and limited to 20 non-words. The list was recorded in a professional environment and voiced by a professional announcer. As a result of the applications, the inter-observer reliability was determined as ,87.

Attitude scale towards reading: The "attitude scale towards reading" developed by Basaran and Ates (2009) was applied to determine students' attitudes towards reading. The scale is a Likert-type triple rating scale and consists of "disagree," "undecided," and "agree" options. Confirmatory factor analysis and reliability analysis were performed before the application.

Reading Motivation Scale: The reading motivation scale developed by Wigfield and Guthrie (1995) and adapted into Turkish by Yildiz (2010) was used in the study. The scale is a 20-item scale consisting of two dimensions, internal (interest, curiosity) and extrinsic (social, competition, recognition, adaptation), and six factors. Confirmatory factor analysis and reliability analysis were performed before the application.

Vocabulary Scale: The Vocabulary Knowledge Scale developed by Weshe and Paribaht (1993) and adapted into Turkish by Ates and Sis (2016) was used as a data collection tool. In the scale consisting of five items, a ranking is made for the related words from unknown to known, and the word is asked to be expressed both linguistically and semantically. A validity and reliability study was conducted before the application.

Text-Based Pre-Knowledge Test: Within the scope of the study, a Text-Based Pre-Knowledge Test (TBPKT) was developed to reveal the relationship between students' reading comprehension levels and their "preliminary knowledge" level. For this purpose, first of all, a reading comprehension test was determined. The reading comprehension scale developed by Kaya, Dogan, and Yildirim (2018) is based on. Among the six informative and narrative texts in the scale, the information and concepts thought to communicate the text effectively were identified and listed. Later, the researcher turned these concepts into questions, and a preliminary knowledge test draft consisting of 42 items was created. The reliability of the scale is .80.

Reading Comprehension Scale: Kaya, Dogan, and Yildirim (2018) studied with 348 students from different socio-economic levels in central districts of Denizli, attending the fourth grade of three other primary schools, and as a result of the analysis, the KR20 reliability coefficient for the whole test was ,83.

*The Influence of the Family in Creating a Reading Culture: The scale of "*Effect of the Family in Creating Reading Culture" was developed (Cigdemir, Akyol, 2020) to determine the effect of the family on reading comprehension. As a result of the exploratory and confirmatory factor analyses, a scale with 19 items and four factors with a reliability rate of .86 was obtained.

Before starting the data collection process, the parents of the students to whom the scales will be applied were informed about them through classroom teachers. In addition, the necessary permissions for the schools where the research will be carried out were obtained from the Provincial Directorate of National Education. One week before going to the school where the research will be conducted, the number of current 4th-grade students was obtained from the school administration, and

the list of the class to be studied in the school was taken, and the class te3acher was informed. The data collection process was completed by repeating the following items in each class where the applications would be made.

In the classroom where the application will be held, an informative speech was made with the participation of their classroom teachers.

Before starting the application of the scales, the "Family's Participation in Reading Scale" to be collected from the parents was distributed to the students, and they were asked to fill it out and submit it to the researcher within three days.

The Attitude Scale towards Reading and the Reading Motivation Scale, which can be applied collectively, were administered to the students on the same day.

The applications of the "Text-Based Vocabulary Scale," "Text-Based Preliminary Knowledge Test," and "Reading Comprehension Scale" were carried out in a way that they spread over a day each.

To apply the "Reading Prozodia Scale," the class list was followed up, and one-on-one work was done with the relevant student. In selecting the text to be read, the narrative text named "Aras' Meeting with Ozdemir Asaf" has been determined since it contains the feelings and thoughts to reflect the prosody.

In the last step of the study, the "Meaningless Word List" scale was applied to measure the students' working memory. Each student worked one-on-one in a private and quiet environment.

The implementation of each class was completed in an average period of one week. The above steps were repeated for each class. Although there were changes in the period depending on the class size, the data collection process took approximately 11 weeks, excluding official holidays.

FINDINGS

In this section, the answer to the question of "What is the predictive power of the variables in reading comprehension in the structural equation model, what is the direction and level of the relationship between the variables," which is the problem sentence of the research, was sought. Structural equation models (SEM) are more effective than the path analysis method as it is possible to detect and control errors in measurement (Meyers, Gamst, & Guarino, 2006). In this research, examining the model assumptions for SEM analysis, testing the model, and evaluating the fit will be conducted.

The purpose of examining the assumptions is to determine whether the data are suitable for SEM analysis. Assumption analyzes include missing values, normality, sample size, and multicollinearity analyzes (Cokluk, Sekercioglu, & Buyukozturk, 2014).

Lost data were analyzed first, and missing or incorrect data were identified and removed to test the assumptions. Extreme value analysis was conducted to determine the normality of the distribution of the data set. According to the Z score, those in the range of +3, -3 were accepted, and the answers of 4 participants outside of these values were excluded from the data set. As a result, normality analyzes were made with 365 data and presented in Table 4.

Table 4. SEM Normality Analysis

Variable	N	Min.	Max.	Skewnes	Kurtosis	Sd
Preliminary Information	365	0.00	1	-.52	.11	.19
Vocabulary	365	1.52	4.40	.31	-.64	.61
Working Memory	365	1.75	3.00	-.64	.30	.22
Motivation	365	1.81	4.00	-.53	.22	.38
Attitude	365	1.38	3.00	-.51	-.96	.36
Prosody	365	1.13	3.73	-.65	-25	.47
Reading Comprehension	365	.20	1.18	-.09	-.83	.21
Family Participation	365	1.74	4.47	0.14	.05	.46
Effectiveness of the Teacher	365	3.18	3.82	-.34	1.16	.20

It is necessary to examine the skewness and kurtosis coefficients in the table to determine whether the structural equation model consisting of different variables shows a normal distribution (Karagoz, 2017). The fact that the multivariate kurtosis value is between -2 and +2 and that the multivariate critical ratio value is less than 1.96 indicates that the data set has multivariate normality (Bayram, 2010). According to the multivariate normality analysis of the model, it was determined that the data set met the multivariate normality assumptions.

In SEM analysis, the formula "50 + eight times the number of predictor variables" is applied for the appropriate sample size (Tabachnick and Fidell 2015). Nine predictor variables were used in the model. As a result, it is observed that the number of 365 participants is a suitable sample size for SEM. For multicollinearity, the relationships between the variables were examined and the relationship between the variables was less than .80. Therefore, it is observed that there is no multi-linearity problem in the data set.

After the model assumptions were realized, the stage of testing the model was started. The structural equation model created is included in Figure 1.
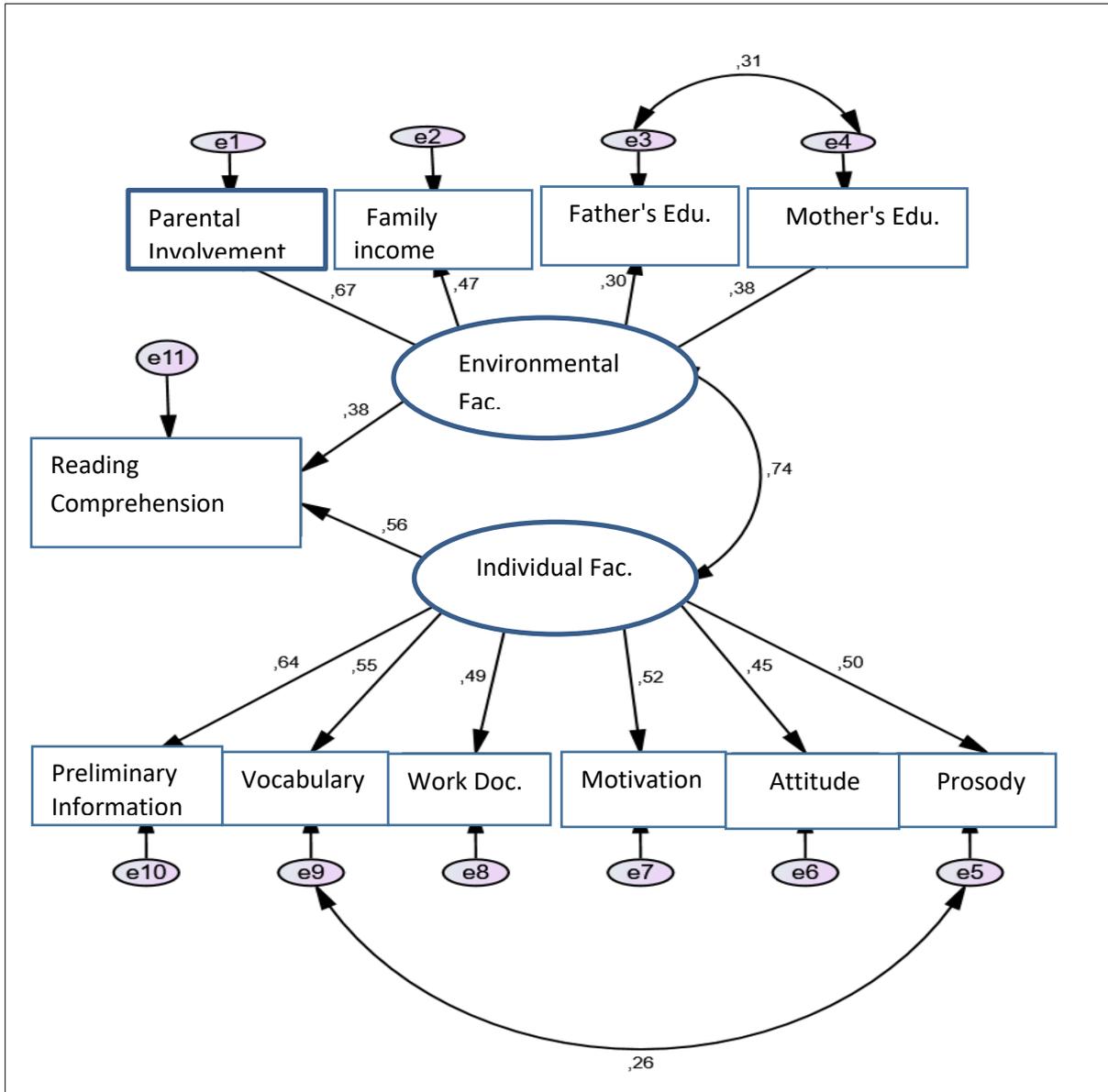
Figure 1. Structural Equation Model Results

After testing the model, the fit values were evaluated. Fit indexes according to the created model are included in Table 6.

Table 6. The Structural Model Fit Values

	X^2/sd	RMSEA	CFI	IFI	GFI
The Structural Model	2.33	.06	.94	.94	.95

When Table 6 was examined, it was determined that the chi-square fit index of the model ($\chi2$= 93,302, P= .00, df= 40 , $\chi2$ df= 2,33) was significant. Other fit indices was found as RMSEA= .06; GFI = .95; IFI= .94 ; CFI = .94. It is seen that the fit values of the model are at a very good level.

In Figure 1, there are path coefficients, standardized factor load values, and standardized error values for the structural equation model established. Information about the ratio of these values and the effect size is shown in Table 7. Kline (2016) made the classification of "small effect" for values below 10-, 30, "medium effect" for values between 30-, 50, and "large effect" for values above 50 for the standard path coefficients. Analyzes are examined in this context.

Table 7. The Effect of Individual and Environmental Factors on Reading Comprehension According to SEM

Structural Relations	Standardized Path Coefficient	Effect Size
Individual factors → Reading Comprehension	,56*	Great Effect
Environmental factors → Reading Comprehension	,38*	Medium Effect

*= p< 0,05

According to the information obtained from Table 7, there is a direct, positive, and significant relationship between individual factors and reading comprehension level (β= 0.56; p <, 05) in the structural equation model created. In addition, the effect of individual factors on reading comprehension is at a high level. According to the table, there is a positive, medium-sized, and significant relationship between environmental factors and reading comprehension levels (β= 0.38; p<.05). Individual and environmental factors, two latent variables in the model, also have a significant and robust relationship (β= 0.74 ; p <05).

In Table 8, the ratio in which the variables included in the individual factors predict the factor is shown.

Table 8. Predicting the Reading Comprehension of Individual Factors by Variables According to SEM

Relationship of Variables with Individual Factors	Standardized Path Coefficient	Effect Size
Attitude	,44*	Medium Effect
Motivation	,51*	Great Effect
Working Memory	,48*	Medium Effect
Prosody	,50*	Great Effect
Preliminary Information	,64*	Great Effect
Vocabulary	,54*	Great Effect

*= p<0,05

According to the information obtained in Table 8, there is a positive, moderate and significant relationship between students' attitude towards reading and individual factors (β=44, p < .05) in the structural equation model created. According to the model, there is a positive, high-impact, and significant relationship between students' reading motivation and individual factors (β=.51, p <05). The verbal working memory of the student is positively, moderately, and significantly related to individual factors (β= .48, p < .05). There was a positive, high-impact, and significant relationship between reading prosody and individual factors (β 50 ; p < .05). The level of preliminary information that the student has about the text read is positively and highly correlated with the individual factor (β= 0.64 ; p > .05). The relationship between the vocabulary information in the text read and the individual factors in reading comprehension (β= .54 ; p < .05).

The effect rates of the variables included in the environmental factors are shown in Table 9.

Table 9. Predicting Levels of Variables in Reading Comprehension of Environmental Factors According to SEM

Structural Relations	Standardized Path Coefficient	Effect Size
Father's Education Level→ Environmental Factor	,29*	Minor Effect
Mother's Level of Education → Environmental Factor	,37*	Medium Effect
Family Involvement in Reading →Environmental Factor	,67*	Great Effect
Family's Level of Income→ Environmental Factor	,47*	Medium Effect

*= p>0,05

According to the information obtained from the table, in the structural equation model, the education level of the father (β= 0.29 , p < .05) predicts the environmental factor positively, with a small effect and significantly, and the education level of the mother (β= .37 , p< .05) positively, moderately and significantly. According to the model, the environmental factor (β= .67 , p < .05) predicts the family's activities to create a reading culture with the student positively, highly effective, and significantly. The income level of the family (β= .47, p < .05) predicts the environmental factor positively, moderately, and significantly.

DISCUSSION, CONCLUSION, AND SUGGESTIONS

It was concluded that the factors included in the structural equation model, which was created to reveal the individual and environmental factors affecting the reading comprehension of primary school 4th-grade students, fit the model very well. In the structural equation model created, firstly, the predictive level of latent variables (individual factors, environmental factors) in reading comprehension was examined. According to the findings, it was determined that individual factors (β=, 56; p <0) and environmental factors (β=, 38; p 0) significantly predicted reading comprehension. The two main latent variables in the SEM model, individual and environmental factors, were significantly and highly correlated with each other (β=, 74; p <0). Similarly, some studies examine the concept of reading in our country by presenting a structural equation model. Kurnaz (2018) discovered that the variables of vocabulary, preliminary information, and intrinsic motivation predicted reading comprehension directly and positively due to his research. In another study, Yamac and Celikturk (2018) found that individual factors such as reading motivation, reading anxiety, and reading fluency directly and strongly predict reading comprehension. Cetinkaya, Yıldırım, Ates (2017), as a result of the study they conducted to examine the effects of speaking and reading prosody on reading comprehension skills, they concluded that reading prosody is highly correlated with reading comprehension level. Baştuğ and Akyol (2012) determined that prosody is an important predictor of reading comprehension as a result of the study they carried out to determine the predictive power of reading fluency in reading comprehension.

Studies that reveal a structural equation model related to the concept of reading comprehension have been frequently encountered abroad in recent years. For instance, Alonzo (2016) found that vocabulary and working memory variables are potent predictors of reading comprehension. Muijselaar et al. (2017) observed that fluent reading, vocabulary, and working memory are meaningful predictors of reading comprehension due to the model they created to explain the relationship between reading comprehension and reading strategies. In the structural equation model developed by Korean high school students to reveal their English reading skills, Kim (2015) found that using reading strategies and listening skills were the best predictors of reading comprehension, but reading motivation and reading success had a weak relationship with reading comprehension. In this respect, the findings contradict with the results obtained. Tobing (2013), as a result of his research to examine the relationship between reading strategies and reading comprehension self-efficacy, concluded that reading self-efficacy is a strong predictor of reading comprehension. It has been determined that the level of using reading strategies has a strong relationship with reading comprehension, but it is not a good predictor.

As a result, it is also supported by the literature that variables such as vocabulary, prosody, motivation, attitude, working memory, which are classified as individual factors affecting the concept of reading comprehension in the current study, are strong predictors of reading comprehension.

When the model is analyzed, it is seen that the strongest predictor of reading comprehension among individual factors is the level of prior knowledge. It is followed by the vocabulary score the student has. Family participation in reading was the variable with the highest predictive value among environmental factors. Parental education level, on the other hand, has a relatively lower predictive power than other variables. Similarly, Zelzele (2017) determined that prior knowledge could explain approximately 30% of the reading comprehension level due to the study conducted to examine the

effect of primary school fourth-grade students' pre-knowledge levels on their reading comprehension levels. This finding seems to support the high predictive effect obtained in the present study. Basaran (2013) found that fluent reading is an indicator of reading comprehension, and prosody is more predictive than other fluent reading skills in making meaning in-depth due to his research conducted to reveal the relationship between fluent reading situations and reading comprehension levels. Miller and Schwanenflugel (2008) concluded that prosodic reading is the most critical variable of fluent reading. The essential factor in developing reading skills is prosody due to their application to examine the effect of oral reading prosody on reading skill. In studies conducted to determine the predictor of reading motivation on reading comprehension, results supporting the present finding were obtained (Yildiz, 2013). In their study to analyze the phonological memory performance of children with reading difficulties and children with typical development, Kesikci and Amado (2005) discovered a significant difference in phonological memory between the two groups and that children with reading difficulties had lower phonological memory scores. Alloway and Alloway (2010) found high correlations of 0.31 between working memory and first literacy skills and 0.41 between working memory and mathematics skills. Their study examined the relationship between literacy skills and mathematics skills of 5 6-year-old children. Another striking aspect of the study is that working memory is more effective on learning than IQ. As a result, it is understood that the findings for all variables collected under the name of individual factors are supported by domestic and foreign literature.

Some studies support the significant predictor of family participation in the reading process, another of the results obtained from the present study, on the student's reading comprehension level. For instance, Katranci (2015) found that having a library of her own at home positively affects the motivation of reading books and that the motivation to read books explains 9% of Turkish course academic success. Matvichuck (2015), on the other hand, discovered that family behaviors have a high effect on the child's interest in reading. In another study, Molfese, Modglin, and Molfese (2003) concluded that the environment created for reading at home is effective on reading skills, which is much higher in the pre-school period. In the developed model, it is seen that the findings obtained regarding the effect of environmental factors on reading comprehension are supported by both domestic and foreign literature. The results obtained from the structural equation model created can be briefly explained as follows.

The variables of preliminary information level, vocabulary, reading prosody, working memory, attitude towards reading, and reading motivation, which constitute the individual factors of the study, are meaningful predictors of reading comprehension.

The environmental factors of the study are the mother's education level, father's education level, and the economic status of the family are significant predictors of understanding the variables.

Environmental and individual factors affecting reading comprehension are not independent of each other and are strongly related.

In the light of the findings, it is seen that variables such as vocabulary, prosody, motivation, attitude, and working memory are strong predictors of reading comprehension. Consequently, conducting studies on these variables to increase the students' reading comprehension level will have effective results. For instance, supposing that a teacher plans to develop activities for understanding the classroom environment based on the developed model. In that case, he/she should first focus on the preliminary information factor, which is the strongest predictor. Thus, activities should be organized to increase the level of preliminary information about the text to be read Following can be shown among the activities to be recommended; preliminary research on the text to be read, animations containing the concepts in the text before the text is read, increasing the level of curiosity with movies or stories, and having in-class discussions and speeches on the subject before starting to read etc. Again, instead of completing the texts in the Turkish course books with classical methods by first reading and then answering the questions, the thematic approach should be exhibited under the structure of the Turkish Education Program, and it should be ensured that the student knows which subject he will be in

contact with during the theme. Therefore, the student will have the opportunity to encounter the necessary preliminary information during the theme.

Since vocabulary is the second strongest variable predicting reading comprehension among individual factors, it is necessary to focus on vocabulary in activities for comprehension. For this purpose, it is recommended that teachers concentrate on making word boards, keeping a word book, solving puzzles, using a dictionary, and guessing the meaning to increase their vocabulary level. Considering both the effect on the reading comprehension level and the skills that must be acquired throughout life, it is seen that the level of vocabulary is directly proportional to the life success of the student. However, unlike other variables, the development of vocabulary skills begins much earlier than the school age. At this point, the responsibility is on the families rather than the school and the teacher. It is essential to raise awareness of families and ensure that children meet with books from an early age, make sample readings, and confront different reading materials. Since the awareness of parents will be provided by schools and teachers, it is among the suggestions to focus on training and provide the necessary materials free of charge by the state.

However, these studies can be carried out under the control of a central executive (MEB - MNE) and on a platform where responsibility is shared, rather than activities that neither the family nor the school can organize. For instance, to increase the child's vocabulary level, the environment offered from birth should be kept under control, and the necessary support should be given to families.

It is seen that economic level has a positive relationship with reading comprehension. Applications such as access to resources, free courses, additional courses for needs in the context of the social state should be continued as in recent years and increasingly to eliminate this negative situation and offer equal opportunities in education to students from different economic levels.

It will be effective to examine the validity and differentiation status of the model created at the fourth grade level of primary school by adding or subtracting different variables appropriate to the situation and applying them to student groups at the pre-school, primary school, second, or high school level.

While creating the model, sensitivity has been tried to reach student groups at different socio-economic levels, but working with higher sample numbers in other geographical and cultural parts of our country and determining the differences that will arise will effectively find solutions.

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