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Metacognitive reading strategies in learning disability: Relations between usage level, academic self-efficacy and self-concept

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Abstract

The purpose of this study is to investigate the relationship between the usage levels of metacognitive reading strategies by students diagnosed with specific learning disability (SLD), academic self-efficacy and the concept of self, in comparison to their typically developing (TD) peers. The data to be used in the study were collected using the Metacognitive Awareness of Reading Strategies Inventory, the Academic Self-efficacy Scale, the Piers-Harris Children's Self-concept Scale and the Demographics Information Form. The study was conducted among a total of 119 students in the fifth, sixth, seventh and eighth grades in İzmir Province, including 59 students diagnosed with SLD and 60 TD students. Considering the results of the study, in comparison to TD students, students diagnosed with SLD were significantly inadequate in terms of the usage levels of metacognitive reading strategies, levels of academic self-efficacy, and the intelligence/school subdimensions of the concept of self.

Keywords: Specific learning disability, metacognitive reading strategies, academic self-efficacy, self-concept

Introduction

Academic success has become one of the most important issues in today's societies and turned into one of the priority goals to be reached among students, families and other individuals who interact with these stakeholders. It may be argued that the most important academic skills for students to achieve in school are reading, writing and mathematics. Students who cannot become skilful in these subjects at school become unsuccessful. This failure by students affects their self-efficacy, which is defined as the belief of individuals in themselves in terms of being able to perform the acts required to deal with difficult situations (Alabay, 2006; Bandura, 1997; Senemoğlu, 2012; Yardımcı & Başbakkal, 2010) and may be named differently, depending on the situation (Caprara & Steca, 2005; Motl & Conroy, 2000; Tabassam & Grainger, 2002). Among these, the belief of academic self-efficacy, which is related to success at school, is defined as the belief of individuals in themselves in terms of being able to successfully complete academic tasks given to them (Yazıcı & Altun, 2013). The belief of self-efficacy also contributes to student success by affecting the usage of learning strategies by students and their behaviour of seeking academic help when needed. There are studies that report a relationship between the usage of necessary and effective learning strategies by students and their success in classes (Karabenick & Knapp, 1991; Pintrich, 1999; Schunk & Pajares, 2004; Wolters & Pintrich, 1998). Some studies show that students with high self-efficacy levels more often show behaviours of seeking help and using effective learning strategies than students with low self-efficacy levels, as well as being more successful academically (Karabenick & Knapp, 1991; Pintrich & De Groot, 1990; Ryan & Pintrich 1997; Wolters & Pintrich, 1998).

Individuals use metacognition to be aware of their own cognitive processes and students perceive their own roles in the learning process through metacognition (Dunlop and Grabinger, 1996; Driscoll, 2000; Jager, Jensen and Reezigt, 2005). While cognitive strategies help individuals achieve their goals, metacognitive strategies help us understand and evaluate whether the goals have been achieved and activate cognitive strategies used in learning and thinking processes (Yurdakul and Demirel; 2011). "Metacognitive strategies control cognitive strategies utilized in learning and thinking processes. The fact that reading is regarded as a mental activity and that it is integrated with perception, comprehension and interpretation indicates that it has an important role and is linked to metacognition." (Kana, 2014; 102).

In the process of reading, the reading strategies used by students, metacognition and metacognitive awareness are highly important (Öztürk, 2012). It may be stated that students who cannot use strategy and are unaware of their own cognition are less proficient readers than those who can use strategy and are aware of their cognition (Kana, 2014). Studies have shown that students who have beliefs of self-efficacy in literacy use their metacognitive

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awareness more effectively (Baker, 2003; Chapman & Tunmer, 2003; Shunk, 2003). Additionally, it was found that they use strategies more and do not give up working on given tasks, even if they experience problems (Brown & Inouye, 1978; Schunk, 1984).

One of the reasons for failure in school is SLD. Students diagnosed with SLD, even if their levels of intelligence are normal or above normal, experience problems in the learning process, such that their academic success is lower than their peers with normal development (Korkmazlar, 1999; Sáenz, Fuchs & Fuchs, 2005). Students diagnosed with SLD, as a result of their diagnostic characteristics, have deficiency in organizing information and using strategies in reading, writing or arithmetic learning processes. They are more vulnerable to negative feedback in the learning process and develop negative self-respect, due to their continuous academic deficiency and being in a situation over which they have no control, which in turn reduces their self-esteem (Humphrey, 2002). Tarnished self-esteem and perception of self, even experiences of depression and anxiety disorders, may lead to increases in academic failure (Erden, Kurdoğlu & Uslu, 2002; Schunk, 2009). As the difficulties in learning academic skills increase, students diagnosed with SLD start to become aware of their differences in relation to and experience problems in interactions with their peers, thereby affecting personality development (Deniz, Yorgancı & Özyeşil, 2009). In some studies, it was found that students diagnosed with SLD receive less approval from their peers and experience more loneliness than those who do not have SLD, have lower self-respect (Allodi, 2000; Bakkaloglu, 2010; Heiman & Margalit, 1998; Pavri & Luftig, 2001; Pavri & Monda-Amaya, 2000), and experience more anxious and depressed moods (Chamberlain, Kasari & Rotheram-Fuller, 2007; Heiman, 2001; Matsuura, Hoshimoto & Toichi, 2009; Valas, 1999).

In the literature on Turkey, one can find studies on social skills, social approval, violent behaviour or self-respect of some students in the diagnosis group in the process of inclusion (Akçemete & Ceber, 1999; Aktaş, 2001; Avcıoğlu, 2005; Civelek, 1990; Çolak, 2008; Hocaoğlu, 2009; Girli & Atasoy, 2008; Kabasakal, Girli, Sencar, Çelik & Vardarlı, 2008; Kanay & Girli, 2009; Küçükaksoy, 1993; Sucuoğlu & Özokçu, 2005; Şahbaz, 2004; Vuran, 2005). For example, in one recent study, it was shown that social skills of special needs students were more deficient than those of their peers, while they showed more problematic behaviour and experienced low self-respect and loneliness (Küçüker & Çiftçi, 2015). However, it can be seen that the focus of these studies tends to be on the relationships between social skills, social approval and problematic behaviours. Moreover, these studies are focused on cognitive and other learning disabilities, while there is a dearth of studies on students diagnosed with SLD. No study was found that especially investigated the relationships between reading strategies, self-efficacy and self-respect. With the study presented here, the relationships between the levels of strategy usage by students diagnosed with SLD during the process of learning academic skills, their self-efficacy and self-respect levels will be identified, thereby making a contribution to the literature. The purpose of this study is to investigate the relationship between the usage levels of metacognitive reading strategies by students diagnosed with SLD, and academic self-efficacy and the concept of self, in comparison to their TD peers.

Method

Research Model

The relational screening model has been selected for use in this study. Screening models are studies conducted with the aim of revealing the opinions of participants on a subject without changing attitudes, skills or capabilities (Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel, 2009; Karasar, 2012). There are also studies in the field of education that seek to understand a phenomenon better by investigating possible relationships (Büyüköztürk et al., 2009). The aim of this model, which is known as the relational screening model, is to test the presence of covariance between two or more variables and understand the level of covariance (Karasar, 2012).

Participants

The study was conducted among a total of 119 students in the fifth, sixth, seventh and eighth grades in İzmir Province, including 59 students diagnosed with SLD and 60 TD students. The diagnosis of the students with SLD who participated in the study was made by physicians at children's mental health clinics of university hospitals who are experts in the field of SLD. The mean IQ scores of the students diagnosed with SLD was *M*= 96.49 (SD= 1.13). It was found that IQ scores were 85 or higher and therefore in compliance with the diagnosis of SLD. As the TD students included in the study were selected on a voluntary basis, from among those who did not experience problems in academic learning in school and whose success levels were not lower than class averages, they were assumed to have intelligence levels within the normal range. The demographic information of participating students is given in Table 1.

As seen in Table 1, family income levels of students diagnosed with SLD and TD students were similar; also had similar characteristics based on the education levels and occupation types of their respective parents.

Process

The scales used in the study were applied by the researchers individually at the institutions where the students were receiving special needs education. The questions were read by the researcher, then children were asked whether they understood the question before responding, with the questions that were not understood explained. Each interaction lasted for about 30-40 min on average and the responses were recorded on the record form by the researchers.

Measures

Metacognitive Awareness of Reading Strategies Inventory: This inventory is designed to determine the extent to which children diagnosed with learning disability use reading strategies. The form developed by Mokhtari and Richard (2002), and checked for reliability and validity by

Öztürk (2012), has 30 items. This inventory takes the form of a five-point Likert-type scale, with the options of (1) Never, (2) Rarely, (3) Frequently, (4) Generally and (5) Always. The original format of the inventory and its version translated into Turkish consist of three subdimensions. The variance explained by the inventory, consisting of general reading strategy, problem-solving strategy and supporting reading strategies, for which reliability and validity studies were conducted, is 42.6%. The Cronbach's alpha value of the scale is 0.93. The reliability and validity of the inventory were tested again by the researchers. In the exploratory factor analysis applied to the data gathered from 350 secondary school students, it was found that the KMO sample suitability coefficient was 0.91 and the Bartlett's test chi-squared value was 2263.784. The results of varimax vertical rotation factor analysis with the principal component method in the exploratory factor analysis was limited to five factors and resulted in an outcome with five factors, which explained 54% of the variance. The factors were named in order as: strategies for making sense of reading, problem-based reading strategies, attention-based reading strategies, audiovisual-based reading strategies, and analysis-based reading strategies. In this study, the Cronbach's alpha reliability coefficient of the scale was computed as 0.94. The "General Reading Strategy", the first of the scale factors 0.85; the second factor, the "Problem Solving Strategy" 0.76, and the third factor, "Supporting Reading Strategies", were found to have a 0.81 reliability value.

Table 1. *Descriptive statistics for students who participated in the study*

Descriptive Statistics	**SLD**		**TD**	
	n	**%**	***n***	**%**
Participants	59	49.6	60	50.4
Gender				
Female	30	50.8	37	61.7
Male	29	49.2	23	38.3
Class level				
Fifth grade	29	49.1	15	25
Sixth grade	12	20.3	15	25
Seventh grade	9	15.3	15	25
Eighth grade	9	15.3	15	25
Education of the mother				
Literate			8	13.4
Elementary	15	26.7	40	66.6
High school	22	39.3	9	15
University	18	32.2	3	5
Master's or above	1	1.8		
Education of the father				
Literate			2	3.4
Elementary	16	28.5	31	53.4
High school	18	32.2	21	36.3
University	21	37.6	4	6.9
Master's or above	1	1.7		
Occupation of the mother				
Civil servant	8	14	1	1.6
Worker	6	10.5	13	21.6
Freelance	5	8.8	6	10
Retired	2	3.5	2	3.4
Unemployed	36	63.2	38	63.4
Occupation of the father				
Civil servant	12	21.4	4	23.2
Worker	14	25	30	51.7
Freelance	23	41	19	32.6
Retired	4	7.4	1	1.7
Unemployed	3	5.2	4	6.8
Family income level				
Low			6	10.6
Medium	52	89.6	49	85.9
High	6	10.4	2	3.5

Academic Self-efficacy Scale: The scale, which consists of 21 items, was developed by Morgan and Jinks (2003), while the adaptation into Turkish, as well as reliability and validity studies, were conducted by Öncü (2012). This has a four-point Likert-type scale, whose options are (1) Absolutely Disagree, (2) Somehow Agree, (3) Agree Very

Much and (4) Absolutely Agree. The original format of the scale and its Turkish version consist of three subdimensions: skills, environment and quality of education. The reliability of the scale for the Turkish form was found to be 0.80 with the method of repeating the test, while it was found to be 0.82 with the method of Cronbach's alpha internal validity. The Cronbach's alpha reliability coefficient was computed as 0.85 in this study.

Piers-Harris Children's Self-concept Scale: This scale was developed by Piers and Harris (1969) to measure self-concept in the age group of nine to 16 years, while its translation from English to Turkish was carried out by Çataklı and Öner (1987). In the 80-item scale, statements are responded to in the form of "yes" or "no". The score that can be obtained from this scale is between 0 and 80. In the scale, which may be applied individually or as a group, a high score shows that the individual has positive feelings about him/herself, while a low score indicates negative feelings. The reliability study of the Piers-Harris Self-concept Scale, when translated into Turkish, includes female and male, and primary and secondary school students, along with two different socio-economic levels. The obtained reliability coefficients (average r=0.87) and internal validity coefficients (with Kuder-Richardson 20 formula for the entire sample r=0.89) were found to be sufficient, while the Piers-Harris Children's Self-concept Scale and the Test Anxiety Scale were applied to a total of 1,388 students to determine the construct validity of the scale. The correlations between the two scales (-0.50 for the second level and -0.47 for high school) were found significant on the level of 0.01 (Çataklı & Öner, 1987). The Cronbach's alpha reliability coefficient of the scale was computed as 0.63 in this study.

Demographic Information Form: The demographic information form used in the study was prepared by the researchers. This form consists of three main titles in terms of the child's personal information, parental information and educational information.

Data Analysis

The analyses were conducted using the SPSS 22.0 package software. The independent samples t-test was used to compare the reading strategies, academic self-efficacy and self-respect levels of the students diagnosed with SLD and TD students in terms of total scores and subscale scores. Pearson correlation analysis was then conducted in respect of the relationships between the scores of these tests and subtests. The predictive level of academic self-efficacy and self-concept for skills in the use of metacognitive reading strategies was analysed using regression analysis.

Results

In this part of the study, the results as to whether SLD and TD students differed in terms of metacognitive reading strategies, academic self-efficacy and self-concept scores are firstly presented. Later, the findings regarding the relationships between these scores and the effects of self-efficacy and self-concept on metacognitive reading strategy usage are presented.

As seen in Table 2, there is a significant difference between the student groups based on their diagnostic statuses in terms of the levels of supporting reading strategies, problem-solving strategy, general reading strategy and metacognitive reading strategy usage (p<0.01). It was also observed that TD students had higher levels than SLD students for supporting reading strategies, problem-solving strategy, general reading strategy and usage of metacognitive reading strategies.

Table 2. *Usage levels of metacognitive reading strategies by students based on their diagnostic status and results of the independent samples t-test based on subdimensions*

	Diagnosis	n	M	SD	*t*	*p*
Supporting reading strategies	SLD	59	22.24	6.53	-8.570	0.000*
	TD	60	31.99	5.88		
Problem-solving strategy	SLD	59	33.58	7.61	-6.607	0.000*
	TD	60	41.96	6.17		
General reading strategy	SLD	59	39.36	10.31	-6.214	0.000*
	TD	60	51.20	10.47		
Metacognitive Reading Strategies Inventory (total score)	SLD	59	92.56	22.07	-7.625	0.000*
	TD	60	122.07	20.13		

*p<0.01

Table 3. *Results of the independent samples t-test in terms of academic self-efficacy levels and subdimensions based on the students' diagnostic statuses*

	Diagnosis	n	M	SD	*t*	*p*
Skill	SLD	59	26.20	5.03	-4.857	0.000*
	TD	60	30.01	3.35		
Environment	SLD	59	26.92	4.46	-3.890	0.000*
	TD	60	29.77	3.48		
General reading strategy	SLD	59	8.27	2.12	-4.525	0.000*
	TD	60	9.92	1.84		
Metacognitive Reading Strategies Inventory (total score)	SLD	59	61.40	10.09	-5.143	0.000*
	TD	60	69.70	7.33		

*p<0.01

As seen in Table 3, there was a significant difference in the levels of academic self-efficacy based on the students' diagnostic statuses. A statistically significant difference was found between SLD students and TD students in the skill, environment and quality of education subdimensions of the academic self-efficacy scale and the total score of the scale (p<0.01). It was seen that TD students had higher levels of skill, environment, quality of education and total academic self-efficacy in comparison to students diagnosed with SLD.

As seen in Table 4, there was a statistically significant difference based on the diagnostic statuses of the students in terms of the levels of self-concept, happiness/satisfaction and mental and reading state subscales (p<0.05). These levels were higher among TD students than students diagnosed with SLD.

There was no statistically significant difference based on the diagnostic statuses of the students in terms of the subscale levels for self-concept, anxiety, popularity, social likes or being favourited, behaviour, physical appearance and total self-concept (p>0.05). The levels of SLD-diagnosed and TD students for self-concept did not differ overall or on the subscales of anxiety, popularity, social likes or being favourited, behaviour and physical appearance.

Table 4. *Results of the independent samples t-test in terms of self-concept and subdimensions based on their diagnostic statuses*

	Diagnosis	*n*	*M*	SD	*t*	*p*
Happiness/Satisfaction	SLD	59	6.93	1.38	2.273	0.025*
	TD	60	6.37	1.30		
Anxiety	SLD	59	5.92	2.31	0.208	0.835
	TD	60	5.84	2.23		
Popularity, social likes or being favourited	SLD	59	6.46	1.60	-1.877	0.063
	TD	60	9.92	1.84		
Behaviour and adaptation	SLD	59	5.88	2.39	0.375	0.708
	TD	60	5.74	1.70		
Physical appearance	SLD	59	7.57	2.12	-0.321	0.749
	TD	60	7.68	1.46		
Mental and reading state	SLD	59	4.86	1.52	-4.036	0.000*
	TD	60	5.82	1.02		
Total self-concept score	SLD	59	41.50	6.22	-0.250	0.803
	TD	60	41.75	4.60		

*p<0.05

Table 5. *Results of the Pearson correlation test, conducted to determine the relationship between the academic self-efficacy scores, and the self-concept and metacognitive reading strategies in students diagnosed with SLD*

	Reading Strategies Inventory	Academic self-efficacy	Self-concept
Reading Strategies Inventory	1		
Academic self-efficacy	0.518**		
	(0.000)	1	
Self-concept	0.361**	0.059	
	(0.005)	(0.655)	1

**p<0.01;*p<0.05

As seen in Table 5, there was a medium-level and statistically significant relationship in the positive direction between the reading strategies and academic self-efficacy levels of the students diagnosed with SLD (r=0.518; p<0.05). It can be stated that, as the reading strategy levels of SLD-diagnosed students increase, their academic self-efficacy levels will also increase. Likewise, there was a low-level statistically significant relationship in the positive direction between the reading strategies and self-concept scores of the students diagnosed with SLD (r=0.361; p<0.05). It may be stated that, as the reading strategy levels of SLD-diagnosed students increase, their self-concept levels will also increase. However, there was no statistically significant relationship between the self-concept and academic self-efficacy of the students with SLD (p>0.05).

Regression analysis was conducted to determine the extent to which the variables of self-concept and academic self-efficacy predicted reading strategies. Firstly, the integrity of the model was evaluated, with the ANOVA significance level used for this purpose. The obtained findings are given in Table 6, which shows that the constructed regression model is significant (p=0.000<0.01). Other assumptions should be evaluated. The R^2 value of the model is 0.378 as can be seen in the table, which is low. This shows that self-concept and academic self-efficacy variables explained 37.8% of the reading strategies. Another assumption to be evaluated is the Durbin-Watson criterion. This assumption highlights the autocorrelation deviation between independent variables. As our Durbin-Watson value is 1.691, that is, in the range of 1.5-2.5, it is considered that there was no autocorrelation between the variables included in our

model. As the value was higher than 1.5, there was also no autocorrelation deviation, such that it can be concluded that the model is correct based on all assumptions; the coefficients of the variables are assessed later.

Table 6. Model summary of the regression analysis among reading strategies, self-concept and academic self-efficacy

R	R^2	Corrected R^2	ANOVA *F* value	ANOVA significance level	Durbin-Watson
0.615	0.378	0.355	16.995	0.000	1.691

Independent variables: self-concept, academic self-efficacy; **dependent variable:** Reading Strategies Inventory

Table 7. *Regression coefficients between self-concept, academic self-efficacy, and the Reading Strategies Inventory*

	Non-standardized coefficients		Standardized coefficients	*t*	Level of significance (*p*)
Model	B	Standard error	Beta		
(Constant)	-23.161	20.550		-1.127	0.265
Academic self-efficacy	1.091	0.231	0.499	4.721	0.000
Self-concept	1.175	0.37	0.331	3.134	0.003

Independent variables: self-concept, academic self-efficacy; **dependent variable:** Reading Strategies Inventory

As seen in Table 7, academic self-efficacy and self-concept variables were significant. It was found that academic self-efficacy and self-concept had a significant and positive effect on skills in using reading strategies (p<0.05). The academic self-efficacy coefficient was 0.499 and the self-concept coefficient was 0.331. Accordingly, an increase in the academic self-efficacy and self-concept levels of SLD-diagnosed students also increases levels of reading strategy usage. As the coefficient of academic self-efficacy was higher than that for self-concept, it was seen that the academic self-efficacy effect was stronger than the self-concept effect.

Discussion

This study aimed to investigate the relationship between the usage levels of metacognitive reading strategies among students diagnosed with SLD, as well as academic self-efficacy and the concept of self, in comparison to their TD peers. It was found that the metacognitive reading strategy usage levels of SLD students were significantly lower than those of TD students in both the total scores and subdimensions of the scale. The students diagnosed with SLD had lower levels of competence regarding *general reading strategies* (i.e., a tendency to use reading strategies found among the general population), *problem-solving strategies* (i.e., a tendency to use strategies for solving a problem when there is difficulty in reading a text) and *supporting reading strategies* (i.e., a tendency towards using other strategies that support reading). This finding has been replicated in various studies. For example, Winograd and Paris (1989) found that SLD-diagnosed children were unable to solve problems they encountered while reading, nor did they have plans or strategies for making sense of the text being read. It was found that the metacognitive reading awareness of students with reading disability was lower than that of their TD peers (Chapman & Tunmer, 1997; Swanson & Trahan, 1996), while students with difficulty in reading had inadequate metacognitive reading skills, as well as skills for organizing the understanding of a text and establishing a connection between the text and the meaning (Botsas & Padeliadu, 2004). In a study by Baydık (2011), it was reported that students with difficulty in reading did not use different strategies in order to better understand the text; they also had lower levels of strategy usage in comparison to their peers.

In this study, the academic self-efficacy levels of SLD-diagnosed students were compared to those of TD students. According to the findings, SLD-diagnosed students had lower scores than TD students in terms of the subdimensions of skill, environment and quality of education, as well as total academic self-efficacy. This result is consistent with the findings of various studies conducted among SLD-diagnosed students in varying grades. For example, in Klassen's study (2007), involving 68 children diagnosed with SLD and 65 TD children in the eighth and ninth grades, whose academic success and self-efficacy beliefs were investigated, it was reported that students diagnosed with SLD had lower levels of self-efficacy beliefs than TD students. In a study with students in the fifth grade, both with and without reading disability, whose levels of understanding what they read, metacognitive knowledge and self-efficacy beliefs were compared, it was found that students with reading disability had lower levels of metacognitive knowledge than those with normal development (Pintrich, Anderman & Klobucar, 1994). In another study among seventh grade students, including 123 SLD and 123 TD children, Lackaye, Margalit, Ziv and Ziman (2006) found that SLD-diagnosed students showed lower levels of capability in both the general level of self-efficacy and the area of academic self-efficacy. Similar findings were obtained by Hen and Goroshit's study (2014), involving 99 university students who had difficulty in reading and 188 TD participants.

While there are various areas where students with learning disability feel good about themselves and achieve success, they may feel incapable when they experience failure in school. This situation, as with TD individuals, may cause students with learning disability to develop different perceptions of self in different areas. In this study, no significant difference was found between SLD and TD children in terms of the total self-concept score. Similarly, there were no significant differences in terms of subscores of anxiety, popularity, social likes or being favourited, behaviour, or physical appearance. However, it was observed that there was a significant difference between the two groups in terms of subscales of happiness/satisfaction and intelligence/school, with TD children having higher levels of self-concept than SLD children on both subscales. It is noteworthy that there was a significant difference on the intelligence/school subscale. A similar result was obtained by Elemek's study (2008), which found that total self-concept scores did not differ, although the scores of TD students were higher on the intelligence/school subscale. In the same study, it was found that there was a significant difference in favour of TD individuals in terms of the other subscales on the scale, namely, popularity, anxiety and physical appearance. In the study by Gang et al. (2003), in which the Piers-Harris Self-concept Scale was used, it was found that there was a significant difference in favour of students without learning disability on the subscales of intelligence/school status and behaviour/adaptation. It could be argued that the self-concept perceptions of children with learning disability towards school are lower than those of their peers because they have lower levels of success at school.

The relationships between usage levels of reading strategies among children with SLD, their academic self-efficacy levels and self-concepts were investigated using Pearson correlation analysis. There were statistically significant positive relationships between the reading strategies of children with SLD on a low-level with self-concept and on a medium-level with self-efficacy levels. Accordingly, it can be stated that, as the reading strategy levels of children with SLD increase, their levels of self-concept and academic self-efficacy will also increase. No studies were found to investigate the relationships between usage levels of reading strategies and academic self-efficacy, not between usage levels of reading strategies and self-concept in students diagnosed with SLD. This limitation restricted the discussion of the findings, such that there was no statistically significant relationship between the self-concept of students diagnosed with SLD and their academic self-efficacy. It is generally reported in the literature that, in order for students to develop academic self-efficacy, they should be able to use effective cognitive strategies and have the skills to effectively manage their learning environment, time and performance (Chemers et al., 2001). Studies involving TD students have shown that metacognitive skills increase academic success (Çakıroğlu, 2007; Özsoy, 2008). It may be argued that increasing academic self-efficacy levels will also increase the level of strategy usage. A more exhaustive research focus on the levels of strategy usage among students diagnosed with SLD will also lead to the broadening of the literature on this issue and our knowledge regarding the strategic usage behaviour of these students.

Regression analysis was conducted with the aim of determining the extent to which the variables of self-concept and academic self-efficacy predicted reading strategies. According to the results, increases in academic self-efficacy and self-concept in children with SLD also increase the usage levels of reading strategies. On the other hand, given that the coefficient of academic self-efficacy (0.499) was higher than that of self-concept (0.331), it was found that the effect of academic self-efficacy on reading strategy usage was stronger than that of self-concept. This result, as reported in the study by Schunk and Pajare (2001), shows that students with high academic self-efficacy levels develop strategies to solve problems. While there are various areas in which students with learning disability feel good about themselves and achieve success, they may feel incapable when they experience failure at school. This situation leads them to foster lower perceptions of academic self-efficacy and self-concept, as well as use metacognitive strategies to a lesser extent. This study obtained similar findings. Based on these results, it is important that guidance counsellors and teachers at schools identify skills in the arts, sports and other areas where SLD-diagnosed students in inclusive education are more successful, as well as make the necessary arrangements with special education support systems to increase academic success. When the necessary arrangements are made, it could be expected that SLD-diagnosed students, whose success levels are increased, will have a higher perception of academic self-efficacy levels and therefore increased levels of reading and understanding as a result of using more metacognitive strategies.

This study was conducted among students in the fifth, sixth, seventh and eighth grades. Therefore, this limitation should be considered when interpreting the results, such that they should not be generalized for younger or older students. Conducting similar studies among students at higher and lower grades will increase the generalizability of the results.

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