Self-confidence as the predictor of metacognitive awareness in high school students

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Metacognitive awareness is said to be reflected by self-confidence scores, and there exists a mutual relationship between them. This study was conducted to examine the role of self-confidence in predicting metacognitive awareness in high school students and to examine whether gender, grade point average, type of high school and father's education level played a role in this relationship. The data were obtained from 390 high school students studying at two different types of high school (general and vocational) using two different scales. Research data were analyzed through hierarchical regression analysis method to determine the predictiveness. Results showed (i) the metacognitive awareness scores were moderately and highly correlated with the self-confidence level total score and sub-dimension scores; (ii) participants' self-confidence scores explained 46% of the change in metacognitive awareness scores; (iii) the type of high school and grade point average had 9% effect on metacognitive awareness scores. It is recommended to examine the relationships of metacognitive awareness and self-confidence with different variables and to conduct experimental studies. The co-development of metacognitive awareness and self-confidence in students should be emphasized by families and educators. It is thought that the current study will be useful in relation to its results for understanding the importance of self-confidence and metacognitive awareness of high school and of those at other levels.

Introduction

In recent years, the goal of education has changed and included a new function that teaches students the ability to find and use information instead of giving the information readily. Traditional education has begun abandoned day by day. Due to changing paradigms for philosophy of education that gives students access to information and teaches them where and how they can use that information, studies about nature of learning have getting placed in

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literature widely. Learning in education is not only provided by the support of family, school, or teacher, it is also realized by restructuring the information proactively as a result of taking responsibility in the learning process by the students. In this process, students should be made aware of how they can access information, how to use and control it instead of simply transferring information to students (Özsoy, Çakıroğlu, Kuruyer, & Özsoy, 2010). Effective learning takes place by enabling students to build on their prior knowledge with this awareness (Cera, Mancini, & Antonietti, 2013).

In order to gain effective learning skills, students must first believe in themselves that learning will take place. It is possible to say that students who knows themselves through self-confidence, self-efficacy skills, and know how to access information will be successful in finding, monitoring, and evaluating information in a planned and controlled manner in the cognitive process (Cera et al., 2013; Ridlo & Lutfiya, 2017). These outputs contribute positively to students' academic performance as well (Desoete, Roeyers, & Buysse, 2001).

Research on the nature of learning has always been an important area of interest in the historical process. In this context, it would be useful to point out Bandura's learning theory (1977), starting from observation, imitation, and modeling, and continuing with social cognitive learning theory. It is hypothesized that the student should be more active in the learning process and their success will increase as they take responsibility for learning (Schraw et al., 2006). To take responsibility for learning, students are expected first to believe that they will learn, to be able to find and use the information on their own, and to ensure permanent learning by assessing their knowledge. This seems possible with high level of self-confidence or self-efficacy, a sub-indicator of self-confidence, in the process of processing information (Bandura, 1997; Lenney, 1977) and with the acquisition of metacognitive awareness (Cera et al., 2013; Özsoy et al., 2010).

Theoretical framework

Definition of metacognitive awareness and its importance for students

Being aware of one's level of knowledge, locating the information, controlling, and evaluating knowledge is possible through metacognitive competence. In this respect, metacognition is addressed separately from cognitive teaching. Cognitive teaching focuses more on the use of strategies (Brown, 1987; Flavell, 1987; Schraw & Dennison, 1994). However, metacognitive processes include awareness, planning, monitoring, and evaluation processes.

Metacognitive awareness which consists of metacognitive knowledge and metacognitive control is defined as one's awareness of and ability to control thinking processes (Brown, 1987; Flavell, 1987; Schraw & Dennison, 1994) equips students with abilities with positive contributions to student achievement: to be aware of what they know, to plan, monitor, and control their knowledge, and most importantly, to evaluate knowledge. Metacognitive knowledge is an awareness consisting of strategies such as knowing what cognitive skills are and which skills should be used in specific situations. Metacognitive control is the awareness of using metacognitive knowledge strategically to achieve the goals in the learning process (Schraw & Dennison, 1994; Schraw & Moshman, 1995).

Many studies demonstrate that metacognitive awareness is an important factor in the learning process of children and adults (Cera et al., 2013; Çakıroğlu, 2007). Metacognitive awareness

also requires a certain level of self-confidence. As a matter of fact, individuals with self-confident who believe that they can undertake a task can access knowledge by proactively taking the responsibility of learning and learn as a result (Bandura, 1997). The metacognition is related to many variables and concepts such as self-confidence, self-efficacy academic procrastination, academic achievement, and problem solving (Bektas et al., 2020; Cera et al., 2013; Demir & Baloğlu, 2020; Kleitman & Gibson, 2011; Ridlo & Lutfiya, 2017; Yurdakul & Demirel, 2011). The relationship between metacognition and self-efficacy is frequently examined in previous studies. Given that self-efficacy is theoretically a sub-indicator of self-confidence (Bandura, 1997), it is considered important to examine the predictive power of self-confidence to observe whether results differ. This study is believed to contribute to the current literature by examining the effect of students' self-confidence levels on their metacognitive awareness.

The role of self-confidence in students' metacognitive awareness

The studies in the literature report that self-confidence, which affects academic performance and achievement, is used as the concepts of self-efficacy and perceived self-efficacy (Akın, 2008). Among these studies, Feltz (1988) used the concept of self-confidence similarly to self-efficacy and defined self-confidence as a belief in being able to do something. The conceptual aspects of self-confidence and self-efficacy were also associated in the context of Bandura's (1977) social cognitive learning theory.

Self-confidence, which is one of the strong predictors of academic success and defined -in the most general sense- as the belief in the self, is explained as the individuals' personal evaluation of their abilities and performances (Bandura, 1997; Lenney, 1977; Ridlo & Lutfiya, 2017). Bandura (1997) defines self-confidence as the perception of self as valuable and having beliefs that one can achieve what is desired. In this respect, self-confidence has been conceptualized as perceived self-efficacy. Self-confidence, which is a perfect combination of self-esteem and self-efficacy (Bandura, 1977), is a personality trait that can develop under the influence of school, family, and environment. Self-confidence consists of intrinsic self-confidence and extrinsic self-confidence. While intrinsic self-confidence is explained by self-love and recognition, extrinsic self-confidence is defined as the reflection of the individual's self-love and satisfaction to the environment (Sarıçam & Güven, 2012).

As presented in the social cognitive learning theory, Bandura (1977, 1997) stated that an individual's high-level beliefs in self and in achievement is effective in deciding how much motivation, effort and determination is required to complete a task and self-confidence is the belief in one's ability to act in accordance with the desired task by activating the motivation and needed resources. Arkes and Garske (1982), who identified a high level of correlation between self-confidence and motivation, also determined that self-confidence is a factor that determines motivation, and successful students have higher levels of self-confidence and motivation. It can be argued that self-confidence is an important element in students' academic achievement, motivation, acquisition of self-regulation skills and subsequent effective learning (Arkes & Garske, 1982; Pajares, 1996; Schunk, 1984; Zimmerman, 2000).

Students with metacognitive awareness can acquire the ability to find and use information. It is stated that self-confidence must first develop for the development of self-efficacy, which is related to metacognition as reported by many studies (Cera et al., 2013; Ridlo & Lutfiya, 2017; Schraw, Crippen, & Hartley, 2006; Yurdakul & Demirel, 2011). This is a remarkable finding in showing that self-confidence is a predictor of metacognition. Hence, self-

confidence skills are a key concept that has an effect on both self-efficacy and metacognition (Pajares, 2002).

Change in metacognitive awareness and self-confidence according to demographic variables

Although it is known that metacognitive awareness depends on many variables, further research is needed to identify them. Studies conducted to investigate the change of metacognitive awareness in regards to demographic variables examined different many variables such as gender (Demir & Baloğlu, 2020; Güneş, 2018; Özsoy et al., 2010; Siswati & Corebima, 2017), type of high school (Demir & Baloğlu, 2020; Kacar & Sarıçam, 2015), father's education level (Demir & Baloğlu, 2020; Güneş, 2018; Siswati & Corebima, 2017; Soner, 1995), grade point average (Evran & Yurdabakan, 2013), mother's education level and family income. Evran and Yurdabakan (2013) found that the students with a high average in their school reports had high metacognitive awareness scores. Güneş (2018) determined that high school students' metacognitive awareness did not differ according to their fathers' education level, but it differed by gender. Siswati and Corebima (2017) examined the combined effect of gender and education level on students' metacognitive awareness and found that there was no significant difference. Özsoy et al. (2010) reached the conclusion that there was no difference according to gender. However, some other studies indicated that metacognitive awareness differed according to gender (Chen, Huang, & Chou, 2016; Evran & Yurdabakan, 2013).

When the studies on the change of self-confidence according to demographic variables were examined, it was found that Marsh (1992) reported that self-confident students were more successful and Kleitman and Moscrop (2010) indicated a relationship between self-confidence and metacognitive beliefs, grades, gender, and parental attachment attitudes. Gencer (2019) determined that high school students' self-confidence levels did not change according to gender and level of father's education. Ridlo and Lutfiya's (2017) emphasis on the necessity of self-confidence to be successful is an indication that students with self-confidence have a higher average on their school reports. Some other studies found that self-confidence scores did not change according to gender, high school type and father's education level (Bilgin, 2011; Erden, 2019; Gencer, 2019; Vanaja & Geetha, 2017). Accordingly, it can be argued that self-confidence is a personality trait dependent on personal factors and internal dynamics rather than demographic variables.

Importance and purpose of the study

The steps in Bloom's taxonomy (1956) -analyzing, creating (synthesizing), evaluating- constitute the metacognitive categories of the cognitive process. The sub-factors of metacognitive awareness such as planning, monitoring, creating strategies, and evaluating have similar processes as well. In addition, individuals' knowledge and awareness of their own cognition suggests that metacognitive knowledge is related to self-confidence. The relationship between self-efficacy and metacognitive awareness (Cera et al., 2013; Schraw et al., 2006; Yurdakul & Demirel, 2011) created the need in this study to identify some of the variables that predicted high school students' metacognitive awareness and the relationship between metacognitive awareness and self-confidence. While studies in the literature examining the relationship between metacognitive awareness and self-efficacy were included, in this study, a gap was tried to be filled by examining the predictor in the relationship between self-confidence and metacognitive awareness.

This study was conducted to examine the role of self-confidence in predicting metacognitive awareness in high school students and to examine whether gender, grade point average, type of high school and father's education level played a role in this relationship. In this context, first of all, relevant studies addressing the theoretical framework of metacognitive awareness, its relationship with self-confidence and the change of these factors according to demographic variables were examined. In the light of these findings, the study aimed to identify some of the variables that predicted high school students' metacognitive awareness. For this purpose, the study sought answers to the following questions:

(1) Is there a significant difference in high school students' self-confidence and metacognitive awareness scores based on the variables of gender, grade point average, high school type and father's education level?
(2) Is there a relationship between high school students' metacognitive awareness and self-confidence scores depending on their metacognitive awareness and self-confidence scores? What is the level of students' metacognitive awareness and self-confidence scores?
(3) Do high school students' self-confidence scores, high school types and grade point averages predict their metacognitive awareness?

Method

Research Design

Quantitative research method was used in this study. The research was conducted with correlational survey model to determine to what extent high school students' metacognitive awareness was predicted by their self-confidence levels, gender, high school type, fathers' education levels, and grade point averages. Correlational survey model is used to determine the existence and degree of change between two or more variables (Cohen, Manion, & Morrison, 2018).

Study group

The study has two different samples, namely, the sample for the piloting and the sample for the main study. The pilot study conducted to determine the suitability of the Metacognitive Awareness Inventory -developed for university students- on high school students included 247 high school students, aged 15–18 years old. The main study examining the CFA analysis, in which the relationships between variables and measurement tools were verified for the final sample, consisted of 390 high school students, aged 15–18 years old.

Table 1. Descriptive statistics of the students included in the study

Variables	*n*	%
Gender		
Male	209	53.6
Female	181	46.4
Type of High School		
Vocational	213	54.6
General	177	45.4
Grade Point Average		
Poor/Failing	4	1.0
Passing grade	52	13.3
Average/Medium	158	40.5
Good	145	37.2
Successful	31	7.9

Father's Educational Level		
Primary School	117	30.0
Secondary School	105	26.9
High School	124	31.8
University Degree or Higher	44	11.3

Note: N= 390.

As seen in Table 1, 53.6% (*n*=209) of the students were males and 46.4% (*n*=181) were females. 54.6% (*n* = 213) of the students studied in vocational high school and 45.4% (*n*=177) in general high school. According to grade point averages, 1% (*n*=4) of the students had poor grades, 13.3% (*n*=52) had passing grades, 40.5% (*n*=158) had moderate grades, 37.2% (*n*=145) had good grades and % 7.9 (*n*=31) were had very good grades. Regarding fathers' education level, 30% (*n*=117) graduated from primary school, 26.9% (*n*=105) from secondary school, 31.8% (*n*=124) from high school, and 11.3% (*n*=44) from university.

Data Collection Tools

Metacognitive Awareness Inventory: The inventory developed by Schraw and Dennison (1994) and adapted into Turkish by Özsoy et al. (2010). Planning, monitoring, strategy, and evaluation sub-dimensions consist of 30 items. The Cronbach Alpha value for the inventory was calculated as .94. EFA was applied to the 30-item short form in a pilot study consisting of a study group consisting of 247 students. Similarly, in the analysis, the scale consisted of four factors and 20 items remained. Four sub-dimensions together explained 57% of the total variance. The Kaiser-Mayer-Olkin test applied to determine whether the 247 high school students participating in the pilot study were sufficient for factor analysis, was found to be .87. Barlett's Test of Sphericity was found significant.

Self-confidence Scale: The scale developed by Akın (2007) includes 33 items and two sub-dimensions: intrinsic self-confidence and extrinsic self-confidence. According to factor analysis, 43.6% of the total variance was explained and the factor loads ranged between .31 and .75. As a result of the CFA analysis performed to verify the two-factor structure of the scale, the following values were obtained: the ratio of x^2 / df was significant at the level of 1.44 ($x^2 / df = 700.48 / 488$) and the fit index values were acceptable and at good levels (RMSEA = .044, NFI = .90, CFI = .96, IFI = .96, RFI. = .89, GFI = .94, AGFI = .91, SRMR = .058) (Hu & Bentler, 1999; Kline, 2015). Cronbach Alpha value for the scale was calculated as .83. The scale is a 5-point Likert type measuring instrument.

Data Collection and Analysis

Statistical analysis of this study was carried out using SPSS 22 and LISREL 8.80 programs. Before performing the analyses, initial normality of the data analyzes were carried out on the data set. For the assumptions of Pearson correlation and hierarchical regression analysis, examined linearity, normality of regression errors, co-variance and multiple linearity assumptions were examined (Tabachnick & Fidell, 2014). The initial analyzes demonstrated that the data were suitable for other analyzes that were planned for data analysis. The students' self-confidence and metacognitive awareness scores according to gender and high school type was analyzed by using independent samples *t*-test. ANOVA was used to determine the change according to the grade point average and father's education levels. In all the statistical analyzes, the significance level was evaluated at the level of *p <.05*.

Findings

Findings regarding the validity and reliability of measurement tools

Findings regarding the Self-confidence Scale

  CFA analysis was conducted to test the compatibility and construct validity of the Self-confidence Scale on high school students in this study group, the x^2 / df ratio was found to be significant at the level of 2.11. Among other fit indices, CFI: 0.95, NFI: .95, GFI: 0.86, AGFI: 0.84, RMR: 0.06 and RMSEA value was calculated as 0.05.
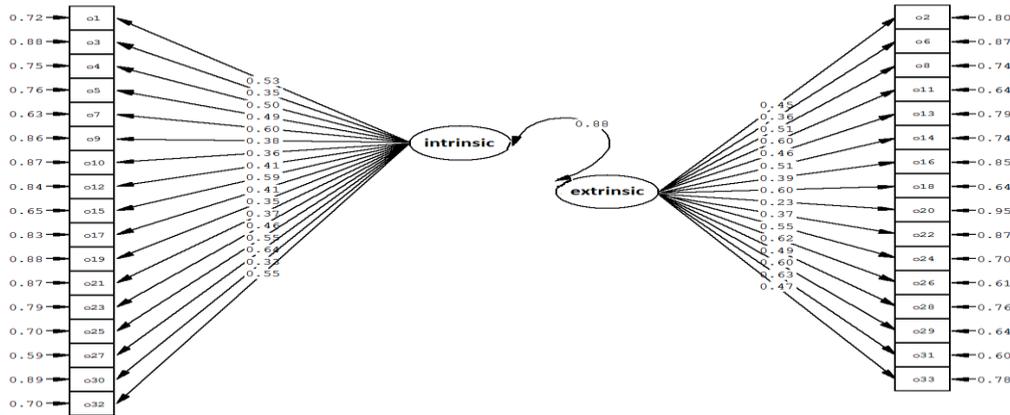
Figure 1. Self-confidence Scale CFA model – standardized factor coefficients

As seen in Figure 1, standardized factor loads varied between .23 and .64. In addition, the *t*-values for the model were between 4.36 and 13.45. The internal consistency was calculated via Cronbach's alpha to determine the reliability of the Self-confidence Scale. The reliability of the intrinsic self-confidence dimension of the scale was calculated as .82, and the extrinsic self-confidence dimension was calculated as .83. With these results, it can be argued that the Self-confidence Scale, which consists of intrinsic self-confidence and extrinsic self-confidence, was a valid and reliable tool for the sample of high school students in this study.

Findings regarding the Metacognitive Awareness Inventory

  CFA analysis was conducted to test the compatibility and construct validity of the 20-item short form obtained as a result of EFA analysis on high school students included in the sample group of this scale, which was originally developed for university students. As a result of the analysis, the *x2 / df* ratio was found to be significant at 1.97 level. Among other fit indices, CFI: 0.96, NFI: .90, GFI: 0.93, AGFI: 0.91, RMR: 0.05 and RMSEA value was calculated as 0.05. Figure 2 presents the diagram obtained as a result of CFA analysis.
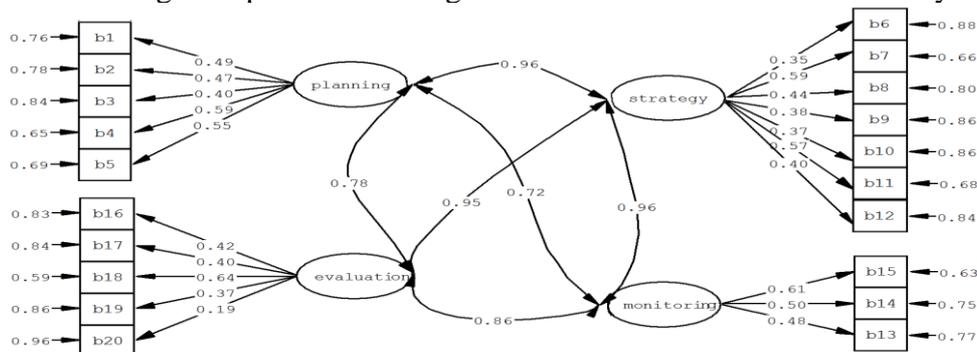
Figure 2. Metacognitive Awareness Inventory CFA model – standardized factor coefficients

As seen in Figure 2, standardized factor loads varied between .19 and .64. The *t* values for the model were found to be between 3.38 and 11.79. The internal consistency was calculated via Cronbach's alpha was found as .73 for planning, .73 for strategy, .61 for monitoring, .70 for evaluation, and .88 for the overall scale, respectively. According to these results, the Metacognitive Awareness Inventory developed for university students was a valid and reliable measurement tool to be used with a sample of high school students in this study.

Findings regarding the changes of metacognitive awareness and self-confidence scores according to demographic variables

Table 2. *t*-test results for independent samples based on gender

	$\bar{X}$	sd	df	t	p
Metacognitive Awareness					
Male	75.18	12.91			
Female	76.08	12.61	388	.70	.49
Self-confidence					
Male	130.83	16.09			
Female	130.27	17.47	388	-.33	.74

According to Table 2, there was no significant difference in the metacognitive awareness scores ($t(388) = .70$, $p > .05$) and self-confidence scores ($t(388) = -.33$, $p > .05$) based on gender as a result of the *t*-test for independent samples. In other words, self-confidence levels and metacognitive awareness levels of female and male students were similar. A series of *t*-tests were conducted for independent groups (samples) to test whether there was a significant difference in the self-confidence scores and metacognitive awareness scores of the students according to the type of high school they attended. Table 3 presents the results of the *t*-tests.

Table 3. *t*-test results for independent samples based on type of high school

	$\bar{X}$	sd	df	t	p
Metacognitive Awareness					
General	77.42	12.20			
Vocational	73.40	13.11	388	3.13	.002**
Self-confidence					
General	131.89	16.06			
Vocational	128.98	17.40	388	1.72	.087

Note: $p < .01**$.

According to Table 3, there was no significant difference between the type of high school and students' self-confidence scores ($t(388) = 1.72$, $p > .05$). However, there was a significant difference in metacognitive awareness scores in favor of students in general high schools ($t(388) = 3.13$, $p < .05$). The metacognitive awareness scores of the students studying in general high schools were higher compared to metacognitive awareness scores of students attending vocational high schools.

Table 4. One-way ANOVA results according to grade point average

	$\bar{X}$	sd	df_1, df_2	F	p	Post-hoc comparison
Metacognitive Awareness						
1. Poor/Failing	72.75	6.99				
2. Passing grade	72.96	12.38				
3. Average/Medium	73.20	13.02	4,385	6.32	.001***	2-5, 3-4, 3-5
4. Good	77.48	12.40				
5. Successful	83.81	9.57				
Self-confidence						
1. Poor/Failing	123.75	23.20				
2. Passing grade	127.90	16.48				
3. Average/Medium	129.01	16.76	4,385	2.63	.03*	3-5
4. Good	131.82	16.82				
5. Successful	138.03	13.64				

Note: $p < .05^*$, $p < .001^{***}$.

According to grade point averages in Table 4 showing the result of the ANOVA performed on students' metacognitive awareness ($F(4, 385) = 6.32$, $p < .001$) and self-confidence ($F(4, 385) = 2.63$, $p < .05$) mean scores, a significant difference was observed among the scores of groups. The result of the Tukey tests performed to determine the source of this difference showed that the metacognitive awareness ($\bar{X}$: 83.81) and self-confidence ($\bar{X}$: 138.03) mean scores of students who were successful based on their grade point average were significantly higher than students whose grade point average was medium. Metacognitive awareness mean scores of students who had good ($\bar{X}$: 77.48) school averages ($\bar{X}$: 77.48) were significantly higher than students whose grade point average was medium ($\bar{X}$: 73.20) while metacognitive awareness mean scores of students who was successful based on their grade point average ($\bar{X}$: 83.81) were significantly higher than the metacognitive awareness mean scores of students who had passing grades based on their grade point averages ($\bar{X}$: 72.96).

Table 5. One-way ANOVA results according to father's level of education

	$\bar{X}$	sd	df_1, df_2	F	p
Metacognitive Awareness					
1. Primary school or lower	75.44	13.55			
2. Secondary school	75.19	13.07			
3. High School	74.90	12.12	3,386	1.18	.32
4. University or higher degree	78.96	11.47			
Self-confidence					
1. Primary school or lower	128.65	17.90			
2. Secondary school	129.38	17.00			
3. High School	131.92	15.31	3,386	1.88	.13
4. University or higher degree	134.73	16.10			

According to Table 5, the result of one way ANOVA showed no significant difference between the groups in regards to students' metacognitive awareness ($F(3, 386) = 1.18$, $p > .05$) and self-confidence ($F(3, 386) = 1.88$, $p > .05$) mean scores based on father's level of education. Although the self-confidence scores of students whose fathers graduated from university were higher than the self-confidence scores of students whose fathers had lower level of education, this difference was not at a level to make a significant difference.

Findings regarding the relationship between metacognitive awareness and self-confidence

Table 6. Correlation values among variables

	1	2	3	4	5
1. Metacognitive Awareness	-				
2. Intrinsic Self-confidence	.63**	-			
3. Extrinsic Self-confidence	.59**	.74**	-		
4. Type of High School	.16**	.06	.10*	-	
5. Grade Point Average	.22**	.16**	.13**	.20**	-
$\overline{X}$	75.60	67.21	63.35	1.45	3.38
sd	12.76	9.02	8.88	.50	.85

Note: $p < .01**$.

As seen in Table 6, the students' metacognitive awareness scores had a positive and moderate correlation with their intrinsic self-confidence ($r = .63$, $p < .01$) and extrinsic self-confidence ($r = .59$, $p < .01$) scores and their metacognitive awareness scores had a positive and low-level correlation with the type of school variable ($r = -.16$, $p < .01$) and grade point average ($r = .22$, $p < .01$) variable. As students' self-confidence levels increased, their higher cognitive awareness scores also increased. The students' metacognitive awareness ($\overline{X} = 75.60$), intrinsic ($\overline{X} = 67.21$) and extrinsic self-confidence ($\overline{X} = 75.60$) mean scores were found to be high.

Prediction of metacognitive awareness according to self-confidence - hierarchical regression analysis

Table 7. Hierarchical regression analysis results regarding the prediction of metacognitive awareness scores

	Phase 1					Phase 2				
	B	SH	β	t	ɔ	B	SH	β	t	p
Fixed	70.01	2.87		24.42	001***	10.81	4.24		2.55	.011
Type of High School	5.34	1.27	.21	.422	001***	3.51	.98	.14	3.58	001***
Grade Point Average	3.96	.74	.26	5.34	001***	2.30	.58	.15	3.97	.001***
Intrinsic Self-confidence						.60	.08	.42	7.55	.001***
Extrinsic Self-confidence						.35	.08	.24	4.30	.001***
R^2		.09					.46			
Adj. R^2		.09					.46			
SE		12.19					9.37			
$F(sd_1, sd_2)$		2, 387					4, 385			

Note: SE: Standard Error, $p < .001***$.

The variables type of high school (β = .21, $t(387) = .42$, $p < .001$) and grade point average (β = .26, $t(387) = 5.34$, $p < .001$) were found to explain 9% of the variance regarding metacognitive awareness scores ($F (2, 387) = 19.52$, $p < .001$, $\Delta R^2 = .05$). When the effect of these significant predictors of metacognitive awareness was controlled, the intrinsic self-confidence and extrinsic self-confidence scores entered the regression equation in the second phase were found to contribute 37% to the variance rate explained and the change was significant ($F (4, 385) = 83.95$, $p < .001$, $\Delta R^2 = .37$). In the last model, intrinsic self-confidence (β = .42, $t(385) = 7.55$, $p < .001$) and extrinsic self-confidence (β = .24, $t(385) = 4.30$, $p < .001$) scores were found to be significant predictors of metacognitive awareness in high school students. The most important predictor of students' metacognitive awareness was found to be intrinsic self-confidence. In other words, a one-unit increase in students' intrinsic

self-confidence scores provided a .42-unit increase in their metacognitive awareness scores.

Discussion and Conclusion

In this study, the role of self-confidence in predicting metacognitive awareness in high school students and whether gender, grade point average, type of high school and father's education level played a role in this relationship was examined. With this regards, high school students' metacognitive scores and self-confidence scores were used.

As a result of the findings there was no difference in students' self-confidence and metacognitive awareness based on gender and father's education level. The metacognitive awareness scores of the students studying in the general high school were higher than students in the vocational high schools, but the self-confidence scores did not change according to type of high school. In addition, it was determined that the self-confidence and metacognitive awareness scores of the students with high grade point averages were significantly higher than the other types of grade point averages. While there are studies that identified no change in students' metacognitive awareness scores according to gender (Demir & Baloğlu, 2020; Özsoy et al., 2010; Siswati & Corebima, 2017), supporting the results of this study, there are also other studies (Chen et al., 2016; Evran & Yurdabakan, 2013; Güneş, 2018) that concluded the exact opposite. Hence, this finding can be interpreted as that high school students' metacognitive awareness may differ according to the study group's characteristics. These characteristics can be as age, gender, grade point, high school type, economic conditions, environment of the schools. Consistent with the findings of this study, Demir & Baloğlu's (2020) showed a difference in metacognitive awareness scores according to type of high school. Similar to this study, many studies (Demir & Baloğlu, 2020; Güneş, 2018; Siswati & Corebima, 2017; Soner, 1995) concluded that metacognitive awareness of students did not change according to their father's level of education. This finding may be due to the fact that fathers spend less time with their children because of social and economic roles. The students' metacognitive awareness (Evran & Yurdabakan, 2013) and self-confidence scores (Kleitman & Moscrop, 2010) changed according to grade point average. The self-confidence scores did not change according to gender, type of high school and father's education level (Bilgin, 2011; Erden, 2019; Gencer, 2019; Vanaja & Geetha, 2017). The students' self-confidence scores may depend more on internal variables or personal characteristics rather than external factors.

The findings demonstrated that participating students' intrinsic self-confidence, extrinsic self-confidence and metacognitive awareness mean scores were high. It was found that gender and father's education level were not related to other variables and that metacognitive awareness was significantly correlated with type of high school and grade point average. Hence, these two demographic variables were taken into the regression equation. In addition, it was observed that there was a significant relationship between metacognitive awareness scores and intrinsic and extrinsic self-confidence scores. Kleitman and Gibson's (2011) finding that a strong relationship existed among students' self-confidence and metacognition supports the findings of this study. There are many other studies consistent with these results in the literature (Bektas et al., 2020; Kleitman & Stankov, 2007; Ridlo & Lutfiya, 2017).

Type of high school and grade point average variables had a 9% effect on metacognitive awareness scores. The self-confidence scores were added to the hierarchical regression analysis, and it was seen that had a 37% contribution. According to this result, metacognitive awareness levels increase as self-confidence levels increased and self-confidence had a

predictive role in the acquisition of metacognitive skills. The similar studies pointing to a predictive role of self-confident on students' metacognitive awareness (Bektas et al., 2020; Kleitman & Gibson, 2011; Kleitman & Stankov, 2007; Yurdakul & Demirel, 2011) shows these two variables which have an important role in education. In addition, it can be stated that one of the most important predictors of metacognitive awareness is self-confidence.

The students can develop the strategies they will use in achieving their goals by increasing their metacognitive awareness when they are self-confident and can plan, monitor, control and evaluate the learning process by organizing their cognition for effective learning. Cera et al. (2013) stated that when students have higher self-confidence, their metacognitive skills more develop, and they approach to learning the more positively. Self-confident students believe they can do what they set out to do. Thanks to this belief, knowledge acquisition is carried out in a strategic, planned, and controlled manner (Yurdakul & Demirel, 2011). The students not only build new knowledge, but also increase their academic achievements. In conclusion, it can be inferred that self-confidence is built as students' achievements increase and effective learning can take place. It was concluded that as students gain self-confidence, they will also develop their levels metacognitive awareness which determine how they use what they know and how they construct information by controlling it from planning to evaluation. Thus, they can construct new knowledge using their prior knowledge. With a high level of self-confidence acquisition, metacognitive awareness will also develop; when they are more aware of their own abilities, they will be more motivated to learn and will be able to cope with difficulties and problems more consciously (Cera et al., 2013).

Implications and Limitations

It should be taken into consideration that the findings obtained from this study with the help of Metacognitive Awareness Inventory reflect students' metacognitive awareness and not their metacognitive knowledge and skill levels. The co-development of metacognitive awareness and self-confidence in students should be among be emphasized by families and educators. It is recommended to examine the relationships of metacognitive awareness and self-confidence with different variables and to conduct experimental studies. In the future, the effect of self-confidence and metacognitive awareness on the learning level should be examined experimentally. Based on this study, research on the self-confidence of secondary school students should be conducted. Practitioners should support teachers to include self-confidence and metacognitive awareness-based activities in the learning and teaching process based on the research results. It is thought that the study will be useful for families, educators and students in understanding the importance of self-confidence and metacognitive awareness.

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