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A Multivariate Analysis of Pre-Service Teachers Use of Metacognitive Reading Strategies

(Öğretmen Adaylarının Üstbiliş Okuma Stratejilerini Kullanma Düzeylerinin Farklı Değişkenler Açısından İncelenmesi)

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Abstract

The aim of this study is to analyze the level of Turkish language pre-service teachers metacognitive reading strategy use by various variables. Relational screening model is used in the study. Participants are 342 Turkish language pre-service teachers studying in the Turkish Language Education Program of a university located in the Western part of Turkey. The "Metacognitive Reading Strategy Scale," adapted to Turkish by Çöğmen and Saracaloğlu (2010), is used in the study. T-test analysis is used for the bivariate data and one-way analysis of variance is used for the data with more than three variables. The analyses demonstrate that there is no significant relationship between the class level (seniority) of pre-service teacher and their metacognitive reading strategies, that there is a significant difference between pre-service teachers gender and their learning and guessing strategies, and that there is a significant difference between their education types and guessing strategies. Pre-service teachers report viewing themselves effective in imagining descriptions, re-reading texts when they have difficulty in understanding them, having an idea about the reading difficulty or ease of a text, activating their background knowledge about the subject to help their reading comprehension, and assessing texts while reading them.

Key Words: Metacognitive reading strategies, Turkish language pre-service teachers, reading.

Özet

Bu araştırmanın amacı Türkçe öğretmeni adaylarının üstbiliş okuma stratejilerini kullanma düzeylerini çeşitli değişkenler açısından incelemektir. Araştırmada ilişkisel tarama modeli kullanılmıştır. Araştırmaya Türkiye'nin batısındaki bir üniversitede Türkçe Eğitimi Bölümünde öğrenim gören 342 Türkçe öğretmeni adayı katılmıştır. Araştırmada Çöğmen ve Saracaloğlu (2010) tarafından Türkçe'ye uyarlanan "Üst Bilişsel Okuma Stratejileri Ölçeği" kullanılmıştır. Araştırmada iki değişkenli veriler için t-testi analizi, üçten fazla değişkene sahip veriler içinse tek yönlü varyans analizi yapılmıştır. Yapılan analizlere göre öğretmen adaylarının öğrenim gördükleri sınıf düzeyleriyle üstbiliş okuma stratejileri arasında anlamlı bir ilişkinin olmadığı; Türkçe öğretmeni adaylarının cinsiyetleriyle öğrenme ve tahmin etme stratejileri arasında anlamlı bir farklılığın olduğu; öğretim şekilleriyle tahmin etme stratejileri arasında anlamlı bir farklılık olduğu görülmektedir. Öğretmen adayları; betimlemeleri kafalarında canlandırma, anlamada zorluk çektiklerinde metinleri tekrar okuma, metnin zorluğu ve kolaylığıyla ilgili bilgi sahibi olma, okuduklarını anlamalarına yardımcı olmaları açısından konuyla ilgili ön bilgilerini harekete geçirme, okurken metni değerlendirme konusunda kendilerini etkili olarak gördükleri ifade edilmektedir.

Anahtar Kelimeler: Üstbiliş okuma stratejileri, Türkçe öğretmeni adayları, okuma.

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Introduction

According to the constructivist education approach, individuals should not simply be the passive recipients of information, the information should be constructed with the help of the cognitive processes and such information should be put into practice by doing and practicing it through real-life experiences. In accordance with this learning philosophy, individuals should be aware of their own learning and learning processes. To be able to explain concepts such as learning to learn and learning awareness, one first needs to know the concept of metacognition. Flavell (1979), who coined the term "metacognition," defined it as the knowledge of an individual about his/her own level of self-cognition, his/her control and monitoring of the cognitive processes. Metcalfe and Shimamura (1994) described metacognition as an individual's knowledge of what he/she knows about a subject, while Brown (1978) defined it as the awareness and organization of the thinking processes.

Individuals with this skill are aware of what they know or do not know (Gordon, 1996). Metacognition is individuals' thinking about their learning that involves the process of planning, monitoring and organizing their minds to make their learning process longer-lasting. Knowingly or unknowingly, individuals encounter metacognitive processes in their daily lives. Metacognition includes metacognitive experience, metacognitive activities and strategies. Guessing, planning, monitoring and assessment steps are included in metacognitive experiences, which consist of the metacognitive activities that monitor, organize and control the learning process and products. While the metacognitive knowledge consists of procedural knowledge, situational knowledge and declarative knowledge, the metacognitive control consists of guessing, planning, monitoring and assessment steps (Melanlıoğlu, 2012: 1587). During the metacognitive control process, some procedures are carried out in the mind to control learning. Özsoy (2007: 19) defined cognitive control as the skill of using metacognitive knowledge strategically to achieve cognitive objectives. Some researchers express metacognitive control as metacognitive strategy. When experiences become habitual for an individual, he/she gains learning skills (Doğanay, 1997). Metacognitive skills play quite an important role in academic success (Sternberg, 1984; Borkowski, Carr and Pressely, 1987; Osborne, 1999).

The need to think is related to individuals' understanding of the world and engaging in cognitive activities (Cacioppo and Petty, 1982). Individuals who use skills like deduction, interpretation and problem-solving in social life are considered to have high-level thinking skills. The need for thinking is a cognitive skill. Every self-confident person open to new experiences think, and need thinking as well (Cacioppo, Petty, Feinstein and Jarvis, 1996). There is a unity in wisdom, intelligence and thinking (Woo, Harms and Kuncel, 2007).

When the Turkish Course Curriculum is analyzed, its aim can be seen to be raising individuals who can understand what they listen, watch and read; can get across their feelings, thoughts and visions; think critically and creatively, take responsibilities, act as entrepreneurs, are harmonious with their environment, are habitually inquiring, questioning, critiquing and interpreting events, cases and

information on the basis of personal experiences, who have acquired aesthetic taste and are sensitive to national values (MEB, 2006: 3). The analysis of the basic skills in the Turkish Course Curriculum reveals that they involve high-level skills such as critical thinking, creative thinking, inquiry and questioning. For the students to be able to learn the high-level thinking skills, teachers themselves need to have these skills first. High-level thinking affects the reading, writing, listening and speaking skills, which are the basic language skills. The reading skill is hard to habitualize. There are some high-level skills and strategies that individuals use in the reading process. The goal of the present study is to analyze the extent of Turkish language pre-service teachers metacognitive reading strategy use by multiple variables. In order to find out whether a relationship exists between Turkish language pre-service teachers metacognitive reading strategy use levels and various variables, the subgoals are determined as follows:

a) Is there a statistically significant difference between Turkish language pre-service teachers metacognitive reading strategies and the year of class they are studying in?
b) Is there a statistically significant difference between Turkish language pre-service teachers metacognitive reading strategies and their gender?
c) Is there a statistically significant difference between Turkish language pre-service teachers metacognitive reading strategies and their education types?
d) Is there a statistically significant difference between Turkish language pre-service teachers metacognitive reading strategies and their GPAs?
e) Is there a statistically significant difference between Turkish language pre-service teachers metacognitive reading strategies and their graduation?
f) What are Turkish language pre-service teachers opinions about metacognitive reading strategies?

Method

Research Model

This research employs a relational screening model. The relational screening model is one of the research models that aim to determine the existence and degree of the co-variance of two or more variables (Karasar, 2011: 81). This study analyzes the relationship between Turkish language pre-service teachers metacognitive reading strategy levels and variables.

Participants

A total of 342 Turkish language pre-service teachers studying at the Turkish Language Education Department of a university in Western Turkey participated in the study. The introductory information about the participating Turkish language pre-service teachers is given in Table 1.

Table 1
Introductory information about the Turkish pre-service teachers in the study

Class	f	%	Gender	f	%
1st year	108	31,6	Female	215	62,9
2nd year	74	21,6	Male	127	37,1
3rd year	91	26,6			
4th year	69	20,2			
Total	342	100,0	Total	342	100,0

As can be seen in Table 1, of the participating pre-service teachers, 62,9% are female (N=215), and 37,1% are male (N=127). 31,6% of the male pre-service teachers are 1st year, 21,6% are 2nd year, 26,6% are 3rd year, and 20,2% are 4th year students.

Data Collection Tool

The "Metacognitive Reading Strategy Scale," adapted to Turkish by Çöğmen and Saracaloğlu (2010), is used in this study. The analyses conducted by Çöğmen and Saracaloğlu (2010) found Kaiser-Meyer-Olkin (KMO) value as .80 and found Barlett sphericity test significant at $p<0.01$. As a result of the analyses, a two-factor scale was created, explaining 32,96% of the total variance. These analyses were repeated by the researcher. These analyses found the Kaiser-Meyer-Olkin (KMO) value as .789 and the Barlett sphericity test as significant at $p<0.01$. The exploratory factor analysis yielded a four-factor structure as learning, guessing, comprehension and assessment. Of the total variance, 15.51% is explained by the learning factor, 15.35% by the guessing factor, 11.34% by the comprehension factor and 10.50% by the assessment factor. The factor dimension total of the scale explains 52.71% of the scale. The Cronbach Alfa coefficients calculated to determine the reliability of the scale were found to be .734 of the whole scale. As a result of the conducted analyses the scale was found to be valid and reliable.

Analysis of the data

Before the data analysis, kurtosis and skewness values of the data were analyzed to see whether it showed normal distribution.

Table 2
Descriptive statistics regarding the metacognitive reading strategy scale

Subdimensions	Kurtosis	Skewness
Learning Strategy	-,520	-,314
Guessing Strategy	-,446	-,186
Comprehension Strategy	-,902	,844
Assessment Strategy	-,576	,433

When the descriptive information given at the level of subdimensions of the metacognitive reading strategy scale is analyzed, kurtosis and skewness values can be seen to

range from -1 to +1. Once the data was determined to show normal distribution, t-test analysis was conducted for the bivariate data, and one-way analysis of variance was conducted for data with more than three variables.

Findings and Interpretation

In this section, the findings from the statistical analyses conducted for the subgoals of the study are presented.

a) Is there a significant difference between Turkish language pre-service teachers metacognitive reading strategies and the year of class they are studying in?

In this subgoal of the study, whether there is a statistically significant difference between Turkish language pre-service teachers metacognitive reading strategies and their class levels is analyzed.

Table 3
One-way analysis of variance results of the reading strategy scale subdimensions by pre-service teachers class levels

Subdimensions	Source of Variance	Sum of Squares	sd	Mean Squares	F	p
Learning Strategy	Between-groups	1,839	3	,613	1,609	,187
	Within-groups	128,829	338	,381		
	Total	130,668	341			
Guessing Strategy	Between-groups	,172	3	,057	,104	,958
	Within-groups	186,511	338	,552		
	Total	186,683	341			
Comprehension Strategy	Between-groups	3,638	3	1,213	2,996	,051
	Within-groups	136,803	338	,405		
	Total	140,442	341			
Assessment Strategy	Between-groups	1,839	3	,613	1,609	,187
	Within-groups	128,829	338	,381		
	Total	130,668	341			

When Table 5 is checked for the one-way analysis of variance results, no significant difference can be seen between the subdimensions in the metacognitive reading strategy scale and pre-service teachers class levels [$F_{(3-338)}$=1.609; p>.05].

b) Is there a statistically significant difference between Turkish language pre-service teachers metacognitive reading strategies and their gender?

The second subgoal of the study is to analyze whether there is a statistically significant difference between Turkish language pre-service teachers metacognitive reading strategies and their gender.

Table 4
t-test analysis results of metacognitive reading strategy scale subdimensions by pre-service teachers gender

Subdimensions	Gender	N	Arithmetic Mean	S	sd	t	p
Learning Strategy	Female	215	3,7991	,89390	340	3,097	,002
	Male	127	3,4724	1,01939			
Guessing Strategy	Female	215	3,6849	,75879	340	-2,008	,045
	Male	127	3,8504	,69740			
Comprehension Strategy	Female	215	4,1488	,64140	340	1,196	,233
	Male	127	4,0630	,64128			
Assessment Strategy	Female	215	3,8797	,63172	340	-,941	,347
	Male	127	3,9449	,59713			

As can be seen in Table 4, a statistically significant difference is found between Turkish language pre-service teachers gender and their learning [$t_{(340)}$=3.09, p<.05], and guessing strategies [$t_{(340)}$=2.008, p<.05]. For the Learning Strategy subdimension, the female Turkish language pre-service teachers scale point average ($\bar{X}$=3.79) is higher than the male Turkish language pre-service teachers point average ($\bar{X}$=3.47). According to this finding, compared to the male pre-service teachers, the female pre-service teachers take notes to remember, underline important places in texts, write questions and take notes on the margins to understand the text, and read multiple times to remember the text. Table 4 shows that for the Guessing Strategy subdimension, the male Turkish language pre-service teachers scale point average ($\bar{X}$=3.85) is higher than the female Turkish language pre-service teachers point average ($\bar{X}$=3.68). Thus, compared to their female counterparts, the male pre-service teachers guess the upcoming information in the text more often and try to figure out the unfamiliar vocabulary in the text to a higher extent.

c) Is there a significant difference between Turkish language pre-service teachers metacognitive reading strategies and their education types?

The third subgoal of the study is to analyze whether there is a significant difference between Turkish language pre-service teachers metacognitive reading strategies and education types.

Table 5
t-test analysis results of the metacognitive reading strategy scale subdimensions of pre-service teachers by their education types

Subdimensions	Education Type	N	Arithmetic Mean	S	sd	t	p
Learning Strategy	Normal Education	139	3,6101	,98373	340	-1,086	,278
	Second Education	203	3,7241	,93298			
Guessing Strategy	Normal Education	139	3,6169	,75918	340	-2,702	,007
	Second Education	203	3,8350	,71484			
Comprehension Strategy	Normal Education	139	4,0561	,66115	340	-1,453	,147
	Second Education	203	4,1586	,62637			
Assessment Strategy	Normal Education	139	3,8777	,62888	340	-,647	,518
	Second Education	203	3,9218	,61310			

As can be observed in Table 5, a statistically significant difference is found between Turkish language pre-service teachers type of education and their guessing strategy [$t_{(340)}$=2.702, p<.05]. Thus, vis-á-vis the Guessing Strategy subdimension, the scale point average of the Turkish language pre-service teachers studying in evening education ($\bar{X}$=3.83) can be seen to be higher than the point average of the Turkish language pre-service teachers who are studying in normal education ($\bar{X}$=3.61).

d) Is there a significant difference between Turkish language pre-service teachers metacognitive reading strategies and their GPAs?

The fourth subgoal of the study is to analyze whether there is a difference between Turkish language pre-service teachers metacognitive reading strategies and their GPAs.

Table 6
t-test analysis results of metacognitive reading strategy scale subdimensions by pre-service teachers GPAs

Subdimensions	GPA	N	Arithmetic Mean	S	sd	t	p
Learning Strategy	1,00-2,50	68	3,2265	1,03889	340	-4,478	,000
	2,51-4,00	274	3,7898	,89943			
Guessing Strategy	1,00-2,50	68	3,7279	,72371	340	-,229	,819
	2,51-4,00	274	3,7509	,74510			
Comprehension Strategy	1,00-2,50	68	3,8853	,69739	340	-3,376	,001
	2,51-4,00	274	4,1745	,61514			
Assessment Strategy	1,00-2,50	68	3,7629	,71568	340	-2,109	,036
	2,51-4,00	274	3,9389	,58886			

The analysis of Table 6 indicates that there is a statistically significant difference between Turkish language pre-service teachers GPAs and their learning strategies [$t_{(340)}$=4.478, p<.05], comprehension strategies [$t_{(340)}$=3.376, p<.05], and assessment strategies

[$t_{(340)}$=2.109, p<.05]. Accordingly, Turkish language pre-service teachers with GPAs within the 2.51-4.00 range have a higher scale point average ($\bar{X}$=3.78) in the subdimension of Learning Strategy than those with GPAs of 1.00-2.50 ($\bar{X}$=3.22), Turkish language pre-service teachers with GPAs of 2.51-4.00 have a higher scale point average ($\bar{X}$=4.17) in the Comprehension Strategy subdimension than those with GPAs of 1.00-2.50 ($\bar{X}$=3.88), and finally, Turkish language pre-service teachers with GPAs of 2.51-4.00 have a higher Assessment Strategy subdimension scale point average ($\bar{X}$=3.93) than those with GPAs of 1.00-2.50 ($\bar{X}$=3.76).

e) Is there a significant difference between Turkish language pre-service teachers metacognitive reading strategies and their graduation?

In this subdimension of the study, whether there is a statistically significant difference between Turkish language pre-service teachers metacognitive reading strategies and their graduation will be analyzed.

Table 7
One-way analysis of variance results of the reading strategy scale subdimensions by pre-service teachers graduation

Subdimensions	Source of Variance	Sum of Squares	sd	Mean Squares	F	p
Learning Strategy	Between-groups	,058	2	,029	,032	,969
	Within-groups	310,393	339	,916		
	Total	310,451	341			
Guessing Strategy	Between-groups	,144	2	,072	,131	,877
	Within-groups	186,539	339	,550		
	Total	186,683	341			
Comprehension Strategy	Between-groups	,369	2	,184	,446	,640
	Within-groups	140,073	339	,413		
	Total	140,442	341			
Assessment Strategy	Between-groups	,192	2	,096	,249	,779
	Within-groups	130,476	339	,385		
	Total	130,668	341			

A close look at Table 7, which displays the conducted one-way analysis of variance results, reveals that no statistically significant difference is found between Learning Strategy [$F_{(2-339)}$=0.32; p>.05], Guessing Strategy [$F_{(2-339)}$=.131; p>.05], Comprehension Strategy [$F_{(2-339)}$=.446; p>.05], Assessment Strategy [$F_{(2-339)}$=.249; p>.05] and pre-service teachers graduation.

f) What are Turkish language pre-service teachers opinions about metacognitive reading strategies?

In this subdimension of the study, views of Turkish language pre-service teachers about metacognitive reading strategies are determined on the basis of the average points they give for the items on the scale.

Table 8
Turkish language pre-service teachers opinions about metacognitive reading strategies

Five items with the highest scale point averages	$\bar{X}$	sd
15. When I am reading, I imagine the descriptions to better understand the text.	4,21	,92
22. If I am having difficulty understanding the text, I read it again.	4,18	,94
16. I am aware of how difficult or easy a text is.	4,17	,90
3. To help me with my reading comprehension, I try to remember my background knowledge of the subject.	4,08	,84
1. While reading, I evaluate the text according to its contribution to my comprehension or to my knowledge.	4,04	,90
Five items with the lowest scale point averages	$\bar{X}$	**sd**
5. While reading, depending on the content of the text, I re-think and review the questions I asked in the beginning.	3,75	,96
21. I read the text multiple times to remember it.	3,69	1,07
17. I take notes while reading to remember the information later.	3,60	1,18
13. While reading, I check whether I correctly guessed the content I am reading.	3,47	1,05
19. While reading, I write questions and notes on the margins to better understand the text.	3,47	1,29

Table 8 indicates that the pre-service teachers consider themselves effective in imagining descriptions, re-reading the text when they are having understanding difficulties, having knowledge of the difficulty or easiness of a text, activating background knowledge on the subject to help with their reading, and evaluating the text while reading. However, pre-service teachers are not fully self-confident in writing questions and notes on the margins to understand the text, guessing the sections they are reading, taking notes to remember, re-reading the text multiple times, and reviewing the pre-reading questions.

Discussion, Conclusion and Suggestions

Ensuring the permanence of learning depends on the availability of an environment that facilitates it. Students' learning will become more lasting if they play an active role in their own learning. For teachers to ensure their students' self-learning, they need to use the methods and techniques to improve students' metacognitive awareness and their use of metacognitive strategies (Aktürk and Şahin, 2011). The current study attempted to find out a potential relationship between Turkish language pre-service teachers metacognitive reading strategies and various variables. According to the analyses, no significant relationship exists

between the class levels (seniority) of pre-service teachers and their metacognitive reading strategies. Therefore, all Turkish language pre-service teachers use metacognitive reading strategies regardless of their specific year of study. However, Karasakaloğlu, Saracaloğlu and Yılmaz Özelçi (2012) found that strategy use varies by class level and reported that senior Turkish language pre-service teachers use strategies effectively.

A significant difference is evident between Turkish language pre-service teachers gender and their learning/guessing strategies. Whereas female Turkish language pre-service teachers appear effective in using learning strategies, male Turkish language pre-service teachers are found to be effective in using guessing strategies. Topuzkanamış and Maltepe (2010) found that women read more than men and therefore female students are more successful than males in reading comprehension, construction, and using reading strategies.

A significant difference has been identified between Turkish language pre-service teachers education type and their guessing strategies. Turkish language pre-service teachers studying in the evening program are found to use Guessing Strategy more effectively than those studying in normal education program.

A significant difference is found between Turkish language pre-service teachers GPAs and their learning strategies, comprehension strategies and assessment strategies. Specifically, at the Assessment Strategy level, Turkish language pre-service teachers with GPAs of 2.51-4.00 have more effective learning and comprehension strategies than those with GPAs of 1.00-2.50. Topuzkanamış and Maltepe's study (2010) revealed that individuals with higher academic success are more successful at reading comprehension. Academically successful pre-service teachers are found to be successful in using reading strategies. No statistically significant difference could be identified between learning, guessing, comprehension and assessment strategies and pre-service teachers graduation.

Pre-service teachers seem to consider themselves effective in imagining descriptions, re-reading texts when they experience comprehension difficulty, knowing the difficulty and easiness of text, activating their background knowledge about the text to help with their reading comprehension and in their text assessment during reading. Nevertheless, the pre-service teachers appear not to be that self-confident about writing questions and taking notes on the margins for comprehension, guessing the content, taking notes to remember, reading the text multiple times, and reviewing the initial questions.

In their study, Yurdakul and Demirel (2011) state that learning designs based on constructivist learning practices enhance students' success. Topuzkanamış and Maltepe's

study (2010) found Turkish language pre-service teachers to be more successful in reading comprehension than pre-service teachers studying in other academic departments.

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