

# **A Path Analysis of Metacognitive Strategies in Reading, Self-Efficacy and Task Value**

By

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## **Abstract**

*The purpose of this study is to reveal the explanatory and predictive correlations among metacognitive awareness of reading strategies, reading self-efficacy, and reading task value. The study was based on structural equation modeling through a path analysis with latent variables. The sample of the study consists of 370 fifth, sixth, seventh and eighth grade students from a middle school in Akcakoca. The data were collected through the “Metacognitive Awareness of Reading Strategies Inventory” and “Motivations for Reading Questionnaire.” The theoretical model was observed to be supported by the data. Whereas metacognitive awareness of reading strategies was a significant predictor of reading self-efficacy, reading self-efficacy was a significant predictor of reading task value. Reading self-efficacy served as a partial mediator between metacognitive awareness of reading strategies and reading task value. The findings suggest that awareness and use of metacognitive strategies in reading constitute a significant variable in the formation of reading self-efficacy and that reading self-efficacy has an influence on reading task value.*

**Keywords:** *reading, self-efficacy, task value.*

## **1. Introduction**

Reading is a skill acquired at an early age, and it provides individuals with a number of advantages throughout their life. The process by which one learns how to read and get information from texts reaches its peak in academic life. The process is influenced by more than one factor. The use of strategies in reading, perceptions of reading self-efficacy and reading task value, which are all individual-centered factors, are only a few of them. Especially in recent years, a number of studies have been conducted on the effects of these factors on reading and comprehension. However, they have focused on how these factors affect reading and reading comprehension or how they are correlated with motivational processes (Anmarkrud & Bråten, 2009; McCrudden, Perkins, & Putney, 2005; Naseri & Zaferanieh, 2012; Schunk, 2003; Schunk & Zimmerman, 2007). Nevertheless, the way these factors can affect one another is just as important as the way they affect achievement. Therefore, it is necessary to take a closer look at metacognitive awareness of reading strategies, reading self-efficacy, and reading task value.

Knowledge and use of strategies in reading have crucial influences on the quality of reading, and children should be taught about them from an early age (Akyol, 2008). However, a clear distinction should be made between reading strategies and those strategies used for learning how to read. Strategies intended to enhance the quality of reading are more often focused on enabling students to interact with texts and to see the connections within them. An effective use of such strategies will lead students to better comprehension of what is being read. That is because the ultimate goal of reading is to comprehend the text (Richek, Caldwell, Jennings, & Lerner, 2002). In other words, the ultimate goal is to construct meaning on the basis of the text (Harris & Sipay, 1990, p. 4). During the use of these strategies, the readers frequently check their comprehension and review their speculations with respect to the text. In this way, they establish a more functional communication with the text (Akyol, 2008). When the readers

check their comprehension by questioning themselves and the text, this is a metacognitive strategy and based on metacognitive awareness (Israel, 2007; Mokhtari & Reichard, 2002).

Another factor in reading achievement is self-efficacy (Demirel & Epçacan, 2012; Guthrie, Wigfield, & You, 2012; McTigue, Washburn, & Liew, 2009; Zare & Mobarakeh, 2011). Self-efficacy is individuals' beliefs about their own capacity regarding a task that they are to carry out for a purpose (Bandura, 1995). Senemoglu (2007) defines self-efficacy as individuals' perceptions of, belief in and judgment about their own capacities to cope with different situations and perform a particular activity (p. 231). Self-efficacy involves one's own judgment about what he/she can do, apart from his/her physical capacity and psychological tendencies. In addition, self-efficacy does not only consist of one single domain; instead, it may be linked with more than one subject or domain of learning. For instance, a student might have different degrees of self-efficacy in mathematics and writing (Zimmerman, 1995). That is because the formation of self-efficacy is much influenced by attainments acquired through experiences. Therefore, individuals' self-efficacy is affected by whether or not they are successful in a problem (Bandura, 1977). Reading self-efficacy, on the other hand, is described as individuals' perceptions of their own capacities to read in a decent way and to comprehend difficult sections in books. In addition, reading self-efficacy depends on how much one believes that he/she is a good reader as well as on his/her self-confidence in reading, and knowledge and use of strategies in reading (Guthrie et al., 2007).

Task value is a significant factor in the quality of the task and its results (Bong, 2001). According to Eccles (2005), individuals are directly concerned with the characteristics of what they are doing and these characteristics have direct influences on how much they are interested in the task. Task value is subjective, for different individuals assign different values to the same task. For example, math achievement is valuable to some but not valuable to others (Wigfield, Tonks, & Klauda, 2009). After all, task value depends on how important and significant the task is to the person.

Task value involves individuals' expectations of benefit as regards a task as well as their interest in and the amount of importance attached to the task (Wigfield & Eccles, 1992). According to Pintrich (1999), task value is individuals' beliefs about how much value they attach to the task they are interested in. The concept is closely intertwined with and based on the response to the question "What should I do for this task?" The main components of task value are interest, importance, usefulness, and cost (Rueda, 2011, p. 95). The first component, interest, is defined as what triggers intrinsic motivation and task enjoyment; the second one, importance, as individuals' finding themselves good at the task; the third one, usefulness, as how useful the task is for enabling them to fulfill their short-term and long-term objectives; and the last one, cost, as the cost of engagement in the activity (Eccles et al. (1983) as cited in Eccles, Wigfield, Harold, & Blumenfeld, 1993). Task value is a decisive factor in reading and a significant predictor of reading comprehension (Anmarkrud & Bråten, 2009), for it has a direct influence on the result and quality of the task (Wigfield & Eccles, 1992).

### ***Strategy Use and Self-Efficacy***

It has been argued, especially in recent years, that metacognitive awareness has an effect on reading comprehension. This awareness is called metacognition, and it is basically concerned with individuals' monitoring themselves and recognizing their performances in reading (Mokhtari & Reichard, 2002). In order for people with self-efficacy to cope with a situation, they must know about accurate strategies and select appropriate ones. In other words, selection on the basis of the environment and situation is a characteristic of those who have self-efficacy (Zimmerman, 1995). In recent years, definitions of reading self-efficacy have involved the use of strategies as a significant component (Guthrie et al., 2007). Readers with good reading skills are able to select and apply different strategies for different reading tasks. If their strategy cannot serve the objective of reading or if readers cannot benefit from this strategy, they immediately switch to another one. This is a technique used by readers who are good at selecting tools appropriate for the target. Unsuccessful readers, on the other hand, rarely use strategies. Even if their strategy fails, they insist on using it and cannot monitor their own reading process. This causes them

not to take pleasure in reading and be unenthusiastic about future reading tasks (Afflerbach & Cho, 2009; Stanovich, 1986).

A number of studies have been conducted on the relationship between strategy instruction and self-efficacy, and they have demonstrated that a significant connection exists between the two (Alcı, Erden, & Baykal, 2010; Gahungu, 2007). This is also the case for reading activities. For example, handling a tough book at school through reading strategies can be considered as an indicator of self-efficacy (McTigue et al., 2009). In their study on high school students' reading self-efficacy and use of reading strategies, Zare and Mobarakeh (2011) reported a positive relationship between self-efficacy and use of strategies. In another study, McCrudden et al. (2005) instructed fourth grade students in reading strategies. The authors observed an improvement in the students' self-efficacy and an increase in their use of reading strategies. The result indicates how crucial knowing and applying strategies are to self-efficacy. In this respect, knowledge of strategies enables students to have self-confidence in their competence in the task. These studies are significant in that they identify the relationship between strategy instruction and self-efficacy. Even so, it is still necessary to know the predictive correlation between current strategy knowledge in reading and reading self-efficacy and how this correlation affects reading task value.

### ***Self-Efficacy and Reading Task Value***

When faced with an academic task or duty, students ask themselves "Can I perform this task?" (self-efficacy) and "Why should I do this task?" (task value). If their answer to the first question is "yes", they proceed to the next question (Why should I do this task?). Students' perceptions of self-efficacy are decisive in the next stage, namely task value. In other words, task value is intertwined with individuals' perceptions of their self-efficacy (Al-Harthy, Was, & Isaacson, 2010). In this way positive academic experiences can increase their self-efficacy beliefs (Amir & Kamal, 2011).

It is possible to argue for a positive relationship between self-efficacy and task value (Bong, 2001; Meece, Wigfield, & Eccles, 1990; Wigfield et al., 2009). Nevertheless, a more meticulous review of literature suggests that there are some other studies demonstrating not only this positive relationship but also that self-efficacy is a direct predictor of task value. However, these studies are neither abundant nor focused on reading. In one such study, Al-Harthy et al. (2010) conducted a path analysis on students of educational psychology and reported a positive interaction between self-efficacy and task value. Likewise, Azar, Lavasani, Malahmadi, and Amani (2010) carried out a path analysis with observable variables and reported that the participants' self-efficacy scores in mathematics directly predicted their task value. A similar finding was reported by Kozanitis, Desbiens, and Chouinard (2007), who concluded from their study, in which students' asking for help and teacher support in return were used as a strategy, that the students' perceptions of self-efficacy directly predicted task value. These studies on self-efficacy and task value suggest that either both of them predict accomplishment or, in only a few of them, self-efficacy predicts task value.

Under these circumstances, it is essential to know the positive relationship between metacognitive awareness of reading strategies and self-efficacy, to know that self-efficacy predicts task value, to identify the connection between awareness of strategy and task value, and, if a connection exists, to reveal the mediating role of self-efficacy. Therefore, the purpose of the present study is to investigate the explanatory and predictive correlations among metacognitive awareness of reading strategies, reading self-efficacy, and reading task value. Accordingly, an attempt was made to test the following hypotheses:

H1. Metacognitive awareness of reading strategies significantly predicts reading self-efficacy.

H2. Reading self-efficacy significantly predicts task value.

H3. Self-efficacy serves as a mediator between metacognitive awareness of reading strategies and task value.

## 2. Methodology

The present study was based on structural equation modeling, a method commonly used in studies of path analysis through latent variables. Thanks to a path analysis with latent variables, it becomes possible to reveal the complicated connections among completely different structures and to focus on the correlations among structures; in addition, the structural model is considered as the reflection of the theory at the researcher's disposal (Şimşek, 2007, p. 15).

### *The Study Model*

The exogenous variable for the structural model was metacognitive awareness of reading strategies (STRATEGY) while the endogenous variables were reading self-efficacy (SELFEFF) and reading task value (TASKV). The model can be expressed theoretically as follows: Metacognitive awareness of reading strategies predicts perceptions of self-efficacy, which, in turn, predicts reading task value. Figure 1 presents the symbolic view of the model.

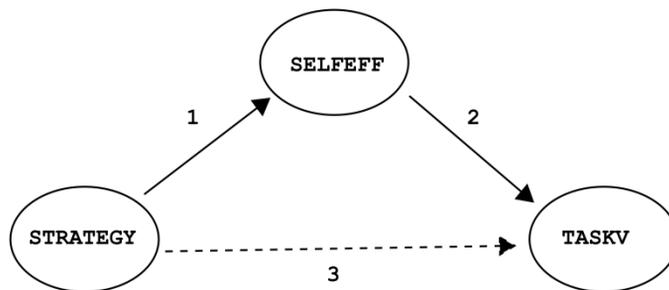


Figure 1. The symbolic view of the model

### *Sample*

The sample of the study was comprised of 370 fifth, sixth, seventh and eighth grade students from a middle school in Akcakoca. The distribution of the sample by grade was as follows: 63 fifth grade students (17%), 71 sixth grade students (19.2%), 127 seventh grade students (34.3%), and 109 eighth grade students (29.5%). It is acknowledged that the ideal number of participants to be included in the sample in studies of structural equation modeling is about 10 times as the number of observable variables. However, there is a lack of consensus on the ideal sample size, and common idea in the literature is that 200 or more participants is sufficient (Kline, 2011; Şimşek, 2007).

### *Data Collection Instruments*

The data were collected by the researcher in cooperation with the teachers during one class in the school specified in *Sample* during the 2013-2014 Academic Year. Metacognitive awareness of reading strategies was measured via the Metacognitive Awareness of Reading Strategies Inventory, which was developed by Mokhtari and Reichard (2002) and adapted to Turkish by Öztürk (2012). The inventory was designed as awareness and perceived use of reading strategies in reading for academic purposes or school subjects (Mokhtari and Reichard, 2002). Awareness and use of strategies was determined with 13 items included in the factor "global reading strategies"  $\alpha=0.85$ , (Öztürk, 2012). Reading self-efficacy and reading task value were measured through the Motivations for Reading Questionnaire, which was developed by Wigfield and Guthrie (1997). The measurement also involved some adapted items from the Questionnaire, already adapted and used by Anmarkrud and Bråten (2009) and Solheim (2011). Whereas six items for self-efficacy and seven items for task value were adapted. A five-point Likert-type scale was devised (from 1- Totally disagree to 5- Totally agree), and the scale had 26 items for the three dimensions.

**Data Analysis**

In addition to Cronbach’s alpha, the Kaiser-Meyer-Olkin (KMO) and Bartlett’s test were conducted in order to reveal the correlations among the latent variables, namely metacognitive strategies in reading, reading self-efficacy, and reading task value. On the other hand, the calculations for the confirmatory factor analysis were made through LISREL (Jöreskog & Sörbom, 1993). The indicators of goodness-of-fit were Normed Chi-Square, RMSEA, GFI, CFI, and SRMR. The reference values for the indexes are presented in Table 1 (Kline, 2011; Meydan & Şeşen, 2011; Şimşek, 2007).

**Table 1. Goodness-of-fit standards**

Fit indices	Good Fit.	Acceptable Fit
$\chi^2/df$	$0 < \chi^2/df < 2$	$2.1 \leq \chi^2/df \leq 5$
RMSEA	$0 < RMSEA \leq .050$	$0.051 \leq RMSEA \leq 0.08$
CFI	$0.95 \leq CFI \leq 1$	$0.90 \leq CFI \leq 0.94$
GFI	$0.90 \leq GFI \leq 1$	$0.85 \leq GFI \leq 0.89$
S-RMR	$0 < S-RMR \leq 0.05$	$0.06 < S-RMR < 0.08$

**3. Findings**

**Testing the Measurement Model**

First, the reliability coefficients for the latent variables were considered. The dimension reading task value had a considerably low reliability coefficient. Next, items 25 and 26 were excluded in accordance with the recommendation by the analysis program, and the reliability coefficient for the dimension increased to 0.70. The reliability coefficients for the other dimensions were as follows:  $\alpha=0.76$  for metacognitive awareness of reading strategies and  $\alpha=0.59$  for self-efficacy. Afterwards, the KMO and Bartlett’s tests were carried out. Whereas the KMO value was 0.860, Bartlett’s test yielded the following result:  $\chi^2=1785.408$ ;  $df=276$  ( $p=0,000$ ). The fact that the KMO value, used to measure the sufficiency of the sample, was higher than 0.70 and Bartlett’s test yielded a significant result at the level of 0.01 suggested that the data came from the multivariable normal distribution (Çokluk, Şekercioglu, & Büyüköztürk, 2012). Table 2 presents the correlational and descriptive statistics for the latent variables in the study.

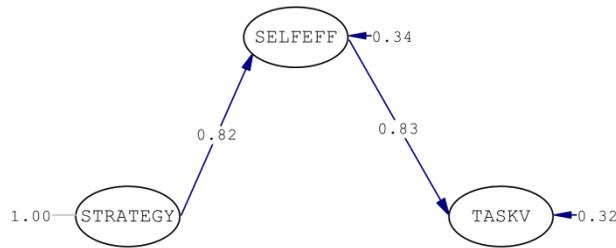
**Table 2. The correlational and descriptive statistics for the latent variables.**

	Strategy	Self-efficacy	Task value
Strategy	1		
Self-efficacy	.418**	1	
Task value	.504**	.469**	1
<i>N</i>	370	370	370
<i>M</i>	3.67	3.66	4.19
<i>SD</i>	.576	.645	.681
<i>Skewness</i>	-.463	-.080	-1.238
<i>Kurtosis</i>	.064	-.569	2.172

$p < .01$

**Testing the model before mediation**

Figure 2 presents the analysis of the regression equations for the latent variables before the test of mediation.



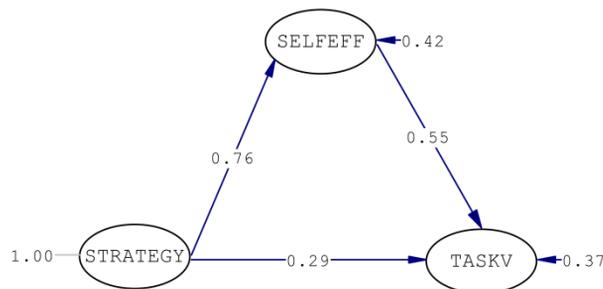
Chi-Square=518.60, df=250, P-value=0.00000, RMSEA=0.054

Figure 2. The model before the mediation

The Normed Chi-Square for the model before the mediation was lower than 5, which suggested an acceptable fit ( $\chi^2=518.60$ ,  $df=250$ ,  $\chi^2/df=2.07<5$ ). Similarly, the RMSEA was lower than 8, which indicated an acceptable fit (RMSEA=.054<8). The values for the other indexes were follows: GFI=90, CFI=94 and SRMR=0.059. While the GFI represented good fit, the SRMR and CFI had acceptable fit. Path coefficients number 1 and 2 (Figure 1) were  $\beta=.82$ ,  $t=7.51$  and  $\beta=.83$ ,  $t=5.57$  respectively, which confirmed Hypotheses 1 and 2.

**Testing the Mediating Model**

The mediating status of self-efficacy was measured in reference to the mediating conditions specified by Baron and Kenny (1986). First, the correlation between STRATEGY and TASKV, the first condition, was considered, and the standardized path coefficient was observed to be significant ( $\beta=.71$ ,  $t=6.59$ ). Similarly, the regression equation between STRATEGY and SELFEFF was significant ( $\beta=.77$ ,  $t=7.19$ ). When the variable STRATEGY was controlled, the regression equation between SELFEFF and TASKV was significant as well ( $\beta=.76$ ,  $t=6.61$ ). All these findings suggested that the regression equations in the model met the conditions specified for the test of mediation. Finally, path number 3 was added to the model to come up with the model presented in Figure 3.



Chi-Square=516.06, df=249, P-value=0.00000, RMSEA=0.054

Figure 3. The Structural Model

The Normed Chi-Square for the model was lower than 5, which suggested an acceptable fit ( $\chi^2=516.06$ ,  $df=249$ ,  $\chi^2/df=2.07<5$ ). In addition, the RMSEA was 0.54, which was lower than 8 and indicated an acceptable fit. Whereas the GFI represented good fit, the other goodness-of-fit values had acceptable fits

(GFI=90, CFI=94, and SRMR=0.59). Before the test of mediation, the path coefficient for the correlation between awareness of strategy and self-efficacy decreased from 0.82 to 0.76 whereas the one for the correlation between self-efficacy and task value decreased from 0.83 to 0.55. The correlation between awareness of strategy and task value was significant ( $\beta=.29$ ,  $t=2.14$ ). In that case, self-efficacy served as a partial mediator between awareness of strategy and task value, which confirmed Hypothesis 3. Awareness of strategy accounted for 58% of the variance in self-efficacy and 50% of the variance in task value. Self-efficacy, in turn, accounted for 30% of the variance in task value. As for the indirect influence, awareness of strategy had an influence of 0.42 on task value.

#### 4. Discussion and Conclusion

The path analysis suggests that metacognitive awareness of reading strategies has an influence on reading self-efficacy. Reading self-efficacy, in turn, affects reading task value. The test of mediation, on the other hand, indicates that reading self-efficacy serves as a partial mediator between metacognitive awareness of reading strategies and reading task value.

As can be concluded from the path analysis, metacognitive awareness and use of reading strategies constitutes a positive predictor of reading self-efficacy, a finding supported by others in the literature. In their study on the explanatory and predictive correlations among university students' math achievement, problem-solving skills, perceptions of self-efficacy and self-regulation strategies, Alcı et al. (2010) reported a positive and significant correlation between self-regulation strategies and perceptions of self-efficacy. Likewise, Gahungu (2007) observed an improvement in the self-efficacies of those who used strategies for language acquisition and reported a positive correlation (0.63) between strategies and self-efficacy. In addition, Seferoğlu and Akbıyık (2005) discovered that teachers with a lower perception of self-efficacy learnt to use a computer through courses whereas those with a higher perception of self-efficacy learnt how to use computers by trial and error. These findings imply the effects of experiences on the formation of self-efficacy. Research has demonstrated that knowledge of strategies taught through an instructional process has notable effects on the formation of self-efficacy. These findings also suggest the importance of what self-efficacy gives to individuals: "I can do this." Accordingly, it can be safely argued that self-efficacy has a decisive influence on the process by which individuals achieve meaningful and realizable targets. The reason for this is that there is a positive correlation between strategy use and self-efficacy (Bandura, 1995). On the basis of the findings of the present study and those in the literature, it can be argued that students using reading strategies will experience an improvement in their self-efficacy. As stated by Schunk (2003), self-efficacy cannot compensate for potential lack of knowledge or skills in an individual. Furthermore, it is assumed that self-efficacy affects choice and maintenance of employment. High levels of self-efficacy must be absolutely supported by strategies and content knowledge. Such stimulation as "You can do this!" is likely to have a slight improvement in self-efficacy. Students with low levels of self-efficacy tend to be weak in reading and reading comprehension. Such students are incompetent in assessing themselves (pp. 165-170). Attempts should be made to monitor these students meticulously and improve their self-efficacy. Therefore, it is recommended that sustainable applications and models should be used for arranging classroom environments.

Another hypothesis tested in the study is as to the extent to which self-efficacy predicts task value. The findings suggest that self-efficacy is a positive predictor of task value, which is supported by others in the literature. For instance, Azar et al. (2010) reported that self-efficacy is a direct predictor of task value. The positive effect of self-efficacy on task value might be attributed to the fact that individuals with higher levels of self-efficacy are motivationally stronger in task selection.

As stated by Guthrie et al. (2007), students' self-assessment helps them feel more competent in reading and carry out their tasks more enthusiastically, which can be attributed to students' monitoring themselves through self-assessment and being aware of what they are doing through metacognition. It can

be argued that those people who have reliable data on their own awareness and capacity tend to attach more value to what they are doing.

Furthermore, Liem, Lau, and Nie (2008) found that self-efficacy and task value predict mastery goal in the same direction. They also reported a positive correlation between self-efficacy and task value. A finding was reported in another study, in which students' asking for help and teacher support in return were used as a strategy and the students' perceptions of self-efficacy were observed to directly predict task value (0.66) (Kozanitis et al., 2007). According to Rueda (2011), acquired beliefs about self-efficacy also affect one's preferences, for one of the components of task value is to feel "good" at the task. The main question in task value is "Why should I do this?" (Rueda, 2011). As the review of literature suggests, self-efficacy has a direct influence on individuals' preferences. It can be asserted that self-efficacy will cause one to select a task that they attach importance or value to. All these suggest that previous research supports the data obtained from the present study and the correlational structure among metacognitive awareness of reading strategies, reading self-efficacy and reading task value.

Another finding of the present study is that metacognitive awareness and use of reading strategies affects reading task value. Sungur (2007) reported a positive correlation between metacognitive strategy use and task value (0.56). Unlike the present study, however, task value was considered as a predictor of metacognitive strategy use in Sungur's study. Even so, the correlational relationships between the two variables were significant in both studies. Considering the way these variables could affect one another, it can be argued that a positive change in one of them will lead to a corresponding change in the other.

The present study identifies the correlation among metacognitive awareness of strategies, self-efficacy, and task value within the framework of the domain of reading. The same model could be tested for other domains of learning so that the correlations among the latent variables could become more generalizable. The present study concludes that metacognitive awareness of reading strategies has a positive influence on self-efficacy. In addition, the two variables together have an effect on reading task value. The identification of these correlations will hopefully be useful for arranging the practices intended to improve primary school students with respect to their reading skills. In addition, the correlation between metacognitive awareness of reading strategies and reading task value should not be neglected, for knowledge and use of metacognitive strategies in reading are observed to be a decisive factor in task value. What to teach, how to teach and when to teach (in what order) are notable considerations in education in that they have a direct influence on whether particular skills will be acquired and whether they will be sustainable. It is one of the desired educational outcomes to train readers in a way that will enable them to use appropriate strategies, to have the desired level of self-efficacy, to assume responsibility for the task they are to do, and to be selective in reading.

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