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Orginal Article

# The Contribution of Student's Variables and Teacher's Variables in Predicting Reading Literacy of PIRLS 2021

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## Abstract

Considering the high potential of reading literacy in influencing other fields of learning, reading instruction and its promotion play an important role in academic success. Therefore, the purpose of this research was to predict the reading literacy of Iranian students participating in the Progress in International Reading Literacy Study (PIRLS) 2021 based on student variables (reading self-concept, attitude towards reading) and teacher variables (school climate, school emphasis on academic success, teacher's instructional limitations). The present research with a secondary approach to the analysis of PIRLS data among Iranian students performed. The statistical population of Iranian students in the PIRLS 2021 consisted of 1,348,842 fourth grade students from 43,697 schools in the academic year of 2019-2020, which were selected using a two-stage stratified cluster sampling method with a total of 5,962 students from 218 schools. Given the hierarchical structure of the PIRLS data, it was analyzed through hierarchical linear modeling by spss and R softwre. The findings of the study indicated that at the student's level, self-concept had a significant relationship with reading literacy, while the variable of attitude towards reading did not have a significant relationship with reading literacy. Additionally, at the teacher's level, none of the three variables (school climate, school emphasis on academic success, teacher limitations) had a significant relationship with reading literacy. By adding predictor variables of the student level to the model, the inter-class correlation was 0.36, which means that 36% of the variance of the reading literacy progress score derives from inter-school factors. By adding the predictor variables of the teacher level to the model, the inter-class correlation again was 0.36. It means that 36% of the variance of the reading achievement score was caused by inter-school factors, but this variance was not caused by the three variables at the second level. The results highlight the importance of a self-concept in reading literacy and suggest

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that fostering confidence and positive attitude towardas students can help them to improve their reading performance. Therefore, designing educational interventions based on improving students 'self concept should be considered by those involved in planning educational system.

**Keywords:** Reading Literacy, HLM, PIRLS.

## Extended Abstract

### Introduction

Considering the high potential of reading literacy in influencing other fields of learning, reading instruction and its promotion play an important role in academic success. Due to the high potential of reading literacy in influencing other fields of learning, reading instruction and its promotion play an important role in academic success. In this regard, several international studies have been developed to assess reading literacy. One of these studies is Progress in International Reading Literacy Study (PIRLS), which is conducted by the International Association for the Evaluation of Educational Achievement (IEA) for fourth-grade students. Iran is among the countries participating in the PIRLS study and has so far taken part in five cycles (from 2001 to 2021). The recorded performance trends indicate a downward trend in the reading literacy performance of Iranian fourth-grade students. Considering the downward trend in the reading literacy performance of Iranian students, the purpose of this research was to predict the reading literacy of Iranian students participating in the PIRLS 2021 based on student variables (reading self-concept, attitude towards reading) and teacher variables (school climate, school emphasis on academic success, teacher's instructional limitations).

### Method

The present study was conducted using a secondary analysis of PIRLS data among Iranian students. The statistical population of Iranian students in the PIRLS 2021 consisted of 1,348,842 fourth grade students from 43,697 schools in the academic year of 2019-2020, which were selected using a two-

stage stratified cluster sampling method with a total of 5,962 students from 218 school. The variables of the study were scaled and derived by the expert team responsible for designing the PIRLS 2021 framework from the student and teacher questionnaires, which were completed by students and teachers during the process of assessing reading literacy

## Results

Data analyzed through hierarchical linear modeling by spss and R softwre. Given the hierarchical structure of the PIRLS data (students and teachers), the PIRLS data were analyzed using a two-level hierarchical linear modeling (HLM) approach, also known as a linear mixed model, to predicte the reading literacy achievement of fourth-grade Iranian students. The findings showed that there was a considerable difference in the average reading literacy among students across schools, with an intraclass correlation coefficient of 0.37. Another finding of the study indicated that at the student's level, self-concept had a significant relationship with reading literacy, while the variable of attitude towards reading did not have a significant relationship with reading literacy. Additionally, at the teacher's level, none of the three variables (school climate, school emphasis on academic success, teacher limitations) had a significant relationship with reading literacy. By adding predictor variables of the student level to the model, the inter-class correlation was 0.36, which means that 36% of the variance of the reading literacy progress score derives from inter-school factors. By adding the predictor variables of the teacher level to the model, the inter-class correlation again was 0.36. It means that 36% of the variance of the reading achievement score was caused by inter-school factors, but this variance was not caused by the three variables at the second level.

## Discussion

The result showed the level of variation among schools participating in the PIRLS 2021 study may indicate the presence of educational inequalities related to school-level factors and examining the structural and environmental factors of schools to explain a large portion of the between-school variance is recommended. Additionally, the results highlighted the importance of a self-concept in reading literacy and suggest that fostering confidence and positive attitude towardas students can help them to improve their reading performance. Therefore, designing educational interventions based on improving students 'self concept should be considered by those involved in planning educational system.

**Author Contributions:** Research design was carried out by the first author under the supervision of the second author as the supervisore. The implementation of the research methodology and the analyses were performed by the first author. The second author played a key role in interpreting the results, verifying the accuracy of the analyses, and providing scientific guidance for the study. The initial draft of the manuscript was written by the first author, while the review, scientific revisions, and finalization of the manuscript were conducted by the second author.

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