Relationships among Fourth Graders' Reading Anxiety, Reading Fluency, Reading Motivation, and Reading Comprehension *

Ahmet Yamaç [1], Zuhal Çeliktürk Sezgin [2]

Abstract

The aim of the current study was to examine the interrelations among reading anxiety, reading comprehension, reading fluency and reading motivation. In this study that is based on a predictive correlational design, the participants were made up of 128 fourth grade students. Structural equation modeling was performed to test our hypotheses regarding the direct and indirect relationships among intrinsic and extrinsic motivation, reading anxiety, reading fluency, and reading comprehension. The results showed that internal motivation has a substantial and positive effect on reading comprehension. Extrinsic motivation has a substantial positive effect on reading fluency. On the other hand, while extrinsic motivation is not a direct substantial predictor of reading comprehension, it has an indirect positive effect on reading comprehension. This relationship is mediated by reading fluency. Furthermore, reading fluency has a substantial and positive effect on reading comprehension and has a substantial and negative effect on reading anxiety. Finally, reading anxiety has a substantial and adverse effect on reading comprehension.

Introduction

To date, research on reading anxiety has remained limited to second language teaching but anxiety is felt in literacy teaching as a first language in elementary school settings (Çeliktürk & Yamaç, 2015; Melanlıoğlu, 2014). The effect of anxiety on performance and achievement continues to be a major area of interest. Accordingly, reading anxiety has been studied widely in second language teaching. Research findings have demonstrated that reading anxiety has an important effect on students' reading performance and learning (Ialongo, Edelsohn, Werthamer-Larsson, Crockett, & Kellam, 1995; Sellers, 2000; Zhao, Guo, & Dynia, 2013).There has been growing interest in reading anxiety in first language teaching (Baki, 2017; Grills-Taquechel, Fletcher, Vaughn, & Stuebing, 2012; Katrancı & Kuşdemir, 2016). The relationships between reading anxiety and reading comprehension, reading fluency and reading motivation have seldom been investigated in literacy teaching as native language (Jalongo & Hirsh, 2010; Piccolo et al., 2017). Therefore, there is a lack of understanding of the interrelations among reading anxiety, reading comprehension, reading fluency and reading motivation. The current study aims to

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[1] Erciyes University, Faculty of Education, Dept. of Primary Education, Turkey, yamac87@gmail.com

[2] Mehmet Akif Ersoy University, Faculty of Education, Dept. of Primary Education, Turkey, zuhalcelikturk@mehmetakif.edu.tr

address these gaps in the reading literature. We tested our model of the relations among reading anxiety, reading comprehension, reading fluency and reading motivation.

Reading Anxiety

Bandura (1997) defined anxiety as "a state of anticipatory apprehension over possible deleterious happenings" (p. 137). The most prominent feature of anxiety is that a person feels a danger or threat to his/her self-esteem in the event of uncertain and threat. Anxiety means that the perceived threat has not been controlled by a person (Zeidner, 1998). People with high anxiety have worries about a threat to goal attainment and thus try to decrease the adverse effects of anxiety in their attempt to attain their goal. That is, anxiety has adverse effects on cognitive performance (Derakshan & Eysenck, 2009). There are a great number of studies examining the relationships between anxiety and cognitive performance. The research on anxiety and cognitive performance has consistently indicated that anxiety affects cognitive performance in negative way (Grills-Taquechel, Fletcher, Vaughn, Denton, & Taylor, 2013; Ialongo et al., 1995; Ocak & Yamaç, 2013; Ramirez, Gunderson, Levine, & Beilock, 2013).

There are a great many theories which try to explain the effect of anxiety on cognitive performance. Attentional control theory and processing efficiency theory are the two prominent theories. Before examining these theories, it is useful to mention the cognitive interference theory proposed by Sarason (1988). "While all people experience self-preoccupation, self-related thoughts become maladaptive when they are excessively preoccupying and when they interfere with task-oriented thinking and attention to situational realities" (Sarason, 1988, p.6). In sum, this theory asserts that anxiety brings about task irrelevant thoughts (such as self-preoccupation and worry) and that task-irrelevant thoughts impair cognitive performance by decreasing the amount of attention (Derakshan & Eysenck, 2009).

The processing efficiency theory was developed by Eysenck and Calvo (1992) and is a valuable framework for understanding anxiety. This theory makes two assumptions. The first is that worry has an effect on performance effectiveness and efficiency. The second is that anxiety affects working memory. Working memory consists of three components: the central executive (planning, strategy selection and attentional control), the phonological loop (the rehearsal of verbal material), and the visuospatial sketchpad (the processing of visual information). Task-irrelevant thoughts impair the functioning of the central executive. As a result, people with high anxiety perform poorly in conditions in which the central executive must fulfill the concurrent demands of two tasks (Derakshan & Eysenck, 2009).

The attentional control theory was put forward by building on the processing efficiency theory. This theory extends the scope of the previous theory (Eysenck, Derakshan, Santos, & Calvo, 2007). The primary assumption is that anxiety impairs cognitive performance by way of its adverse effects on attentional control which has a major role in the central executive (Derakshan & Eysenck, 2009). Afterwards, people with high anxiety preferentially devote attentional resources to threat-related stimuli that are internal (e.g., worrisome thoughts) or external (e.g., threatening task-irrelevant distractors) (Eysenck et al., 2007).

As a result, these theoretical frameworks are trying to explain how anxiety negatively affect cognitive performance. Based on these theoretical frameworks, various studies have been carried out on mathematics anxiety, computer anxiety, social anxiety and literacy anxiety. Research on reading and anxiety largely focuses on second language teaching. The acquisition process of reading and writing skills in the first language is not exempt from anxiety. Teachers should keep in mind the effects of anxiety in the teaching of reading (Tysinger, Tysinger, Diamanduros, & Earley, 2010). A high anxiety level may bring about a deterioration in concentration, memory functioning and information processing. Therefore, it would inevitably lead to decreased learning and poor achievement (Grills-Taquechel et al., 2012). Anxiety and reading problems may influence one another in a cyclical,

cumulative manner" (Jorgenson, 2015, p. 20). When elementary school students experience difficulties regarding reading fluency and reading comprehension in the classroom, anxiety related to reading can arise. For instance, while reading aloud in the classroom, students who have difficulties in reading rate or word recognition can experience reading anxiety (Çeliktürk & Yamaç, 2015).

Anxiety in first language teaching has attracted researchers' attention recently. Recent studies have reiterated the fact that there are relationships between anxiety and literacy skills such as reading comprehension, reading fluency, decoding, reading rate, and writing skills (Baki, 2017; Grills-Taquechel et al., 2012; Jorgenson, 2015; Katrancı & Kuşdemir, 2016; Ialongo et al., 1995; Tysinger et al., 2010). However, some results have been equivocal. Tysinger et al. (2010) showed that there was a significant negative correlation between social anxiety and reading comprehension but no significant correlation between social anxiety and reading fluency. Jorgenson (2015) investigated the relationships between reading and anxiety. The relationships between reading and anxiety in the overall sample was not significant. However in the sample consisting of students with low working memory performance and high anxiety, anxiety was a predictor of single word reading and reading comprehension. Bonifacci, Candria, and Contento (2008) investigated the relationship between primary school students' anxiety and depression and early literacy skills. The findings demonstrated that there is no relationship among word accuracy and reading rate and anxiety or depression. However, there is evidence of a relationship between depression and the lexical component of writing. Katrancı and Kuşdemir (2016) investigated the relationships between fourth graders' reading comprehension and reading anxiety. The findings showed that there was a negative correlation between reading anxiety and reading comprehension. Grills-Taquechel et al. (2012) explored the relationships between first graders' anxiety symptoms and decoding and fluency. The findings showed that fluency predicted anxiety symptoms. Anxiety symptoms predicted fluency performance for girls only. Decoding was not predicted by any anxiety sub- scales.

Reading Comprehension
According to the RAND Reading Study Group (2002), "reading comprehension is the process of simultaneously extracting and constructing meaning through interaction and involvement with written language" (p. 11). "Comprehension is the act of constructing meaning with oral or written text. This is truly a constructive process" (Duke & Carlisle, 2011, p. 200). Kintsch and Rawson (2005) assert that text comprehension is a complex process. This process entails the involvement of many different components, many different kinds of information, and complex mental representations.

Cognitive perspective provides a framework for the understanding of reading and the processes related to reading. Unrau and Alvermann (2013) point out that cognitive framework seeks to explore the role of "cognitive processes such as sensory input, attention allocation, symbol interpretation, strategy use, the organization of knowledge, its storage in short- and long-term memory, and outputs, especially in the form of text representation or comprehension" (p. 62).

Many cognitive skills and processes are needed for text comprehension. Comprehension skills and processes have two components: higher and lower level language skills. Higher level language skills include inference and integration, comprehension monitoring, and knowledge about text structure. The most important aim of this skills is to help readers to construct an integrated and coherent model of a text's meaning. On the other hand, lower language skills such as word recognition and phonologic processes have a precise effect in predicting early reading comprehension (Kendeou, Van Den Broek, Helder, & Karlsson, 2014). When fluent readers read texts quickly and easily, literal comprehension is automatically activated. However, this is not the ultimate goal of reading. For complete understanding of a text, the attainment of particular facts or events that were expressed earlier, and consideration of the knowledge and construction of arguments that are not within the text may be

needed. Critical and inferential activities have a precise role in comprehension by putting together information from various sources (Adams, 2013).

"Reading can be construed as the coordinated execution of a number of processing stages such as word encoding, lexical access, assigning semantic roles, and relating the information in a given sentence to previous sentences and previous knowledge" (Adam Just & Carpenter, 2013, p. 750). Executive functions such as working memory and inhibition, and attention allocation are the key to text comprehension. Deficiency in any one of these functions may cause comprehension problems (Kendeou et al., 2014). In the process of text comprehension, working memory is the place where all information is processed (Cain, Oakhill, & Bryant, 2004; Kintsch & Rawson, 2005). To comprehend a sentence, readers must remember the words within a sentence, retrieve information from previous texts, and parse the sentence. The working memory which stores and manipulates information is the bottleneck for these processes (Perfetti, Landi, & Oakhill, 2005). It has a precise role in inference making and comprehension. Readers who have deficiency in working memory lack reading strategies that are central to comprehension. Thus working memory increases comprehension by improving students' ability to perform cognitive processes (Kendeou et al., 2014). Research has indicated that working memory significantly contributed to the explanation of comprehension (Cain et al., 2004; Oakhill, Cain, & Bryant, 2003; Seigneuric & Ehrlich, 2005). In the study of Cain et al. (2004), the scholars investigated the relationships between elementary school students' working memory capacity and reading comprehension skills. The findings indicated that working memory capacity has a significant role in reading comprehension. In the longitudinal study of Oakhill et al. (2003), the researchers reported that even though word reading and comprehension skills are interrelated, the structures explaining these reading skills are different. Furthermore, the findings indicated that text integration, knowledge about story structure, metacognitive monitoring, and working memory are the predictors of comprehension skills.

Reading Fluency

Previously, reading fluency was a study area neglected in reading research. However, in recent years, research on reading fluency has clearly indicated that reading fluency has an important role in the acquisition process of reading proficiency. Accordingly, teaching and evaluation methods for reading fluency have been developed by researchers (Hudson, Lane, & Pullen, 2005). Although a consensus has not been reached on the definition of reading fluency, there has been a growing interest in the significance of reading fluency in reading achievement in recent years (Rasinski, Reutzel, Chard, & Linan-Thompson, 2011).

The National Reading Panel's (National Institute of Child Health and Human Development, 2000) report on reading research has suggested that fluency is a critical component of reading instruction. Pikulski and Chard (2005) emphasized that fluency in itself is not enough to ensure reading comprehension but is a prerequisite for good comprehension. LaBerge and Samuels' seminal study (1974) on reading fluency was a cornerstone. Within a model of automatic processing, reading fluency is essential to a high level of reading achievement. Reading is a complex process that has a multifaceted structure such as language, memory and attention. During this process, readers are able to execute a number of components in a short span of time. However, human beings have a limited amount of attention span. In particular, readers must perform two activities for successful reading: word identification or decoding and comprehension. If the reader is able to decode automatically, cognitive capacity (e.g. working memory, attention) is allocated for the construction of meaning. In contrast, a reader who struggles in reading words in texts accurately and automatically will divide their cognitive capacity between these two processes. This is due to the fact that non-fluent readers are more occupied in decoding words, so not enough cognitive capacity remains for the structure of comprehension (Kim, 2015a; Logan, 1997; Pikulski & Chard, 2005; Rasinski, 2012).

Considering the debates on the definition of reading fluency, the points of view of prominent organizations and researcher could be useful in the understanding of reading fluency. According to the National Reading Panel (National Institute of Child Health and Human Development, 2000), reading fluency is "the ability to read a text quickly, accurately, and with proper expression" (pp. 3-5). Wolf and Katzir-Cohen (2001) defined fluency as "the oral translation of text with speed and accuracy" (p. 239). Pikulski and Chard (2005) stated that "reading fluency refers to efficient, effective word recognition skills that permit a reader to construct the meaning of text. Fluency is manifested in accurate, rapid, expressive oral reading and is applied during, and makes possible, silent reading comprehension" (p.510). Kuhn, Schwanenflugel, and Meisinger (2010) stressed that fluency consists of accuracy, automaticity and oral reading prosody. All of these components holistically make the process of comprehension easier. Rasinski et al. (2011) stated that fluency is achieved when readers are able to read with sufficient accuracy and rate, allowing compherension of a text and reflecting prosodic features. In light of these views, accuracy, rate and prosody come into prominence for defining and understanding fluency. Each of these components plays an important role in structuring comprehension. Teachers must focus on all components of reading fluency. By incorporating accuracy, rate, and prosody, comprehensive reading instruction can allow for reading competency for all children (Hudson et al., 2005). In this research, reading fluency has been accepted as a triple structure consisting of word recognition, reading rate and prosody.

A great number of researchers have found that reading fluency has an important role in higher levels of comprehension (Denton et al., 2011; Kim, 2015a, 2015b; Kim, Park, & Wagner, 2014; Kim, Wagner, & Lopez, 2012; Klauda & Guthrie, 2008; Schwanenflugel et al., 2006). Furthermore, the relationships between reading fluency and reading comprehension have been reported to vary depending on the grade and level of reading ability (Kim, 2015a; Kim, Wagner, & Foster, 2011; Kim et al., 2012; Kuhn et al., 2010). In Kim et al.'s longitudinal study (2012) the authors showed that silent reading fluency was not uniquely related to first graders' reading comprehension. On the other hand, oral and silent reading became independently related to second graders' reading comprehension and reading fluency made a contribution to second graders' reading comprehension independently from list reading.

Some studies have shown that reading comprehension and reading fluency have a bidirectional relationship (Hudson, Torgesen, Lane, & Turner, 2012; Klauda & Guthrie, 2008; Yıldız, 2013). In their study with fifth graders, Klauda and Guthrie (2008) found that the word, syntactic, and passage levels of reading fluency are individually related to reading comprehension. Students with higher reading comprehension were able to recognize words swiftly, process phrases and sentences skillfully as syntactic units, and read stories and information texts properly and with consistent expression. Reading comprehension promotes reading fluency via top–down processes, whereas reading fluency increases reading comprehension by allowing more cognitive capacity.

Reading Motivation

Many researchers studying reading motivation report that reading motivation has a multidimensional structure with multiple constituents (Guthrie et al., 2007). The aspects that Wigfield and Guthrie (1997) proposed regarding reading motivation are based on work self-efficacy, intrinsic-extrinsic motivation, subjective values, achievement goals, and social motivation for reading. Self-efficacy consists of two aspects: reading efficacy and reading challenge. Intrinsic motivation and learning goals include reading curiosity, reading involvement, importance of reading and reading work avoidance. On the other hand, extrinsic motivation and performance goals include competition, recognition, and grades. Finally, social motivation for reading consists of two aspects: social reasons and compliance. Wang and Guthrie (2004) proposed that the motivational model has typically two primary constructs intrinsic and extrinsic motivation. While intrinsic motivation consists of curiosity, involvement, and preference for challenge, extrinsic motivation includes the five constructs of recognition, grades, social, competition, and compliance.

Intrinsic reading motivation is viewed as the willingness to read and enjoying it because the activity of reading itself is satisfying or rewarding (Schaffner, Schiefele, & Ulferts, 2013; Stutz, Schaffner, & Schiefele, 2016). The reasons why students are motivated intrinsically to reading are that they have positive experiences with the activity of reading, value books, recognize the personal importance of reading, and have an interest in the content of the reading material (Becker, McElvany, & Kortenbruck, 2010). As intrinsically motivated students experience cognitive and emotional satisfaction with the activity of reading, they spend more time reading and become self-determined in reading tasks (Wang & Guthrie, 2004). On the other hand, the reason why extrinsically motivated readers read is that they are trying to reach certain goals such as grade and reward which are external to the activity (Schaffner et al., 2013; Stutz et al., 2016).

A great deal of study on reading has reiterated the fact that reading motivation is a structure that explains and supports reading comprehension, reading fluency, and reading amount (Baker & Wigfield, 1999; Becker et al., 2010; Guthrie et al., 2007; Retelsdorf, Köller, & Möller, 2011; Schaffner et al., 2013; Stutz et al., 2016; Taboada, Tonks, Wigfield, & Guthrie, 2009; Wang & Guthrie, 2004; Wigfield & Guthrie, 1997; Yıldız, 2013; Yıldız & Akyol, 2011). Considering the importance of reading comprehension in school success, the effects of motivation on reading comprehension have been an area of interest for literacy researchers. Several researchers have examined the relationships among intrinsic and extrinsic motivation and text comprehension. Research on reading motivation has consistently demonstrated that there is a positive relation between intrinsic motivation and text comprehension (Stutz et al., 2016; Taboada et al., 2009; Wang & Guthrie, 2004), whereas there is a negative or insignificant relationship between extrinsic motivation and text comprehension (Stutz et al., 2016; Wang & Guthrie, 2004). In their study on reading motivation and reading amount and reading comprehension (N=1053), Stutz et al. (2016) found that involvement is an indirect positive predictor of reading comprehension through examining reading amount in a sample of second and third grade elementary students. On the other hand, competition-oriented reading motivation is a direct negative predictor of reading comprehension. Taboada et al. (2009) investigated how internal motivation, background knowledge activation, and student text-based questioning predict elementary school students' reading comprehension. The findings of the study indicated that background knowledge, students' questioning and internal motivations independently predict their reading comprehension. In a study by Wang and Guthrie (2004), the authors examined the relationships among intrinsic and extrinsic motivation and text comprehension. The results indicated that internal and external motivation have different effects on text comprehension. While intrinsic motivation has a positive effect on comprehension, external motivation has a negative effect on comprehension. In a study with Turkish fifth graders, Yıldız and Akyol (2011) found that intrinsic motivation contributes positively to reading comprehension, while extrinsic motivation negatively influence reading comprehension, except for competition. Considering the effects of reading motivation on reading amount, it was found that intrinsic motivation contributes both to reading for personal tendencies and school-related reading. Extrinsic motivation has a positive effect on school-related reading.

The Current Study

Even though reading fluency and intrinsic and extrinsic motivation have been studied repeatedly as variables in relation to reading comprehension, reading anxiety has not been studied simultaneously in relation to text comprehension, reading fluency and extrinsic and intrinsic motivation. Given the prominent role of each of these variables in the teaching of reading, the aim of this study was to examine the interrelations among reading anxiety, reading comprehension, reading fluency and reading motivation. Therefore, we proposed a theoretical structural model that describes the direct and indirect relationships among intrinsic and extrinsic motivation, reading fluency, reading anxiety and reading comprehension (See Figure 1).
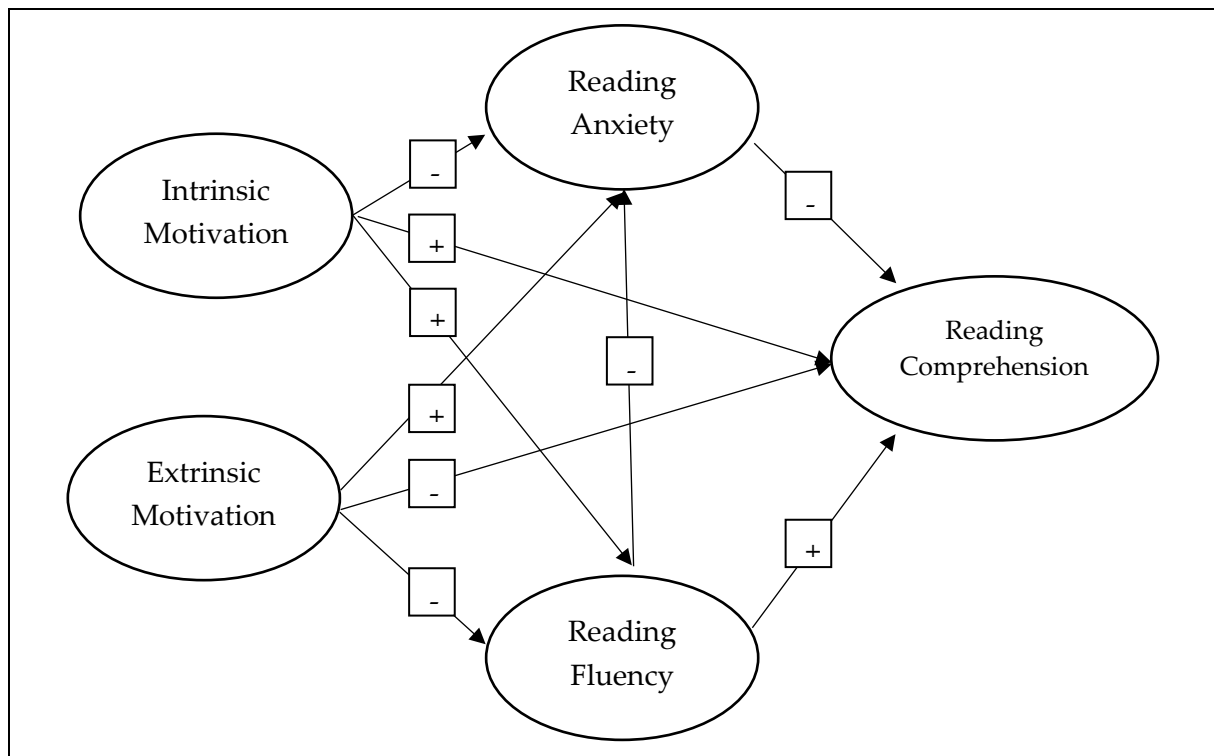
Figure 1. Hypothesized Structural Model of Reading Motivation, Reading Anxiety, Reading Fluency and Reading Comprehension

Hypothesis 1: Intrinsic motivation predicts directly reading anxiety in a negative way.

Hypothesis 2: Intrinsic motivation predicts directly reading comprehension in a positive way.

Hypothesis 3: Intrinsic motivation predicts directly reading fluency in a positive way.

Hypothesis 4: Extrinsic motivation predicts directly reading fluency in a negative way.

Hypothesis 5: Extrinsic motivation predicts directly reading comprehension in a negative way.

Hypothesis 6: Extrinsic motivation predicts directly reading anxiety in a positive way.

Hypothesis 7: Reading fluency predicts directly reading anxiety in a negative way.

Hypothesis 8: Reading fluency predicts directly reading comprehension in a positive way.

Hypothesis 9: Reading anxiety predicts directly reading comprehension in a negative way.

Hypothesis 10: Intrinsic motivation predicts indirectly reading comprehension in a positive way through reading anxiety.

Hypothesis 11: Intrinsic motivation predicts indirectly reading comprehension in a positive way through reading anxiety.

Hypothesis 12: Extrinsic motivation predicts indirectly reading comprehension in a negative way through reading fluency.

Hypothesis 13: Extrinsic motivation predicts indirectly reading comprehension in a negative way through reading fluency.

Hypothesis 14: Reading fluency predicts indirectly reading comprehension in a positive way through reading anxiety.

Research Question
What are the direct and indirect relationship patterns among reading motivation, reading anxiety, reading fluency and reading comprehension?

Method

Research Design

This study, which aims to investigate the relationship among reading anxiety, reading fluency, reading motivation and reading comprehension, was conducted based on a predictive correlational research design. In correlational research, the relationships between two or more variables are explored and no manipulation is made on the variables (Fraenkel, Wallen, & Hyun, 2012). In a predictive correlational design, the researcher tries to predict the output using some variables as a predictor rather than associating two variables in a simple way. For this reason, the investigator identifies one or more dependent and independent variables (Creswell, 2012).

Participants

The participants in the study were made up of 128 fourth grade elementary school students: 65 females and 63 males. The most basic reason for working with elementary school fourth grade students in the research is that the reading gap between the students who cannot achieve basic reading skills until the fourth grade and their peers increase gradually (Casey Foundation, 2010, 2013, 2015). The study was carried out in Burdur, a city in the southwest of Turkey, and it was conducted from March to late April 2016. For data collection purposes, two elementary schools were selected. Six different classes from these two schools were identified for the study. All classes ranged from 19 to 26 students in size. Each class was taught by different teachers. Four teachers were male and two teachers were female. The age range of children varied from 9 to 10.

Measurement Instruments and Methods

Reading Anxiety Measures

In this study, the reading anxiety scale which was developed by Çeliktürk and Yamaç (2015) was used to identify the reading anxiety levels of participants. According to the exploratory and explanatory factor analyses, the reading anxiety scale has a unitary factor with 29 items. Ratings statements of the scale vary from 1 (never) to 5 (always). Some of the items on the scale are as following: "When I am reading aloud in class, my knees tremble with excitement.", "I sweat in my palms while reading a text." and "Because I am excited while I read a text, I cannot comprehend it." The Cronbach Alpha internal consistency coefficient of the scale for this study was .94. Confirmatory factor analysis conducted to test the validity of the scale confirmed the unitary factor structure of the reading anxiety (χ^2/sd=2.03, RMSEA=.090, SRMR= .075, CFI=.94).

Reading Comprehension Measures

To assess the reading comprehension levels of the participants, the reading comprehension test developed by Çeliktürk Sezgin (2015) was used in this study. The reading comprehension test consists of informative and narrative texts and 20 open-ended questions about these texts. The development process of the reading comprehension test is as follows; a) Selecting unique texts from different resources according to the aims of the research b) Selecting 8 texts based on contents, clarity, difficulty level, length and word levels. c) Defining informative and narrative texts for usage in the reading comprehension test according to expert views d) Preparing an item pool which consists of 40 questions and 20 for each texts e) Using Barrett Taxonomy when preparing questions, and supporting a homogenous distribution for questions according to taxonomy steps (literal comprehension, reorganization, inferential comprehension, evaluation, appreciation) f) Rendering draft questions to 3 field experts in Turkish education and also applying them to fourth grade classes as a pilot study to determine whether the questions are suitable for evaluation criteria or not g) Forming the questions of the reading comprehension test with 20 open-ended questions, 10 for each text, according to the pilot study and field experts h) Producing the final version of the assessment tool.

A rubric was used for the evaluation of the reading comprehension test. Each question was assessed between 0 and 5. In this way the highest possible grade for informative text was 50 and the highest possible grade for narrative text was 50. Thus, the highest possible grade for reading comprehension test was 100 points in total. The reading comprehension test was scored by two researchers. Each test was scored separately. Inter-rater reliability scores for the informative and narrative tests were calculated as being .89 and .83 respectively.

Reading Fluency Measures

In this research, reading fluency has been accepted as a tripled structure consisting of word recognition, reading rate and prosody. Firstly, to assess the reading prosody of participants, the multi-dimensional reading scale which was developed by Zutell and Rasinki (1991) and adapted by Yıldız, Yıldırım, Ateş, and Çetinkaya (2009) was used in this study. In the scale, oral reading is evaluated under 4 factors (expression and volume, phrasing, smoothness and pace). In the evaluation process, the lowest possible grade is 4, while the highest possible grade is 16 for the multi-dimensional reading scale. When identifying the fluency reading levels of participants, a random text was selected by the researchers from the Turkish main course book which had been read by the participants before. The participants were asked to reading the text aloud for a minute. For the analysis process, readings were recorded at the same time. Reading prosody was scored by two researchers. The internal consistency coefficient of the scale for this study was calculated as .79. The interrater reliability scores for expression and volume, phrasing, smoothness and pace turned out to be .82, .79, .86, and .75, respectively. Secondly, the percentage of correct reading was calculated by dividing the number of correct words read by the student in one minute into the total number of words read and multiplying by 100. Thirdly, for reading rate, the correct number of words students read in a minute was calculated.

Reading Motivation Measures

In this study, the reading motivation scale which was developed by Wigfield and Guthrie (1997) was used to assess reading motivations of the participants. Later, this scale was remodeled by Wang and Guthrie (2004) as a two factored structure (internal and external motivation) and adapted into Turkish by Yıldız (2010). The adapted version of the reading motivation scale was used in this study. Internal motivation part of the scale consists of involvement and curiosity factors, while the external motivation part of the scale consists of recognition, social, rivalry and adaptation factors. The reading motivation scale is a four point Likert scale that consists of 21 items. The rating statements of the scale are as follows: 1 (very different from me), 2 (different from me), 3 (similar to me), 4 (very similar to me). For this study, the Cronbach alpha internal consistency coefficient of the scale was calculated as .73 for the internal motivation subscale and .84 for the external motivation subscale. Moreover, the conformity factor analysis done to test the construct validity confirmed the two sub-dimensional structure of the scale (χ^2/sd=1.53, RMSEA=.065, SRMR= .071, CFI=.95).

Data Collection Process

Data collection process consisted of a 3-week period in April 2016. The data of the study were collected from the fourth grade students of two state schools in the central district of Burdur province. Permission for research was taken from Burdur National Education Office. School administration, teachers and students were informed about the content of the research. Participants of the study were selected on a voluntary basis. All data of the study were collected by one of the researchers. Before the data were collected, the data collection process was planned by the researchers and the data were collected in this direction. In order to increase the reliability of the data collection process, each measurement tool was applied in different course hours. Instruments were applied in different periods of time respectively: reading motivation scale (20 minutes), reading comprehension test (40 minutes) and reading anxiety scale (20 minutes). Finally, reading fluency measurements were performed in a quiet environment.

Statistical analysis

All statistical analyses were conducted with SPSS IBM Statistic and Lisrel 8.7. The direct and indirect relationships among reading motivation, reading comprehension, reading fluency and reading anxiety were analyzed using structural equation modeling (SEM). An important reason why the SEM is so widespread is that it provides researchers with a convenient tool for the quantification and testing of theories (Raykov & Marcoulides, 2000). "The Lisrel Model consists of two phases: the measurement model and the structural model. The measurement model specifies how latent variable or hypothetical construct depend upon or are indicated by the observed variables. The structural model specifies the causal relationships among the latent variables" (Jöreskog & Sörbom, 1996, p. 1). In the present study, the measurement models were internal and external motivation, reading fluency, reading anxiety and reading comprehension. Firstly, the validity properties of the measurement models were tested and then the structural model was employed. Univariate and multivariate normality were tested before the analysis. The kurtosis and skewness values of each variable were calculated in order to evaluate univariate normality. Because the kurtosis and skewness values are between +2 and -2, it is seen that the assumption of normal distribution is acceptable (George & Mallery, 2016). Mertler and Vannatta (2017) noted that multivariate normality should be controlled for multivariate analysis after examining the individual normality of each of the variables. One of the most common methods used to evaluate the normality multivariate is to examine by scattering diagram the relationship between each variable. If the relations between variables satisfy the assumption of normal distribution, scatter diagrams should be elliptical. Because the scatter diagrams examined in this study are close to the ellipse, the assumption of multivariate normal distribution is consider to be acceptable.

Results

Descriptive and Correlational Statistics

Table 1. Descriptive Statistics for All Variables

Variable	N	Possible Range	Observed Range	M	SD
Intrinsic Motivation	128	7-35	10-28	23.14	3.78
Extrinsic Motivation	128	14-70	23-56	45.26	7.08
Reading Anxiety	128	29-145	29-123	50.46	19.88
Reading Comprehension	128	0-100	13-82	43.30	13.54
Correct Reading Percent	128	0-100	86-100	96.87	3.08
Reading Prosody	128	4-16	8-16	14.07	1.75
Correct Words Per Minute (CWPM)	128	-	47-166	100.58	20.68

In order to examine the relationship between variables, the Pearson product-moment correlational analyses were performed. Table 2 presents the correlations between variables. Descriptive statistics for each of the variables are illustrated in Table 1. Correlation analyses between reading motivation and other variables show that intrinsic motivation correlates positively and significantly with extrinsic motivation, reading comprehension, and CWPM and correlates significantly and negatively with reading anxiety. The relationships between reading fluency and intrinsic motivation are not significant. On the other hand, extrinsic motivation correlates significantly and positively with intrinsic motivation, reading fluency, reading comprehension, and CWPM. Additionally, reading anxiety correlates significantly and negatively with reading comprehension, reading fluency, and CWPM. Reading fluency correlates positively and significantly with reading comprehension and CWPM. Lastly, the relationship between reading comprehension and CWPM is statistically significant and positive.

Table 2. Intercorrelations between Variables

Variable	1	2	3	4	5	6
Intrinsic Motivation	-					
Extrinsic Motivation	.62**	-				
Reading Anxiety	-.18*	-.24**	-			
Reading Prosody	.16	.25**	-.34**	-		
Reading Comprehension	.33*	.34**	-.42**	.51**	-	
Correct Words Per Minute (CWPM)	.31**	.23**	-.35**.	.56**	43**	-
Correct Reading Percent	.07	.09	-.28**	.50**	.40**	.36**	-

* p<.05 **p<.01

Structural Equation Model

Structural equation modeling was performed to test our hypotheses regarding the direct and indirect relationships among intrinsic and extrinsic motivation, reading anxiety, reading fluency, and reading comprehension. The indicators used to evaluate the model's goodness of fit are as follows: χ^2/Df (Chi-square/Degree of freedom), RMSEA (Root Mean Square Error of Approximation), SRMR (Standardized Root Mean Square Residuals), and CFI (Comparative fit index). The resulting structural model with χ^2/Df=1.45, RMSEA=.060, SRMR= .085, CFI=.91 was a good fit to the data (Schermelleh-Engel, Moosbrugger, & Müller, 2003).
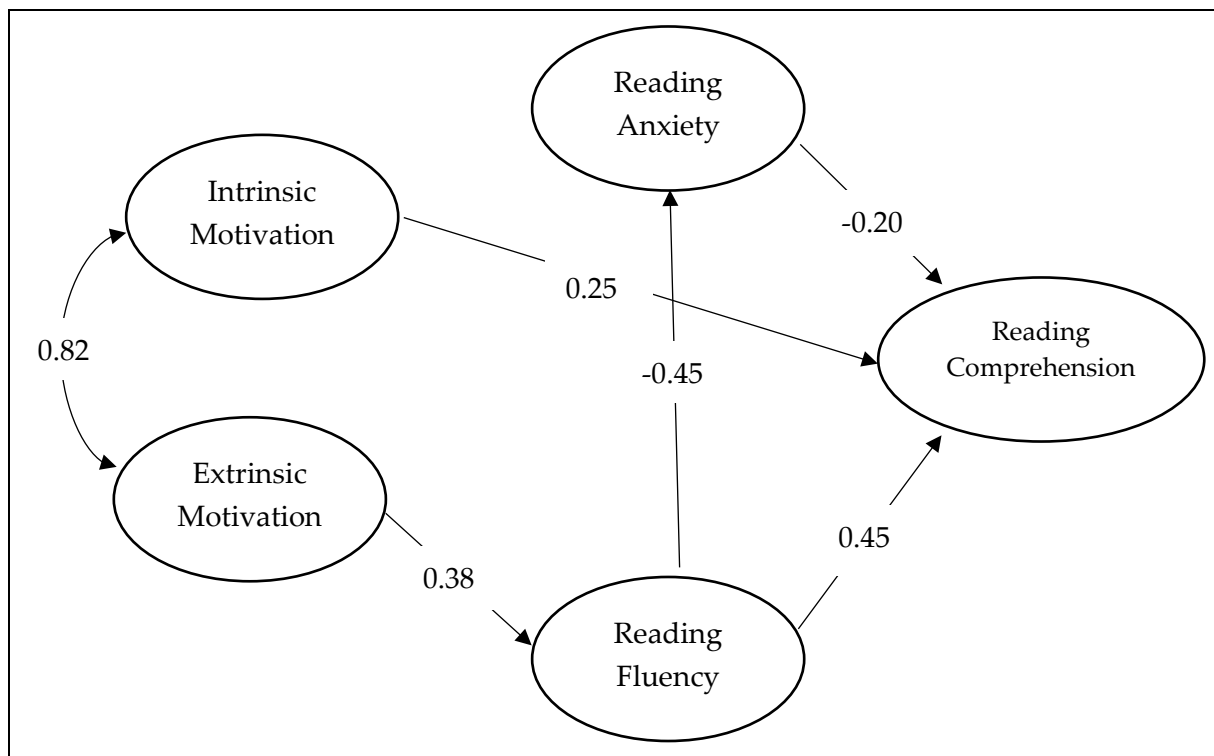

Figure 2. Path Coefficients for Structural Equation Modeling

As shown Figures 2 and 3, the results of the SEM analyses indicated that intrinsic motivation was a direct positive predictor of reading comprehension (**β**=.25, t value=2.72). Extrinsic motivation predicted reading fluency positively and directly (**β**=.38, t value=3.49) and predicted reading comprehension positively and indirectly through reading fluency. Reading fluency predicted reading comprehension both directly and indirectly. Firstly, reading fluency was a direct positive predictor of reading comprehension (**β**=.45, t value=3.75). Secondly, reading fluency predicted reading comprehension indirectly and positively through reading anxiety. Moreover, reading fluency was a direct negative predictor of reading anxiety (**β**=-.45, t value=-3.70). Finally, reading anxiety was a direct negative predictor of reading comprehension (**β**=-.20, t value=-2.14).
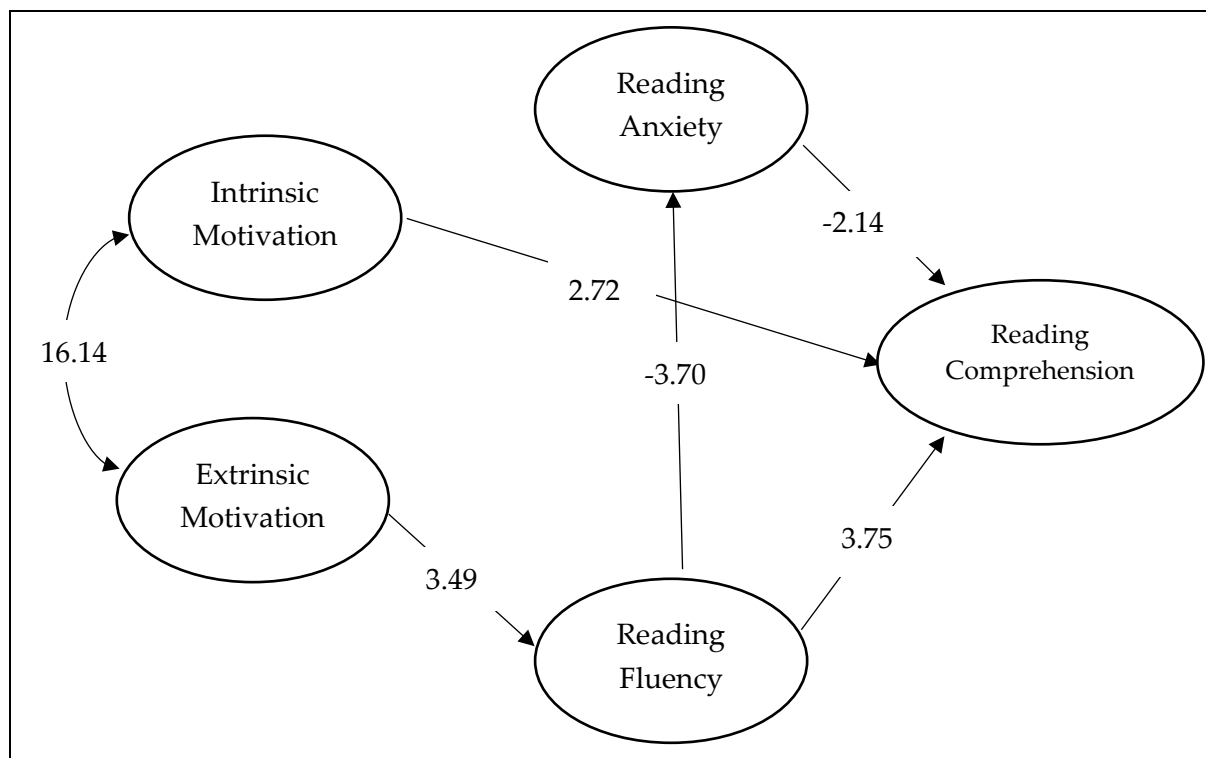
Figure 3. t Values for Structural Equation Modeling

Discussion and Conclusion

The present study aimed to examine the interrelationships among reading motivation, reading fluency, reading anxiety, and reading comprehension. The data presented here add to our knowledge about reading motivation, reading fluency, reading anxiety and reading comprehension in several ways. The results showed that internal motivation has a substantial and positive effect on reading comprehension. Extrinsic motivation has a substantial positive effect on reading fluency. On the other hand, while extrinsic motivation is not a direct substantial predictor of reading comprehension, it has an indirect positive effect on reading comprehension. This relationship is mediated by reading fluency. Furthermore, reading fluency has a substantial and positive effect on reading comprehension and has a substantial and negative effect on reading anxiety. Finally, reading anxiety has a substantial and adverse effect on reading comprehension.

Relationships among Reading Motivation, Reading Comprehension, and Reading Fluency

Intrinsic motivation in this research consisted of two factors: curiosity and involvement. The results suggested that curiosity and involvement are likely to strengthen Turkish fourth graders' comprehension of narrative and informative texts. These findings are similar to those of previous studies (Retelsdorf et al., 2011; Schaffner et al., 2013; Stutz et al., 2016; Taboada et al., 2009; Wang & Guthrie, 2004; Yıldız, 2013; Yıldız & Akyol, 2011). Intrinsic motivation increases students' cognitive processes and strategy use. Students who have internal motivation will be more devoted to reading and will be more fluent in the cognitive processes of background knowledge activation and student questioning. Thus this leads to better reading comprehension (Taboada et al., 2009).

Extrinsic motivation in this research consisted of four factors: recognition, competition, compliance, and social. The results suggested that extrinsic motivation did not directly contribute to reading comprehension and had a direct positive effect on reading fluency. Moreover, extrinsic reading motivation contributed to reading comprehension via reading fluency. Previous research on extrinsic motivation and reading comprehension yielded conflicting findings. Some studies indicated that extrinsic motivation had a negative effect on reading comprehension (Becker et al., 2010; Law, 2008; Schaffner et al., 2013; Stutz et al., 2016; Wang & Guthrie, 2004). However, in other studies, a direct and significant relationship between extrinsic reading motivation and reading comprehension was not

found (Andreassen & Bråten, 2010; Law, 2009). The results of the current study support the view that extrinsic reading motivation does not directly contribute to reading comprehension. On the other hand, extrinsic factors, such as recognition, competition, compliance, and social, are likely to improve Turkish fourth graders' reading fluency. This finding is in line with that of Paige (2011). In a study with struggling students, Paige found that extrinsic motivation had a significant effect on oral reading fluency. A study with Turkish fifth graders by Yıldız and Akyol (2011) found that extrinsic motivation directly contributed to school-related reading hours. This might be because Turkish classroom settings have a competitive structure. In the Turkish context, the reason for students to read more may be that teachers and families make comparisons with other students and teachers hold reading competitions and focus on strongly reading instruction.

Relationships among Reading Fluency, Reading Anxiety, and Reading Comprehension

In this study, it was assumed that reading fluency consisted of the following three elements: reading rate, accuracy, and prosody. The findings revealed that reading fluency is likely to reduce Turkish fourth graders' reading anxiety. The most prominent feature of anxiety is that a person feels a danger or threat to his/her self-esteem in the event of uncertainty and threat (Zeidner, 1998). Learning difficulties bring about negative affective states such as anxiety. When students experience repeated failure in the classroom setting, anxiety is likely to increase (Çeliktürk & Yamaç, 2015; Grills-Taquechel et al., 2012; Yasutake & Bryan, 1995). Especially at primary school level, achievement reduces anxiety. Students who are able to read a text with an accurate, appropriate rate, and prosody will suffer less anxiety. This finding is consistent with the results obtained by Grills-Taquechel et al. (2012) who indicated that fluency is a negative predictor of anxiety symptoms.

Considering the relationship between reading fluency and reading comprehension, the findings revealed that reading fluency contributed positively to reading comprehension. All elements of fluency holistically make the process of comprehension easier (Hudson et al., 2005; Klauda & Guthrie, 2008; Kuhn et al., 2010). Moreover, reading fluency has an indirect and positive effect on reading comprehension via reading anxiety. When reading fluency reduces reading anxiety, reading comprehension rises. A model of automatic processing emphasizes that reading fluency is essential to reading comprehension. Readers must carry out the following two tasks: word identification and comprehension. When readers are able to decode automatically and accurately the words in texts, more cognitive capacity (e.g. working memory, attention) is devoted for reading comprehension. In contrast, readers who have difficulties in decoding divide their cognitive capacity between these two tasks. Thus less cognitive capacity is allocated for reading comprehension (Kim, 2015a; Pikulski & Chard, 2005; Rasinski, 2012). Reading fluency increases reading comprehension by allowing more cognitive capacity (Klauda & Guthrie, 2008). This finding is supported by previous studies, as well (Denton et al., 2011; Kim, 2015a, 2015b; Kim et al., 2014, 2012; Klauda & Guthrie, 2008; Schwanenflugel et al., 2006).

The present study also expands our knowledge about the relationship of anxiety to achievement. The findings suggested that reading anxiety impairs Turkish fourth graders' reading comprehension in first language acquisition. Anxiety has adverse effects on cognitive performance, particularly when the task to be carried out is complex and attentionally demanding (Derakshan & Eysenck, 2009). To comprehend a sentence, readers must remember words within a sentence, retrieve information from previous texts, and parse the sentence. The working memory which stores and manipulates information is a bottleneck for these processes (Perfetti et al., 2005). In the process of text comprehension, working memory is a place where all information processing occurs (Cain et al., 2004; Kintsch & Rawson, 2005). Executive functions such as working memory and inhibition, and attention allocation are the keys to effective text comprehension (Kendeou et al., 2014). Both the processing efficiency theory and the attentional control theory maintain that anxiety impairs the efficiency of the central executive component of the working memory. Particularly, the attentional control theory asserts that anxiety increases attention to task-irrelevant stimulus and decreases students' attention on task relevant stimulus. Thus, anxiety dampers attention control that is a key function of working memory (Derakshan & Eysenck, 2009). The central executive has the functions of inhibition, shifting, and

updating (Miyake et al., 2000). The updating function is not directly influenced by anxiety. In contrast, the inhibition function involves using attentional control to restrain attention being directed to task-irrelevant stimuli and responses. The shifting function uses attention control to focus on task-relevant stimuli. Anxiety affects adversely the function of inhibition and shifting (Eysenck et al., 2007). Thus, anxiety harms the functioning of cognitive competence. When students with reading anxiety give more attention (associating with text preliminary information, making inferences and reading strategically) to reading comprehension, he/she pays more attention task-irrelevant stimulus, but less attention to task-relevant stimulus. For this reason, making inferences and monitoring that are key to reading comprehension suffer from anxiety. Thus, reading comprehension does not occur in anxious students.

Suggestions and Limitations

The present study suffers from some limitations. Firstly, the sample of the study was limited to 128 fourth grade elementary school students. Replications with broader and more varied samples are needed to generalize the results. Secondly, the current study was carried out by using cross-sectional data. The findings do not allow for a causal conclusion. Therefore, replications with a longitudinal design are needed. Thirdly, to assess reading motivation and reading anxiety in the current study, self-reporting questionnaires were used. In future research, interviewing students about their anxiety, information processing, internal and external motivation and how these processes affect reading comprehension may provide in-depth understanding of reading motivation, reading anxiety and reading comprehension. Finally, reading anxiety can be included as a variable in experimental studies designed to improve reading skills.

The present study has also some pedagogical implications for teachers. The results indicate that anxiety at elementary school level is an important part of reading instruction. Students suffer from reading anxiety at various levels and reading anxiety is closely related to reading comprehension and reading fluency. Under these circumstances, classroom teachers should consider reading anxiety as part of their teaching in activities they prepare to improve reading fluency and comprehension skills. Reading anxiety positively affects reading comprehension, while reading fluency reduces reading anxiety. For this reason, it may be practical for teachers to develop an anxiety-free learning environment when students are reading. It is especially recommended for teachers to avoid activities such as reading competitions that can cause reading anxiety in the classroom setting. It may be meaningful for teachers to motivate students with poor reading fluency by using external awards and students with poor reading comprehension by means of curious and engaging reading texts.

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