

The Structural Relationship of Reading Attitude, Reading Comprehension and Academic Achievement

By

Muhammet Bastug

Department of Elementary School, Education Faculty, Nigde University, Nigde / Turkiye

Abstract

The purpose of this study is to determine the extent to which academic achievement is influenced by attitudes toward reading and reading comprehension. The study was conducted using the survey method and tested with structural equation modeling. The population consisted of 1028 fourth and fifth grade students from primary schools in the city of Nigde, Turkey. Their attitudes toward reading were determined using the "Reading Attitude Scale for Secondary Level Students." Their reading comprehension skills were tested with open-ended questions, multiple-choice questions and cloze tests based on narrative and expository texts appropriate for their grade levels. Their weighted grade point averages for Turkish, Mathematics, Science and Social Sciences for the 2012-2013 academic year were used to assess their academic achievement. The hypotheses were tested using structural equation modeling. The results confirmed the hypothesis model for the relationship between in reading attitude, reading comprehension and academic achievement. In other words, reading attitude and reading comprehension significantly predicted academic achievement. In addition, reading attitude was found to be a significant predictor of reading comprehension. The results and recommendations are then discussed.

Keywords: *Academic achievement, reading attitude, comprehension*

1. Introduction

It's well-known that education lays a crucial role in the development and economy of countries (Bircan & Tekin, 1989; Hanushek & Woessmann, 2008; Turkmen, 2002). Research (Turkmen, 2002; Bircan & Tekin, 1989) has illustrated that an increase in the number of literate people in the society leads a rise in the level of income. Likewise, Yildirim (2000) suggests that the potential of academically successful, and qualified human resources is the main factor that helps a country develop. It may be suggested that well-educated, literate individuals play a more important role in the future of nations. Therefore, education of individuals and improvement of their academic performance should be prioritized. When the linkage between education and development is taken into account, it is inevitable for under-developed and developing countries to give priority to education in their national politics.

It is suggested in research that academic achievement is based on many factors such as intelligence, talent and abilities, individual factors and family-related issues, the school where the individual is studying, studying habits and strategies, and taking extra courses out of school. (Yildirim, 2000; Savaş, Tas & Duru, 2010). –On the other hand, the importance of individuals' reading skills is mentioned for their academic achievement. (Keskin, 2013; Sünbül et al., 2010; Yildiz, 2013). Reading skill constitutes one of the three factors related to student success; namely, reading, writing and mathematics, (Thrupp, 2013), and it is accepted as one of the most marked and quick way of learning (Ulug, 1980). Moreover, it is argued that an individual cannot successful unless his/ her reading skill is improved (MEB, 1995). The importance of having good reading skills is often emphasized in education curricula (programs), and it is stated that reading skills constitute the initial steps of any course, and a student who cannot read efficiently and who cannot comprehend what he/she reads will not able to achieve success (Sünbül et.al., 2010). However further research is needed to find out the actual influence of reading skills on academic achievement. Reading skill is composed of a number of dimensions such as reading fluency (Rasinski,

2010), comprehension reading texts (Kinstch, 1998, Duke & Pearson, 2002), attitude towards reading (McKenna, Kear & Elisworth 1995), and motivation (Guthrie, Wigfield, Metsala & Cox 1999). Due to this study investigates attitude and comprehension in relation with reading skills.

Attitudes toward Reading

The concept of attitude, is an issue that is often studied in educational environments. According to Eagly and Chaiken (1993:p.1) attitude is “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor”. Senemoglu (2004:419) points out that attitude is an internal situation that is acquired and has an affect on the selection of behavior. Based on these definitions, attitude can be defined as an cognitive manner that has emotional and sentimental side and affect on the person’s decision regarding doing something or not. According to the resources, (Masarogulları & Kocakgöl, 2011; McKenna, Kear, & Elisworth, 1995) the concept of attitude is made of three components which are emotional, cognitive and behavioral. The first one is the emotional that is made of emotional reactions towards the attitude. The second one is cognitive component that is made of ideas and believes that the individual has about the attitude object. The third one is behavioral component that involves behaviors towards attitude.

Attitudes are emphasized heavily in studies of reading. Sainsbury (2004) stresses that reading education has two fundamental objectives: developing reading skills and positive attitudes toward reading. Studies of reading should emphasize attitudes, since attitude towards reading is a variable that predicts academic achievement (Hood, Creed, & Neumann, 2012; House & Prion, 1998). Reading attitude is an important factor that affects students’ reading achievement and in-class reading activities, and determines whether they will become independent readers or not (Logan & Johnston, 2009).

Reading Comprehension

The ability to read and comprehend a text is considered one of the basic conditions for success in life (Van den Broek & Espin, 2012). Effective readers are known to understand what they read and to learn better from texts. Comprehension is considered as the process to give meaning to the written text and during this process the reader creates a mental representation of the meaning of the text (Kinstch, 1998). Reading comprehension is a complicated process by nature, which requires readers to integrate their knowledge with the information in the text (Meneghetti, Carretti, & De Beni, 2006). The RAND Reading Study Group (2002) stated that comprehension is “the process of simultaneously extracting and constructing meaning through interaction and involvement with written language” (p. 11). Good readers construct, revise, and question the meanings they make as they read (Duke & Pearson, 2002:p.205). During the process of comprehension, the reader selects pieces of information from a text, ignoring some and adding things to others. In this way the reader can infer new meanings from a text beyond the ones presented (Gunes, 2013). Accordingly, students can increase their learning levels through effective reading and comprehension.

Reading comprehension is fundamentally seen as an interaction between the reader and the text. RAND Reading Study Group (2002) mentions about the features of the text (language, structure, purpose, content etc.) and features of the reader (reader’s prior knowledge, ideas, purposes, strategies and skills etc.). This study focuses on the relationship between reader’s attitude from reader features and reading comprehension skill during the comprehension process.

2. Related Research

There are studies that examine the relationship between the different aspects of reading and academic success. The studies mostly focus on the relationship between reading motivation, reading success and academic success. In the studies (Guthrie, Wigfield, Metsala & Cox 1999; Baker & Wigfield, 1999; Taboada, Tonks, Wigfield, & Guthrie, 2009) it is found that the reading motivation predicts the amount of reading, the amount of reading predicts reading comprehension. Yildiz (2013) in his study with

structural equality model finds that there is a structural relationship between reading motivation, fluent reading, reading comprehension and academic success. Gottfried (1985) posits that the student's internal academic motivation predicts student's academic success. The studies that are conducted on reading attitude, reading success and academic success are studies that are done on generally correlative level and in these studies, the two way relationship is mentioned.

The correlation between students' attitudes toward reading and their achievement in reading and comprehension has frequently been studied in the literature (Ates, 2008; Conlon, Zimmer-Gembeck, Creed, & Tucker, 2006; Diamond & Onwuegbuzie, 2001; Fawson, Reutzel, Read, Smith, & Moore, 2009; Kayiran & Karabay, 2012; Keskin, 2013; Kush, Watkins & Brookhart, 2005; Martínez, Aricak, & Jewell, 2008; McKenna, Kear, & Elisworth, 1995; Sainsbury, 2004; Schofield, 1980; Walberg & Tsai, 1983). These studies explore the interplay between reading attitude and achievement in reading and comprehension, and emphasize the role of attitudes in achievement. A good understanding of texts and a positive attitude toward reading are prerequisites for being a good reader. Also research indicates that there is a positive and significant correlation between reading attitudes and academic achievement (Ates, 2008; Bas & Sahin, 2012; Ghaith & Bouzeineddine, 2003; Sallabas, 2008), and positive attitudes toward reading allow students to enjoy higher levels of academic achievement.

In studies on the effect of reading comprehension on academic achievement, reading comprehension is regarded as important for academic achievement (Bharuthram, 2012; Grimm, 2008; Lerkkanen, Rasku-Puttonen, Aunola, & Nurmi, 2005; Silvina Demagistri, 2009) and deemed to be a prerequisite for many academic skills (Guldenoglu, 2008). This is because many subjects are learned by reading, which means that one's reading comprehension skill should be of high quality. A decrease in one's reading comprehension ability will inevitably lead to a decrease in the amount of learning from texts.

The related literature shows that there is a significant relationship between academic success and reading comprehension. Besides, the related literature puts emphasis on reading comprehension and attitudes towards reading in academic success. However, when studies conducted on the same topic analyzed, there seems to be fewer studies that show one way relation between variables and especially on international level (in Turkey) none have been come across. The studies conducted are mostly the comparative studies with two or more variables and it is difficult to determine the relationship deeply. However, by the help of structural model, it is possible to see all the relationships together between two or more hidden variables just because all variables are analyzed at once (Simsek, 2007). In this study is examined the relationship between attitudes toward reading, reading comprehension and academic achievement with the help of structural equality model. Besides, it is attempted to reveal the casual relationship exist on theoretical level among all variables. This aspect of the study may contribute to the literature.

Purpose and Importance

A review of the literature indicates that reading comprehension and academic achievement are closely linked. Reading is a highly effective way to gain knowledge, which is power in today's world, and it is the key to academic success. Since reading skill is one of the most important aims of the education system, the variables related to academic achievement in reading comprehension and reading attitude and their structural relationship to academic achievement must be known. The purpose of this study is to determine these relationships using structural equation modeling.

3. Methodology

This study was based on a survey model. Designed as a quantitative study, it attempts to test the following hypotheses using structural equation modeling:

H1: Reading attitude is a significant predictor of reading comprehension.

H2: Reading comprehension is a significant predictor of academic achievement.

H3: Reading attitude is a significant predictor of academic achievement.

H4: Reading comprehension partial mediates between reading attitude and academic achievement.

Participants

The study population included 1028 primary school fourth grade (N=487) and fifth grade (N=541) students studying at four state-run schools in the city of Nigde, Turkey. Of the fourth grade students, 253 were female whereas the remaining 234 were male. First years of school are mostly the times to gain basic reading skills and reading is expected to be directed more to comprehension and learning. While the students read for the purpose of learning how to read in the first three years of education, they are faced with content area texts and read for learning as from the 4th and 5th grades (Vacca, et al., 2006). On the other hand, the assessment of students' academic achievement in Turkish national education system starts beginning from the 4th grade. Therefore, 4th grade is taken into consideration in order to collect more valid data about the students' reading skills and academic achievement. Besides, both 4th and 5th grade students are included in the sampling as the attainments (achievements)/behaviors related to reading in the educational programs of both grades highly overlap (MEB, 2005).

Procedure

Informed consent was obtained from the Provincial Directorate for National Education in Nigde. Afterward, the principals and teachers of the schools in the sample were informed about the study, and the schedule was determined together with them. The teachers of the classes included in the sample helped administer the measurement tools. They were told how to conduct the measuring process before starting research. Finally, the measurement tools were administered as scheduled.

Measurement Tools

Reading Comprehension Tests: Students at each grade level (fourth and fifth grades) were asked to read two texts including one narrative and one expository text that existed in Turkish language textbooks. The texts, which were 350 words on average, were chosen among those which the participants were unfamiliar with. The fourth grade students read one narrative (NAR 1) and one expository text (EXP 1), and so did the fifth grade students (NAR 2 and EXP 2).

Multiple-Choice Questions: Each text was followed by a total of 10 multiple-choice questions designed in accordance with recall, comprehension, analysis, synthesis and evaluation steps, each of which consisted of two questions. The content and appropriateness of the questions were checked by experts, Turkish language teachers, classroom teachers and qualified academics. Necessary changes were made according to their expert opinions. Then, a pilot study was conducted with some groups of students in order to check reliability of the questions. Correct and incorrect answers were assigned 1 and 0 (zero) points respectively. The KR 20 reliability coefficients were calculated accordingly. The coefficients were 0.76 for M-CNAR 1, 0.72 for M-CEXP 1, 0.73 for M-CNAR 2, and for M-CEXP 2, which indicated that the test was reliable (Turgut & Baykul, 2011). These are referred to as M-CNAR for narratives ($M-CNAR = (M-CNAR 1 + M-CNAR 2) / 2$) and (M-CEXP = $(M-CEXP 1 + M-CEXP 2) / 2$) for expository.

Open-Ended Questions: The purpose of the open-ended exam questions was to test to what extent students could comprehend what they were reading. Five open-ended questions were prepared for each text. Three of the questions are based on simple comprehension while the other two are deep comprehension based questions. Simple comprehension questions are mostly at recall level whereas the deep comprehension questions are at inferential level. The Lawshe's technique was used to analyze the content validity. Lawshe's technique is developed by Lawshe (1975: cited. Yurdagül, 2005) in order to measure content validity. In this technique, opinions of at least 5 experts are required. The content validity values of the open-ended questions were from 80% and 100% (for 10 experts) and this suggested that the content validity of the scale was sufficient (Yurdagül, 2005). The Error Analysis Inventory was used for grading the open-ended questions (Akyol, 2011). Accordingly, deep comprehension questions are rated in accordance with the completeness of answers as 3, 2, 1 and 0, which refer to 'completely

true', 'mostly true answers with a few wrong ones', 'few true answers' and 'no true answers' respectively. Similarly, simple comprehension questions are also rated according to answers as 2, 1, and 0. After this grading, the comprehension score of the reader is obtained by dividing the real scores into the required ones.

The Reliability of the Grading Method for the Open-Ended Questions: 98 students were randomly selected and their answers to open-ended questions were graded by two different raters (Turgut & Baykul, 2011). The Pearson Correlation coefficient between the two raters were $r=0.94$ for OP-ENDNAR 1, $r=0.92$ for OP-ENDEXP 1, $r=0.93$ for OP-ENDNAR 2 and $r=0.97$ for OP-ENDEXP 2. These are referred to as CLOZ NAR for narratives ($OP-ENDNAR=(OP-ENDNAR\ 1 + OP-ENDNAR\ 2) / 2$) and ($OP-ENDEXP=(OP-ENDEXP\ 1 + OP-ENDEXP\ 2) / 2$) for expository.

Cloze Tests: Four cloze tests consisting of one narrative (C-NAR 1 and C-NAR 2) and one expository (C-EXP 1 and C-EXP 2) for each grade level were prepared for the study. The words following the fifth word in each sentence, except for the first and last sentences, were deleted (Ulusoy, 2009). These are referred to as CLOZ NAR for narratives ($CLOZNAR=(C-NAR\ 1 + C-NAR\ 2) / 2$) and ($CLOZEXP=(C-EXP\ 1 + C-EXP\ 2) / 2$) for expository. CLOZNAR and CLOZEXP refers to the cloze tests. The percentage of true answers is calculated and the students' comprehension scores related to these tests are determined.

The Reading Attitude Scale: Ozbay and Uyar's (2009) "Reading Attitude Scale for Secondary Level Students" was used for the study. The original scale had 25 items and four factors. The researchers found that the scale had an alpha reliability coefficient of 0.93. However, items inexistent in any factors or with load factor lower than 0.45 are excluded (Buyukozturk, 2007). this study used 17 of the items grouped under the dimensions of "Recreational Reading Attitude (RRA), Attitude toward Books (ATB) and General Reading Attitude (GRA)." The scale was retested for reliability and validity. The second analysis revealed that the scale had an alpha reliability coefficient of 0.89 and that the three factors used could be maintained.

Academic Achievement Scores: The students' weighted grade point averages for the 2012-2013 academic year were used to assess their academic achievement. Academic achievement scores consist of end of year weighted grade points of Turkish, Social, Science and Mathematics lessons. Grade points are obtained from the students' scores of written exams, projects, performance homework and in-class participation

Data Analysis

Data were subjected to exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and Structural Equation Modeling. The data were calculated using SPSS 15.0 for the EFA, and AMOS 6.0 for the CFA and Structural Equation Modeling.

The Results of the Exploratory Factor Analysis (EFA) and Reliability for the Reading Attitude, Comprehension and Academic Achievement Scales

The Kaiser-Meyer-Olkin (KMO) and Barlett's test of sphericity were used to determine whether the data were suitable for factor analysis. The KMO values were 0.86, 0.822 and 0.92 for the variables "achievement," "comprehension" and "attitude," respectively. Buyukozturk (2006) suggests that a KMO value higher than 0.60 is sufficient for the data to be subjected to factor analysis, whereas Ozdamar (2011) argues that this value must be higher than 0.70. Thus the KMO values for the variables in this study clearly mean that the data were suitable for factor analysis. Barlett's test, another indicator of appropriateness for factor analysis, yielded a significant result ($p<0.01$), suggesting that the data came from a multi-variable normal distribution (Cokluk, Sekercioglu, & Buyukozturk, 2012).

Afterwards, an EFA was conducted on the variables “achievement,” “comprehension” and “attitude.” The analysis indicated that the variable “achievement” comprised one single factor. The factor loadings for the variable ranged from 0.90 to 0.95. The total amount of explained variance 87.70% and α (Cronbach’s Alpha) value was 0.947 respectively. Similarly, the second variable, “comprehension,” consisted of one single factor and the factor loadings varied between 0.63 and 0.75. The total amount of variance was 50.52%, and the α value was 0.79. In contrast, the items on the attitude scale were grouped under three factors (RRA, ATB and GRA). The loadings for the first factor (RRA) ranged from 0.74 to 0.82. The total amount of variance and α value for this factor were 24.12% and 0.90, respectively. As for the second factor (ATB), the factor loadings varied between 0.70 and 0.85. The total amount of variance and α value for this factor were 22.80% and 0.89, respectively. The loadings for the third factor (GRA) ranged from 0.58 to 0.73. The total amount of variance and α value for this factor were 15.29% and 0.75. The α value for the whole scale was 0.89.

The EFA values for the measurement tools satisfied the principles of CFA (Confirmatory Factor Analysis) (Kline, 2011; Simsek, 2007). The CFA was tested through the Maximum Likelihood method. The normality (Kurtosis and skewness) values for the variables in the model varied from -196 to +196.

The Results of the CFA and Reliability for the Reading Attitude, Comprehension and Academic Achievement Scales

Before the structural model is tested in structural equation modeling research, it is necessary to test the measurement models and incorporate them into the structural model once favorable parameters have been achieved (Simsek, 2007). Therefore, the CFA of the measurement models was followed by an assessment of structural reliability and fit indexes. Table 1 presents the structural reliability and standardized regression weights in reference to the CFA whereas Table 2 introduces goodness of fit indexes.

Table 2 The confirmatory factor analysis results regarding Attitude, Comprehension and Academic Achievement

Scale	Dimensions	Items	Standardized Regression Weights	t	p
Attitude	Dimension of RRA ($\rho\eta = 0.91^*$)	soM14	0.832	---	---
		soM15	0.725	25.89	0.000
		soM16	0.832	31.91	0.000
		soM17	0.777	28.27	0.000
		soM23	0.769	28.47	0.000
		soM25	0.824	30.68	0.000
	Dimension of ATB ($\rho\eta = 0.89^*$)	kioM3	0.806	---	---
		kioM4	0.858	30.68	0.000
		kioM9	0.774	27.48	0.000
		kioM11	0.748	25.75	0.000
		kioM12	0.649	21.66	0.000
		kioM18	0.724	24.50	0.000
	Dimension of GRA ($\rho\eta = 0.70^*$)	goM1	0.642	---	---
		goM2	0.665	16.31	0.000
		goM5	0.627	15.48	0.000
goM6		0.649	15.61	0.000	
goM7		0.491	12.47	0.000	

The Structural Relationship of Reading Attitude, Reading Comprehension and Academic Achievement

Comprehension	Dimension of Comprehension ($\rho\eta = 0.79^*$)	OP-ENDEXP	0.651	---	---
		OP-ENDNAR	0.713	16.95	0.000
		CLOZEXP	0.646	15.38	0.000
		CLOZNAR	0.663	15.48	0.000
		M-CEXP	0.547	13.54	0.000
		M-CNAR	0.51	12.70	0.000
Academic Achievement	Dimension of Academic Achievement ($\rho\eta = 0.95^*$)	MATH	0.833	---	---
		TURKISH	0.961	41.86	0.000
		SOCIAL	0.920	39.34	0.000
		SCIENCE	0.926	44.60	0.000

* $\rho\eta$: Construct Reliability = $(\sum \text{standardized loadings})^2 / (\sum \text{standardized loadings})^2 + \sum \text{error}$ (Hair, Anderson, Tahtam, & Black, 1998).

The dimensions revealed by the EFA were confirmed for all the scales (Table 1). The standardized regression weights for the items in the sub-dimensions of the scales were quite high and significant. The CFA suggested that the reliability of the factors for the attitude scale were 0.91, 0.89 and 0.70 respectively. On the other hand, the single factor for the comprehension scale had a structural reliability of 0.79, whereas the one for the academic achievement scale had a structural reliability of 0.95.

Table 3 The goodness of fit index regarding the model constructed in the attitude, comprehension and academic achievement scales *

Fit Measure	Good Fit	Acceptable Fit	Reading Attitude	Comprehension	Academic Achievement
RMSEA	$0 < \text{RMSEA} < 0.05$	$0.05 \leq \text{RMSEA} \leq 0.10$	0.042	0.039	0.044
NFI	$0.95 \leq \text{NFI} \leq 1$	$0.90 \leq \text{NFI} \leq 0.95$	0.96	0.99	0.99
CFI	$0.97 \leq \text{CFI} \leq 1$	$0.95 \leq \text{CFI} \leq 0.97$	0.97	0.99	1.00
GFI	$0.95 \leq \text{GFI} \leq 1$	$0.90 \leq \text{GFI} \leq 0.95$	0.96	0.99	0.99
AGFI	$0.90 \leq \text{AGFI} \leq 1$	$0.85 \leq \text{AGFI} \leq 0.9$	0.95	0.98	0.98
χ^2/df	$0 < \chi^2/\text{df} < 3$	$0 < \chi^2/\text{df} < 5$	$331.10 / 116 = 2.85$	$12.96 / 5 = 2.59$	$2.95/1=2.95$

*Schermelleh-Engel, Moosbrugger, and Müller (2003, p.52).

Table 3 presents the CFA fit indexes (χ^2/df , AGFI, GFI, CFI, NFI, and RMSEA). The Chi-Square value is sensitive to sample size (Simsek, 2007) and, according to Kline (2011), the value is likely to be more significant as the sample gets larger. Therefore, the value obtained from χ^2/df should be taken into account, since there are problems with the significance of the p value in structural equation modeling, where samples are very large (Cokluk et al, 2012; Kline, 2011; Ozdamar, 2011). Even though it signals an acceptable fit, the goodness of fit index obtained from χ^2/df is not considered to be sufficient on its own to evaluate the model and, therefore, other goodness of fit indexes (AGFI, GFI, CFI, NFI, IFI, and RMSEA) should also be considered (Brown, 2006; Hooper, Coughlan, & Mullen, 2008; Hu & Bentler, 1999; Kline, 2011; Tabachnick & Fidell, 2001). This study considered “ χ^2/df , AGFI, GFI, CFI, NFI, IFI, and RMSEA,” and results were interpreted accordingly.

First, the model was confirmed by CFA conducted to test the structural integrity between the latent variable attitude and observed variables ($\Delta \chi^2 (116)=331.10$, $\Delta\chi^2/df=2.85$, $p=0.000$, $RMSEA=0.042$, $NFI=.96$, $CFI=.97$, $IFI=.97$, $GFI=0.96$, $AGFI=0.95$).

The model could not be confirmed by the CFA conducted to test the structural integrity between the latent variable comprehension and observed variables ($\Delta \chi^2 (9)=174.56$, $\Delta\chi^2/df=19.39$, $p=0.000$, $RMSEA=0.13$, $NFI=0.89$, $CFI=0.90$, $IFI=.90$, $GFI=0.94$, $AGFI=0.87$). The model had high values of normed Chi-Square and RMSEA. Therefore, an assessment was made of the Modification indexes for the measurement model comprehension. In accordance with these indexes, error variables were matched and the model was subjected to re-analysis. The values suggested that the model had good fit after the revision ($\Delta\chi^2 (5)=12.96$, $\Delta\chi^2/df=2.59$, $p=0.024$, $RMSEA=0.039$, $NFI=0.99$, $IFI=0.99$, $CFI=0.99$, $GFI=0.99$, $AGFI=0.98$). The model could not be confirmed by the CFA conducted to test the structural integrity between the latent variable achievement and observed variables ($\Delta \chi^2 (2)=32.51$, $\Delta\chi^2/df=16.25$, $p=0.000$, $RMSEA=0.12$, $NFI=0.99$, $CFI=0.99$, $SRMR=0.009$, $GFI=0.98$, $AGFI=0.92$). The model had high values of normed Chi-Square and RMSEA. Whereas NFI, CFI and GFI signaled perfect fit (>0.95), AGFI represented good fit (>0.90). Therefore, an assessment was made of the Modification indexes. The values suggested that the model had good fit after the revision ($\Delta\chi^2 (1)=2.95$, $\Delta\chi^2/df=2.95$, $p=0.086$, $RMSEA=0.044$, $NFI=.99$, $IFI=1.00$, $CFI=1.00$, $GFI=.99$, $AGFI=0.98$).

The results of the CFA suggested that the EFA of the scales attitude, comprehension and achievement was confirmed and the scales could be used in the structural equation modeling.

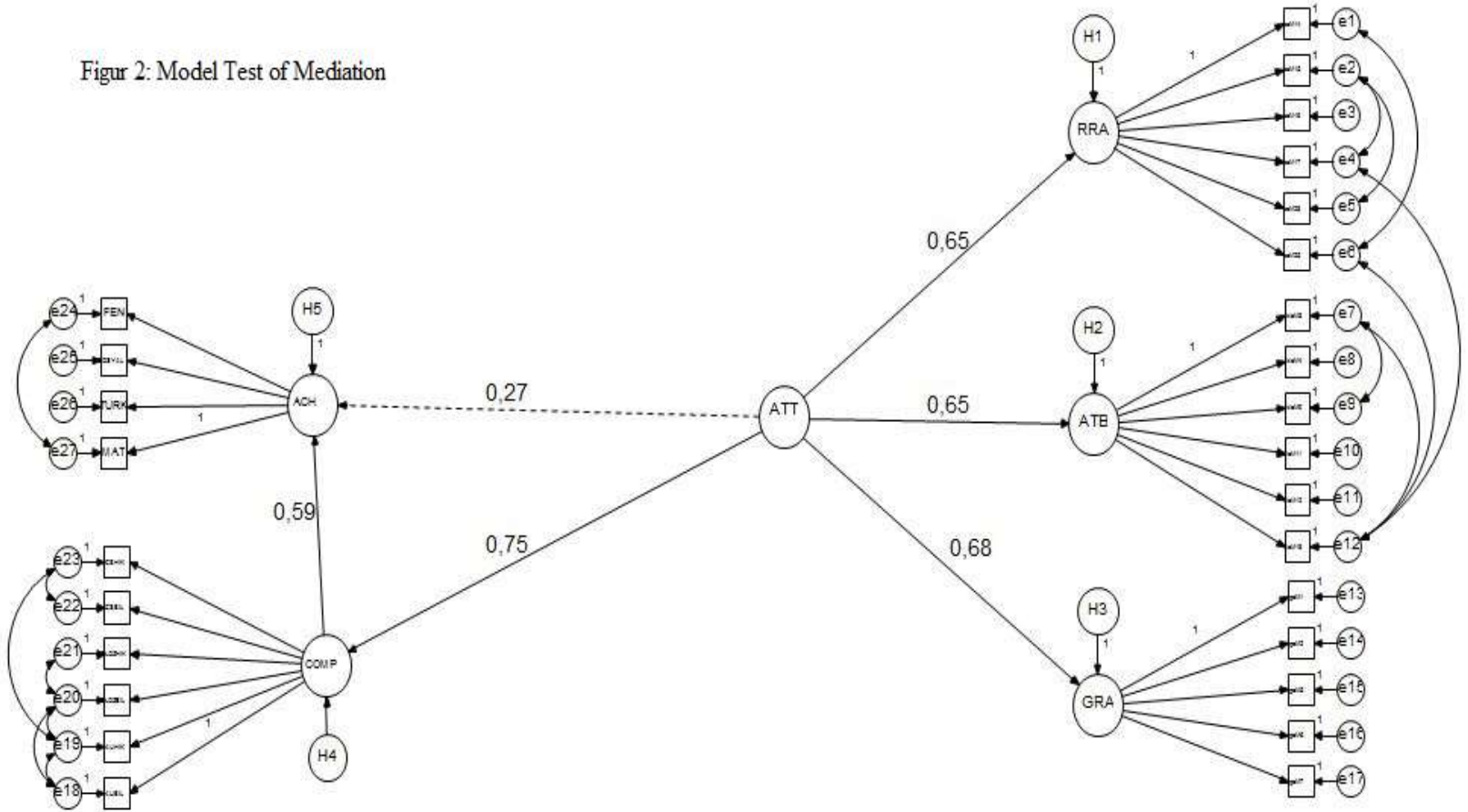
The Findings on the Structural Equation Modeling

First, the t values were investigated. The t values for the paths between unobserved and observed variables, and all the t values for the path coefficients between unobserved variables themselves were significant. In other words, observed variables significantly contributed to the formation of the factors (Ozdamar, 2011: 264). Next, an assessment was made of the standardized values for the model, and the results were interpreted.

Three latent variables were identified for the model, namely “Attitude,” “comprehension” and “achievement.” The fit of the model was tested with “Chi-Square, RMSEA, AGFI, GFI, IFI, CFI and NFI,” and it was observed that the model was significant at the level of 0.05. In addition, an assessment was made of modification indexes, which were then revised, for the idea was that the indicators would have a positive influence on other fit indexes, especially on the Chi-Square value. Since, the indicators would have a positive influence on other fit indexes, especially on the Chi-Square value. An assessment was made of modification indexes, which were then revised. An analysis of the fit indexes for the model concluded that the Chi-Square value was $\chi^2=764.88$, $df=305$, $p=0.000$, with the p value being significant. The model had the following indexes: $\chi^2/df=2.50$, 0.038 for RMSEA, 0.93 for AGFI, 0.94 for GFI, 0.95 for NFI, 0.97 for IFI and 0.97 for CFI. A comparison between these figures and the values presented in Table 2 suggested that the RMSEA, AGFI and CFI values were good, whereas the GFI and NFI values were acceptable. This means that that the hypotheses were supported, and the structural equation modeling was acceptable. In other words, the reading attitude significantly predicted reading comprehension. In turn, reading comprehension significantly predicted academic achievement.

For hypotheses 3 and 4, a mediating test was carried out between the latent variables included in the model. The purpose was to reveal whether students’ “attitude” levels had a direct influence on their academic achievement, or their achievement was determined indirectly by comprehension. For this purpose, a mediating test was conducted on the model based on the latent variables attitude, comprehension and achievement.

Figur 2: Model Test of Mediation



In the first model (Figure 1), the path coefficient from comprehension to achievement was 0.83, but its value dropped to 0.59 after the mediating test (Figure 2). As for the path coefficient from attitude to comprehension, it was 0.82 in the first model, but it decreased to 0.75 following the mediating test. Thus, the path coefficient from attitude to achievement was 0.27, and the *t* value was significant. The fit indexes were as follows: RMSEA=0.038, χ^2 /sd value=2.46, AGFI=0.93, GFI=0.94, IFI=0.97, CFI=0.97, and NFI=0.95. A comparison between these figures and the values presented in Table 2 suggested that the RMSEA, AGFI and CFI values were good, whereas the GFI and NFI values were acceptable. According to the results of the mediating test, reading comprehension played a partial mediating role between the reading attitude and academic achievement. So, the model constructed for the hypothesis is confirmed.

4. Discussion

Designed to determine the structural relationships between the reading attitude, comprehension and academic achievement, this study concluded that the hypothesis model was supported. There were direct and positive structural correlations between reading attitudes, reading comprehension and academic achievement. The reading attitude significantly predicted reading comprehension. In turn, reading comprehension significantly predicted academic achievement. This finding is supported by the literature (Ates, 2008; Conlon et al., 2006; Diamond & Onwuegbuzie, 2001; Fawson et al., 2009; Kayiran & Karabay, 2012; Kush et al., 2005; Martínez et al., 2008; McKenna et al., 1995; Sainsbury, 2004; Schofield, 1980; Walberg & Tsai, 1983). Readers with a positive attitude toward reading will have higher achievement in reading and comprehension. Kovacioglu (2006) reports that positive or negative attitudes adopted by children toward reading will influence the extent to which they can comprehend what they read. Readers with a positive attitude to reading read more, and those who read a lot will be more successful in reading. According to Matthewson (2004) reading attitude effect the behaviors such as; intention to reading and sustaining reading activity, these behaviors also effect the reading, strategy use, text selection, attention and comprehension. Stanovich (1986) calls this the Matthew effect. The effect is based on the idea that the rich get richer, and the poor get poorer. Accordingly, unsuccessful students increasing deficiency comparing to contemporary due to reading little. Therefore, these students are unsuccessful at reading and the other fields. On the other hand, successful reader increases their achievement by reading more. When reading skills are progressed, the cognitional skills are also improved (Adams, 1990). Since, increasing reading amount causes to improve the prior knowledge and experience of reader, the improvement of the prior knowledge and experience result in reading comprehension skill. The improvement of reading comprehension is interpreted as the efficient learn of students from knowledge and content.

Furthermore, there are experimental studies suggesting that improved reading attitude improves reading comprehension. Activities designed for reading comprehension lead to a change in students' attitudes toward reading, too (Ernesto & Lynn, 2008; Kanmaz & Saracaloglu, 2012; Reis, McCoach, Coyne, Schreiber, Eckert & Gubbins, 2007). Thus a correlation exists between an improvement in reading and an improvement in reading attitude. Reading attitude should be considered in reference to reading comprehension skills.

A mediating test was conducted on the model based on the structural relationships between the reading attitude, reading comprehension and academic achievement. The test yielded reading attitude significantly predicted academic achievement. Reading comprehension also played a partial mediating role between reading attitudes and academic achievement. This study's finding is supported by the literature (Ates, 2008; Bas & Sahin, 2012; Ghaith & Bouzeineddine, 2003; Sallabas, 2008). Those with more positive attitudes toward reading will have higher academic achievement. The high reading attitude, the more reading attitude, make contribution to their school achievements. In particular, the structural equation modeling study of Keskin (2013) supported substantially the result of present study. The author introduce that the reading attitude is the important predictor of the academic achievement. The positive

attitudes to reading activity make contribution to increasing amount in reading and variety in reading activity of students, and emphasized that the progressed of positive reading attitude of students effect their successful.

Another important finding is that reading comprehension significantly predicted academic achievement. Current study' finding is supported by the literature (Ates, 2008; Bloom, 1998; Grimm, 2008; Lerkkanen et al., 2005; Silvina Demagistri, 2009; Villa, 2008; Yildiz, 2013). Bharuthram (2012) argues that reading is one of the most important academic tasks undertaken by students, and emphasizes that reading is essence of formal education. Written materials such as textbooks and journals are among the most important learning sources in schools (Tasdemir, 2010). Most learning takes place by reading and comprehending such sources. Reading and learning out of such materials are associated with students' academic achievement (Tasdemir, 2010). Therefore, higher academic achievement requires students to read efficiently and construct meaning on the basis of reading. Guldenoglu (2008) points out that reading comprehension affects students' academic achievement and is a prerequisite for a number of academic skills. A lack of reading comprehension adversely affects students' academic performance (Bharuthram, 2012; Bohlman & Pretorius, 2002; Meneghetti et al., 2006; Pretorius, 2002). Students need to read and comprehend what they read for any class.

In conclusion, the findings of this study suggest that reading attitudes, reading comprehension and academic achievement share a structural relationship. Its hypotheses were proven, and the structural equation modeling was confirmed. Reading attitude affects reading comprehension and academic achievement. Academic achievement is also influenced by reading comprehension.

The Limitations of the Study

Nevertheless, this study suffers from several limitations. The first one concerns the sample. The study population included 1028 fourth and fifth grade Turkish-speaking students from four schools in a city of 120,000 people located in central Turkey. The study was also limited by being confined to fourth and fifth grade students. The second limitation is methodological. The study was conducted using the survey method on two grade levels. It lacks experimental and longitudinal aspects. In addition, it is known that reading comprehension and academic achievement are influenced by a number of factors. Reading attitudes alone cannot account for reading comprehension, just as academic achievement cannot be explained by reading comprehension and reading attitudes on their own. Thus, more variables could be modeled in further studies to test such latent factors. Despite these limitations, it is hoped that this study will make a contribution to the literature.

Implications

Certain recommendations can be made in light of the results of this study:

For instruction: Students' reading attitudes should be taken into consideration not only in reading and comprehension activities, but also in activities designed to enhance their academic achievement. Reading comprehension is a significant predictor of academic achievement. Thus reading comprehension skills should be emphasized to increase academic achievement.

For researchers: Further studies should focus on different sample groups (different ages, different level class etc. college, high school) to identify the relationship of reading attitudes, reading comprehension and academic achievement. In addition, given that this study was carried out using the survey method, other researchers should conduct experimental and qualitative studies. Finally, the results of this study should be compared with studies conducted on bilingual sample groups.

References

- Adams, MJ. (1990). *Beginning to Read: Thinking and Learning about Print*. Cambridge, MA: The MIT Press.
- Akyol, H. (2011). *Yeni Programa Uygun Turkce Ogretim Yontemleri* (4 ed.). Ankara: PegemAkademi.

- Ates, M. (2008). *İlkogretim ikinci kademe ogrencilerinin okudugunu anlama duzeyleri ile turkce dersine karsi tutumlari ve akademik basarilari arasindaki iliski*. Unpublished Ph.D., University of Selcuk, Konya.
- Baker, L., & Wigfield, A. (1999). *Dimensions of children's motivation for reading and their relations to reading activity and reading achievement*. *Reading Research Quarterly*, 34, 452-477. doi: 10.2307/748216.
- Bas, G., & Sahin, C. (2012). İlkogretim 6. 7. ve 8. Sınıf Ogrencilerinin Okuma Tutumlari Ve Yazma Egilimleri ile Turkce Dersindeki Akademik Basarilari Arasindaki Iliski. *Turkish Studies*, 7(3), 555-572.
- Bharuthram, S. (2012). Making a case for the teaching of reading across the curriculum in higher education, *South African Journal of Education*, Vol 32:205-214.
- Bircan, I. & Tekin, M. (1989). Turkiye'de okuma aliskanliginin azalma sorunlari ve cozum yollari. *A.Ü. Egitim Bilimleri Dergisi*, 22(1), 393-410.
- Bloom, BS. (1998). *İnsan Nitelikleri ve Okulda Ogrenme* (D. A. Ozcelik, Trans.). İstanbul: Milli Egitim Bakanligi.
- Bohlman, CA., & Pretorius, EJ. (2002). Reading skills and mathematics. *South African Journal of Higher Education*, 16:196-206.
- Brown, (TA). (2006). *Confirmatory factor analysis for applied research*. New York: Guilford Publications.
- Buyukozturk, S.(2007). Sosyal Bilimler İçin Veri Analizi El Kitabı (8.Baskı). Ankara: Pegem A Yayıncılık.
- Conlon, EG. Zimmer-Gembeck, MJ., Creed, PA., & Tucker, M. (2006). Family history, self-perceptions, attitudes and cognitive abilities are associated with early adolescent reading skills. *Journal of Research in Reading*, 29(1), 11-32.
- Cokluk, O. Sekercioglu, G., & Buyukozturk, S. (2012). *Sosyal Bilimler icin Çok Degiskenli İstatistik SPSS ve LISREL Uygulamalari* (2 ed.). Ankara: Pegem Akademi.
- Diamond, PJ., & Onwuegbuzie, AJ., (2001). Factors Associated with Reading Achievement and Attitude among Elementary School-Aged Students. *Research in the Schools*, 8(1), 1-11.
- Duke, NK., & Pearson., PD. (2002). Effective practices for developing reading comprehension. In A. E. Farstrup & S. J. Samuels (Eds.), *What research has to say about reading instruction* (3rd ed.,pp. 205-242). Newark, DE: International Reading Association.
- Eagly, AH. & Chaiken, S. (1993). The nature of attitudes. In *The psychology of attitudes* (pp. 1-21). Fort Worth: Harcourt Brace Jovanovich.
- Ernesto, M., & Lynn, E. (2008). Raising the Achievement of Young-beginner Readers of French through Strategy Instruction. *Applied Linguistics*, 29(1), 90-90.
- Fawson, PC., Reutzel, DR., Read, S., Smith, JA., & Moore, SA. (2009). The Influence of Differing the Paths to an Incentive on Third Graders' Reading Achievement and Attitudes. *Reading Psychology*, 30(6), 564-583.
- Ghaith, GM., & Bouzeineddine,. AR. (2003). Relationship between Reading Attitudes, Achievement, and Learners' Perceptions of Their Jigsaw II Cooperative Learning Experience. *Reading Psychology*, 24(2), 105-121.
- Gottfried, AE. (1985). Academic Intrinsic Motivation in Elementary and Junior High School Students. *Journal of Educational Psychology*, 77(6), 631-645.
- Grimm, KJ. (2008). Longitudinal Associations Between Reading and Mathematics Achievement. *Developmental Neuropsychology*, 33(3), 410-426.
- Guldenoglu, B. (2008). Zihinsel Yetersizligi Olan Ogrencilerde Okudugunu Anlama Becerilerinin Desteklenmesi. *Ankara Universitesi Egitim Bilimleri Fakultesi Ozel Egitim Dergisi*, 9(2), 51-63.
- Gunes, F. (2013). *Turkce Ogretimi Yaklasimlar ve Modeller*. Ankara: Pegem Akademi.
- Guthrie, JT., Wigfield, A., Metsala, JL., & Cox, KE. (1999). Motivational and Cognitive Predictors of Text Comprehension and Reading Amount. *Scientific Studies of Reading*, 3(3), 231-256. doi: 10.1207/s1532799xssr0303_3.

- Hair, JF. Anderson, RE., Tahtam, RL., & Black, WC. (1998). *Multivariate Data Analysis* (5 ed.). New Jersey: Prentice-Hall International INC.
- Hanushek, EA., & Woessmann., L, (2008).The Role of Cognitive Skills in Economic Development.*Journal of Economic Literature.* 46:3, 607-668. Available at http://www.citizing.org/data/projects/highered/The%20Role%20of%20Cognitive%20Skills%20in%20Economic%20Development%20Hanushek_Woessmann%202008.pdf.Accessed 05 October 2013.
- Hood, M., Creed, PA., & Neumann, DL. (2012). Using the Expectancy Value Model of Motivation to Understand the Relationship between Student Attitudes and Achievement in Statistics. *Statistics Education Research Journal*, 11(2), 72-85.
- Hooper, D., Coughlan, J. & Mullen, MR. (2008). Structural Equation Modelling: Guidelines for Determining Model Fit. *The Electronic Journal of Business Research Methods* 6(1), 53-60.
- House, JD., & Prion, SK., (1998). Student Attitudes and Academic Background as Predictors of Achievement in College English. *International Journal of Instructional Media*, 25(1), 29-42.
- Hu, Lt.& Bentler, PM. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55.
- Kanmaz, A. & Saracaloglu, AS. (2012). Okudugunu Anlama Stratejisi Kullaniminin, Okumaya Yonelik Tutum Ve Kaliciliga Etkisi. *e-Journal of New World Sciences Academy*,7(2), 764-776.
- Kayiran, BK. & Karabay, A. 2012. A Study on Reading Comprehension Skills of Primary School 5th Grade Students -Learning Basic Reading and Writing Skills Through Phonics-Based Sentence Method or Decoding Method. *Educational Sciences: Theory & Practice*, 12(4), 2854-2860.
- Keskin, HK. (2013). Impacts of reading metacognitive strategies and reading attitudes on school success. *International Journal of Academic Research Part B*; 5(5), 312-317.
- Kline, RB. (2011). *Principles and Practice of Structural Equation Modeling* (3 ed.). New York: The Guilford Press.
- Kintsch, W. (1998). *Comprehension: A Paradigm For Cognition*. Cambridge, England: Cambridge University Press.
- Kovacioglu, NS. (2006). *İlkogretim ikinci siniflarinda aile cevresi ve cocugun okumaya karsi tutumu ile okudugunu anlama becerisi arasindaki iliskiler*. Unpublished Master Thesis, University of Yildiz Teknik, İstanbul.
- Kush, JC., Watkins, MW., & Brookhart, SM. (2005). The Temporal-Interactive Influence of Reading Achievement and Reading Attitude. *Educational Research and Evaluation*, 11(1), 29-44.
- Lazarus, BD., & Calla, T. (2000). Attitudes toward reading expressed by elementary school students diagnosed with learning disabilities. *Reading Psychology*. 21: 271-282.
- Lerkkanen, MK., Rasku-Puttonen, H., Aunola, K. & Nurmi, JE. (2005). Mathematical performance predicts progress in reading comprehension among 7-year olds. *European Journal of Psychology of Education - EJPE (Istituto Superior de Psicologia Aplicada)*, 20(2), 121-137.
- Logan, S. & Johnston, R. (2009). Gender differences in reading ability and attitudes: examining where these differences lie. *Journal of Research in Reading*, 32(2), 199-214.
- Martínez, RS., Aricak, OT., & Jewell, J. (2008). Influence of reading attitude on reading achievement: A test of the temporal-interaction model. *Psychology in the Schools*, 45(10), 1010-1023.
- Masarogulları, G. & Kocakgöl, M. (2011). *Psikoloji Sözlüğü*. Ankara: Nobel Yayıncılık.
- Mathewson, GC. (2004). Model of Attitude Influence Upon Reading and Learning to Read. In R. B. Ruddel & N. J. Unrau (Eds.), *Theoretical Models and Processes of Reading* (Vol. II, pp. 1431-1461). Newark,USA: International Reading Association.
- McKenna, MC., Kear, DJ., & Elisworth,. RA. (1995). Children's attitudes toward reading:A national survey. *Reading Research Quarterly*, 30(4), 934-956.
- McKenna, MC. & Kear, DJ. (1990). Measuring attitude toward reading: A new tool for teachers. *The Reading Teacher*. 43: 626-639.
- MEB, (1995). *İlkogretim programi*. Ankara: MEB yayinlari.
- MEB, (2005). *İlköğretim Türkçe dersi (1-5. Sınıflar) öğretim programı ve kılavuzu*. Ankara: Devlet Kitapları Müdürlüğü Basımevi.

- Meneghetti, C, Carretti., B. & De Beni, R. (2006). Components of reading comprehension and scholastic achievement. *Learning and Individual Differences, 16*(4), 291-301.
- Nelson-Royes AM (2013). Tutors Can Improve Students' Reading Skills. *Reading Improvement, 50*(2), 48-53.
- Ozbay, M. & Uyar, Y. (2009). İlköğretim İkinci Kademe Öğrencileri İçin Okumaya Yönelik Tutum Olceğinin Gelistirilmesi:Gecerlik ve Guvenirlilik Calismasi. *e-Journal of New World Sciences Academy, 4*(2), 632-651.
- Ozdamar, K. (2011). *Paket Programlar ile İstatistiksel Veri Analizi 2* (Vol. 2). Eskisehir: Kaan Kitabevi.
- Petscher, Y. (2010). A Meta-Analysis of the Relationship between Student Attitudes towards Reading and Achievement in Reading. *Journal of Research in Reading, 33*(4), 335-355.
- Pretorius, EJ. (2002). Reading ability and academic performance in South Africa: Are we fiddling while Rome is burning? *Language Matters, 33*:169-196.
- RAND Reading Study Group, (2002). Reading for understanding:Toward a research and development program in reading comprehension. Santa Monica, CA: Office of Education Research and Improvement.
- Rasinski, T. (2010). The Fluent Reader (2nd edition). New York: Scholastic.
- Reis, SM., McCoach, DB., Coyne, M., Schreiber, FJ., Eckert, RD. & Gubbins, EJ. (2007). Using Planned Enrichment Strategies with Direct Instruction to Improve Reading Fluency, Comprehension, and Attitude toward Reading: An Evidence-Based Study. *Elementary School Journal, 108*(1), 3-23.
- Sainsbury, M. (2004). Children's attitudes to reading. *Education Journal, 1* (79), 15-15.
- Sallabas, ME. (2008). Relationship between 8th Grade Secondary School Students' Reading Attitudes and Reading Comprehension Skills. *İnönü University Journal of the Faculty of Education, 9*(16), 141-155.
- Savas, E., Tas, S. & Duru, A. (2010). Matematikte Öğrenci Başarısını Etkileyen Faktörler. İnönü Üniversitesi Eğitim Fakültesi Dergisi. 11(1), ss. 113–132.
- Schermelleh-Engel K, Moosbrugger, H., & Muller, H. (2003). Evaluating the fit of Structural Equation Models: Test of Significance and descriptive Goodness- Fit-Measures. *Methods of Psychological Research Online, 8*(2), 23-74.
- Schofield, HL. (1980). Reading Attitude and Achievement: Teacher-Pupil Relationships. *Journal of Educational Research, 74*(2).
- Senemoglu, N. (2004). Gelişim Öğrenme ve Öğretim, Kuramdan Uygulamaya (10 ed.). Ankara: Gazi Kitabevi.
- Silvina Demagistri, M. (2009). Habilidades cognitivas y rendimiento académico en alumnos de una escuela secundaria. (Spanish). *Cognitive skills and academic performance of secondary school students. (English), 6*(1), 30-38.
- Stanovich, KH. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, XXI*(4), 360-407.
- Simsek, OF. (2007). *Yapısal Esitlik Modellemesine Giriş - Temel İlkeler ve LISREL Uygulamaları*. Ankara: Ekinoks.
- Sünbül, AM., et al. (2010). İlköğretim öğrencileri kitap okuma alışkanlıkları. Konya ili araştırma raporu. Konya:Selçuk Üniversitesi.
- Tabachnick, BG., & Fidell, LS. (2001). *Using multivariate statistics*: Allyn and Bacon.
- Taboada, A., Tonks, SM., Wigfield, A., & Guthrie, J. T. (2009).Effects of Motivational and Cognitive Variables on Reading Comprehension. *Reading and Writing: An Interdisciplinary Journal, 22*(1), 85-106.
- Tasdemir, M. (2010). Ders Kitaplarının Kullanımında Anlama Stratejilerinin Kullanımı İle Başarı Arasındaki İlişki Üzerine Bir Durum Çalışması. *Türk Eğitim Bilimleri Dergisi, 8*(4), 913-947.
- Thrupp, M. (2013). National Standards for student achievement: Is New Zealand's idiosyncratic approach any better?. *Australian Journal of Language & Literacy, 36*(2), 99-110.
- Turgut, F., & Baykul., Y. (2011). *Eğitimde Ölçme ve Değerlendirme* (3 ed.). Ankara: PegemAkademi.

- Turkmen, F . (2002). Egitimin Ekonomik ve Sosyal Faydalari ve Turkiye’de Egitim Ekonomik Buyume Iliskisinin Arastirilmesi, Ankara: DPT, Eylul.
- Ulug, F. (1990). *Okulda Basari*. İstanbul: Remzi Kitabevi.
- Ulusoy, M. (2009). Bosluk Tamamlama Testinin Okuma Duzeyini Ve Okunabilirliği Olmede Kullanilmasi. *Turk Egitim Bilimleri Dergisi*, 7(1), 105-126.
- Vacca, JA., Vacca, RT., Gove, MK., Burkey, LC., Lenhart, LA. & McKeon, CA. (2006). Reading and Learning to Read, Boston: Pearson.
- van den Broek, P. & Espin, CA. (2012). Connecting Cognitive Theory and Assessment: Measuring Individual Differences in Reading Comprehension. *School Psychology Review*, 41(3), 315-325.
- Villa, SM. (2008). *Correlation between reading skills and mathematics performance: An analysis of Stanford Achievement Test scores from grades 6 to 11*. Unpublished Master Thesis, The University of Texas at El Paso, Ann Arbor.
- Walberg, HJ. & Tsai, Sl. (1983). Reading Achievement and Attitude Productivity among 17-Year Olds. *Journal of Literacy Research*, 15(41), 42-53.
- Yildirim, İ. (2000). Akademik başarının yordayıcısı olarak, yalnızlık, sınav kaygısı ve sosyal destek. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi* 18 : 167 - 176.
- Yildiz, M. (2013). Okuma Motivasyonu, Akıcı Okuma Ve Okudugunu Anlamanın Besinci Sınıf Öğrencilerinin Akademik Başarılarındaki Rolü. *Turkish Studies*, 8(4), 1461-1478.
- Yurdagül, H. (2005). Ölçek Geliştirme Çalışmalarında Kapsam Geçerliliği için Kapsam Geçerlilik İndekslerinin Kullanılması. *XIV. Ulusal Eğitim Bilimleri Kongresi*. Denizli; 25 Eylül 2005,s. 28-30.