Metacognitive Awareness and Autonomous Learning Skill Levels in Gifted Children[1]

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Abstract

This study examines the relationship between metacognitive awareness and autonomous learning skill levels of gifted students. The research sample consists of 338 gifted students in the 3-4-5-6-7-8th grade levels studying at the Science and Art Center affiliated to the Ministry of National Education in Izmit province. The research was designed using the correlational screening model, one of the quantitative research methods. The research data were collected using Metacognitive Awareness A and B Scales and Autonomous Learning Scale. In the study, it was found that there was no significant relationship between metacognitive awareness and autonomous learning skills of gifted students studying at the 3-4-5th grade levels. It was also found that there was a moderate, positive, and significant relationship between metacognitive awareness and autonomous learning skills of gifted students studying at the 6-7-8th grade level. Furthermore, it was found that the metacognitive awareness levels of gifted students studying at the 3-4-5th grade level were at a medium level, while the metacognitive awareness levels of gifted students studying at the 6-7-8th grade level were at a high level. Moreover, it was determined that the autonomous learning skill levels of gifted students studying at 3-4-5th grade levels and 6-7-8th grade levels were medium.

Keywords: Gifted, metacognition, Metacognitive awareness, Autonomous learning, Autonomous learning skills.

Introduction

The power of technology is growing faster than the wisdom with which human beings created and dominated it (Tegmark, 2019). Creative and gifted individuals, who are very few in society, are thought to be responsible for the changes and transformations experienced with technology (Enç, 1979). When the mental characteristics of gifted individuals are examined, it is noted that they have extraordinary mental energy and their minds are constantly active (Rooper, 1982). Based on these characteristics, it can be said that gifted children have a natural ability to take responsibility for their learning. In the globalized world, with the development of technology, the ways of accessing information have become richer along with the information density. In this context, apart from the planned information presented to the individual, he/she can access the information he/she wants at the speed he/she wants with the technological tools of the modern world. Considering such an advantage, the individual should be able

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to control and structure his/her learning and take over the management of learning processes (Açıkgöz, 2003). This can only be possible through autonomy in learning. Autonomous learning (AL) is the ability to take responsibility for one's own learning (Benson, 2001; Broady & Kenning, 1996; McCrocklin, 2014). In the Ministry of National Education 2023 Vision Document (2018) published in Turkey, it is underlined that learning is the self-responsibility of the learner and that individuals should take responsibility for controlling their learning processes. When the literature was examined, it was seen that studies on AL skills were mostly related to language learning skills, and the samples were mainly selected from higher education students (Confessore & Park, 2004; Deregözü, 2014; Hsieh, 2010; İmre, 2015; Kaya, 2012; Lowe, 2009).

AL, which has become more prominent in Turkey, especially with the recent introduction of lifelong learning, describes a process in which students set goals, make plans, and make learning decisions due to their responsibility to take action (Derrick, 2001). Littlewood (1999) states that autonomous learners have the independent capacity to make and sustain choices that can direct their behavior. According to him, this capacity consists of desire, which consists of motivation and confidence, and ability, which consists of knowledge and skills. Meyer (2001) states that autonomous learners are active in learning, interact with their environment, and realize successful learning by controlling the learning process by their own will. While Nunan (1997) states that the most prominent characteristics of autonomous learners are acting independently from the classroom, teacher, and course resources, Keegan (1996) explains them as risk-taking and having foresight.

Gifted/Talented and Autonomous Learning

AL is defined as an individual's ability to set goals for learning, to make plans for the successful progress of the learning process, to choose appropriate methods and techniques, and to evaluate the stages at the end of the process; in short, it is defined as the individual's ability to take responsibility for learning (Holec, 2009). While examining the characteristics of these individuals in studies conducted with gifted individuals, it is stated that they have a strong sense of curiosity, learn quite easily and quickly, persist in goal-oriented behaviors, have an extensive vocabulary, have extraordinary capacities in processing information, learn to read and write earlier than their peers, have the responsibility, have high self-awareness and self-control, comprehend and analyze complex events and situations quite quickly, and have increased attention spans in subjects that interest them (Ataman, 2004; Clark, 2015; Jackson & Klein, 1997; Jackson & Peterson, 2003). Considering these characteristics of gifted individuals, it has been brought to the agenda that it would not be sufficient for them to develop their potential through learning in typical educational environments and that children need to be supported with different academic programs (Chan, 2001; Clark, 2015; Horn, 2002; Van-Tassel-Baska, 2005). In studies on students' learning styles, it is seen that gifted students prefer independent learning styles much more (Arseven, 2016; Chan, 2001; Kahyaoğlu & Pesen, 2013; Tüysüz, 2013).

In today's world, where learning to learn is accepted as the primary goal, the individual must be self-educating and self-actualizing rather than a learner. In this context, it is sufficient for the individual to learn how to learn and master the cognitive processes of learning. Although metacognition, which refers to the individual's cognitive processes and the knowledge of the individual about all these processes, was conceptualized as “metacognition” and gained a place in the literature with Flavell's (1979) theory, it gained popularity mainly in the 2000s (Demir & Kaya, 2015; Karakelle, 2012; Livingston, 2003;

Senemoğlu, 2011). The concept of metacognition represents a system in terms of its meaning. Individuals' mastery and awareness of this process come to the fore when the system's functioning is considered. Flavell (1979) explains this awareness with the concept of metacognitive awareness (MCA) and defines it as the awareness of the cognitive experiences of individuals as well as the acquisitions that occur after their experiences. In essence, MCA involves the individual's pre-planning of all the stages of the learning process, determining the necessary strategies, and pre-planning for the situations that may occur. In this respect, it has recently attracted much attention in the literature (Akın & Çeçen, 2014; Demir & Doğanay, 2009; Schraw & Dennison, 1994).

Metacognition can be expressed as a meta-system when it is considered as both a structure and the organization of this structure. Considering the learning experience after the individual's interaction with the environment, the idea that the individual has awareness within this system brings the concept of MCA to the agenda. Flavell (1979) defines MCA as the individual's thinking about the cognitive acquisitions and cognitive experiences gained through these acquisitions. MCA is a way of thinking that controls an individual's behavior and is found in all stages of the learning process. It is explained as planning, evaluating, observing, actively participating in the process, and controlling it in learning information (Doğanay, 1997). In a way, MCA is also seen as the ability to plan, monitor, organize, and implement behavior to increase success (Schraw & Dennison, 1994).

Giftedness and Metacognitive Awareness

Gifted individuals have a higher level of cognitive performance within their age group (Ataman, 2018; Dilekli, 2017; Glass, 2004; NAGC, 2010). These individuals are interested and curious in problem-solving (Bildiren, 2011; Hodge & Kemp, 2000; Levent, 2011; Rotigel, 2003), mentally agile, solve problems quickly, attract attention with the new methods they use, enjoy difficult questions and restructure the problem (Koshy, 2002; Miller, 1990). The reason why cognitive skills are given importance in the identification process of gifted individuals in many countries, especially in Turkey, may be that gifted individuals have high performance in terms of cognitive skills and differ from their peers in this aspect.

MCA is defined as the individual's control, monitoring, and evaluation of his/her cognitive processes (Bonds, Bonds, & Peach, 1992). Breed, Mentz, and Westhuizen (2014) define MCA as being willing and conscious about learning, planning, operating the process, and organizing, reconstructing, and producing the information obtained. Students' MCA enables them to plan their learning and use more strategic thinking techniques, which increases their success (Georghiades, 2000; Schraw, 1998). Kuhn and Dean (2010) argue that the development of metacognition is directly proportional to age and intelligence. They state that individuals determine how they will learn and think based on the learning experiences they experience due to their age or intelligence and that they create strategies for themselves. In addition, when the research on MCA and the characteristics of gifted students are considered, it is realized that they support each other. Studies conducted in this direction confirm this view. Holton and Gaffney (1994) concluded in their research that gifted students have more cognitive awareness than other students and are noticeably ahead in independent learning and problem-solving. Similarly, Schofield and Ashman (1987) found that gifted students were more successful in acquiring, planning, controlling, and measuring metacognitive knowledge than their peers.

Considering the educational activities to be offered to gifted individuals, it can be said that they need different, aware, and rich educational experiences that support all their developmental areas (Camcı

Erdoğan, 2014). In addition, it is also stated that gifted individuals need to be cognitively stimulated to solve complex and challenging problems and to examine, question, and research in-depth on topics of interest (Koshy, 2002). Such learning experiences of gifted individuals can only be realized by preparing learning designs that include metacognitive processes (Taber, 2007). When the learning experiences of gifted individuals are examined, it is seen that they learn mostly on their own and independently. However, they have been observed to develop unique learning styles that match metacognitive components (Risemberg & Zimmerman, 1992). Considering the added value that gifted individuals, who are in 2% of society, will provide in terms of guiding and shaping societies, it is essential to determine their AL skill levels and MCA levels in order to improve their current mental development and the education programs to be offered to them to support this development. No study addressed AL skills and MCA concepts when the literature was examined. In this respect, it is thought that this study, conducted to determine the MCA and AL skills of gifted students, will make significant contributions to the literature. This study examined the relationship between MCA and AL skill levels of gifted students studying at the 3-4-5-6-8th grade levels.

Problem statement

This study studied the problem "Is there a relationship between MCA and AL skill levels of gifted students?".

Sub-problems

1. What is the level of MCA of gifted students in grades 3-4-5?

2. What is the level of MCA of gifted students in grades 6-7-8?

3. What is the level of AL skills of gifted students in grades 3-4-5?

4. What is the level of AL skills of gifted students in grades 6-7-8?

Method

Research Model

This study aimed to examine the relationship between MCA and AL skill levels of gifted students, so the research model was designed as a quantitative research method and correlational survey research design. The relational research design is used to determine the relationships between two or more variables and to make predictions about cause and effect (Büyüköztürk et al., 2018).

Population Sample

The study population consists of specially gifted students (n=388) between the third and eighth grades in the Science and Art Center affiliated to the Ministry of National Education in Izmit province in the 2021-22 academic year. Since the population was reached in the study, a separate sample was not determined. The distributions of the gender and grade level variables of the students belonging to the research sample are shown in Tables 1 and 2 separately for students in grades 3-4-5-6-7-8.

Table 1

3-4-5. Gender and Grade Level Distribution of the Research Sample Studying at Grade Levels 3-4-5

Variable	N	%
Gender		
Female	104	52.0
Male	96	48.0
Class Levels		
3rd grade	40	20.0
4th grade	70	35.0
5th grade	90	45.0
Total	200	100

When Table 1 is analyzed, 52% (104) of the students in the sample are female, and 48% (96) are male. At this point, it is seen that the sample is balanced in terms of gender. When we look at the distribution of the sample in terms of grade levels, 20% (40) were 3rd-grade students, 35% (70) were 4th-grade students, and 45% (90) were 5th-grade students.

Table 2

6-7-8. Distribution of the Research Sample Studying at the 6th-7th-8th Grade Levels According to Gender and Grade Level

Variable	**N**	%
Gender		
Female	104	55.3
Male	84	44.7
Class Levels		
6th grade	79	42.0
7th grade	68	36.2
8th grade	41	21.8
Total	188	100

When Table 2 is analyzed, 55.3% (104) of the students in the sample were female, and 44.7% (84) were male. When we look at the distribution of the sample in terms of grade levels, 42% (79) were 6th-grade students, 36.2% (68) were 7th-grade students, and 21.8% (41) were 8th-grade students.

Data Collection Tools

The study used the Personal Information Form, Autonomous Learning Scale (ALS), and Metacognitive Awareness A and B Scales (MCA-A and MCA-B).

Autonomous Learning Scale (ALS)

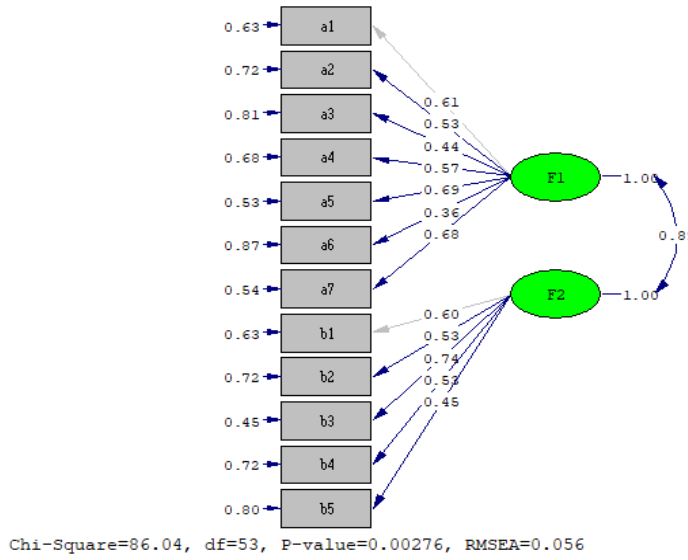
In the study, the ALS developed by Macaskill and Taylor (2010) and adapted into Turkish by Arslan and Yurdakul (2015) was used to determine students' autonomy levels. The scale is a scale in which learners make self-evaluations about themselves. Consisting of 12 questions and two sub-dimensions (independent learning and study habits), each question is used according to the preference of one of the five answer options. During the adaptation process of the ALS into Turkish, reciprocal translations were made to prevent language confusion. The validity and reliability levels of the scale were checked with statistical measurements, and all of them were found to be at the desired level (Arslan & Yurdakul, 2015).

In the study, Cronbach's alpha reliability analysis was performed to determine the scale's reliability in the gifted sample. Cronbach's alpha coefficients for reliability were .822 for the scale's total score for gifted students in grades 3-4-5 and .771 for gifted students in grades 6-7-8. These results show that the discrimination of the scale items for gifted students is high. In item discrimination values, it is stated that items between 0-0.19 are not good discriminators, those between 0.2-0.39 are good discriminators, and those above 0.4 are very good discriminators (Büyüköztürk, 2002; Mcmillan & Schumacher, 2010).

The scale's validity applied to the research sample in grades 3-4-5 was also reanalyzed. Confirmatory factor analysis was performed for the scale's validity, and the scale's factor loadings are shown in Figure 1.

Figure 1

ALS factor loadings



In the study, Confirmatory Factor Analysis (CFA) was conducted to determine whether the factor structure in the original form of the ALS was confirmed for the gifted research sample at the 3-4-5th grade levels. The CFA was conducted with 200 gifted students (3rd, 4th, and 5th graders). In CFA, many fit indices are used to determine the adequacy of the model. CFI, NFI, NNFI, RFI, IFI, and GFI indices .90-acceptable, .95-perfect fit (Bentler, 1980; Bentler & Bonett, 1980; Marsh, Hau, Artelt, Baumert, & Peschar, 2006). AGFI index indicates a .85-acceptable, .90-excellent fit, while the SRMR index indicates a .05-excellent, .10-acceptable fit (Schermelleh-Engel & Moosbrugger, 2003). For RMSEA, .08-acceptable, .05-excellent fit (Browne & Cudeck, 1993; Byrne & Campbell, 1999). PNFI and PGFI values of .50 and above are acceptable (Meyers, Gamst, & Guarino, 2006), and .95 and above indicate a perfect fit (Meydan & Şeşen, 2011). In the study, fit indices were determined in the model obtained in CFA, and the minimum chi-square value (χ2=86.04, Sd=53, p=0.00276) was found to be significant. The fit indices were determined as RMSEA=0.056, GFI=0.93, AGFI=0.90, CFI=0.97, NFI=0.93, NNFI=0.97 RFI=0.92, IFI=0.97, SRMR=0.053, PGFI=0.63 and PNFI=0.75. When these values are evaluated in terms of acceptable and excellent fit criteria, it is considered that the two-factor structure determined in CFA is compatible, and the factor structures in the original form are confirmed for gifted students (3rd, 4th, and 5th graders).

Since the ALS was adapted for the 11-16 age group (Arslan & Yurdakul, 2015), CFA was conducted only for 3rd, 4th, and 5th-grade students in this study. The two-factor structure of the scale (independent learning and study habits) was confirmed for 3rd, 4th, and 5th-grade students. Since the age group to which the scale was adapted by Arslan and Yurdakul (2015) was appropriate for 6th, 7th, and 8th graders, CFA was not conducted for 6th, 7th, and 8th graders in this study.

Metacognitive Awareness Scale (MCAS) Form A

The MECAS-A form developed by Sperling et al. (2002) and adapted to the Turkish language by Karakelle and Saraç (2007) was used for students studying at the 3-4-5th grade levels. The questionnaire consists of 12 items: half of the scale questions include knowledge of cognition, and the other half provides the organization of cognition. The items in the scale were rated on a three-point Likert scale (always, sometimes, never). Statistical measurements checked the validity and reliability levels of the scale, and all of them were found to be at the desired level (Karakelle & Saraç, 2007).

In the study, Cronbach's alpha reliability analysis was performed to determine the scale's reliability in the gifted sample. Cronbach's alpha coefficients for reliability were determined as .647 for the whole scale. These results show that the items in the scale are very good discriminators for gifted students. The item-total correlation values show that 0-0.19 is not a good discriminator, 0.2-0.39 is a good discriminator, and 0.4-plus is a very good discriminator (Büyüköztürk, 2002; Mcmillan & Schumacher, 2010).

Metacognitive Awareness Scale (MCAS) Form B

In the present study, the MCAS-B form developed by Sperling et al. (2002) and adapted into Turkish by Karakelle and Saraç (2007) was used for 6th, 7th, and 8th-grade students. The scale consists of 18 items, and when the dimensions of the scale are examined, half of the questions include knowledge of cognition, and the other half includes the organization of cognition. The items on the scale are on a five-point Likert scale (never, rarely, sometimes, often, always). Statistical measurements checked the

validity and reliability levels of the scale, and all of them were found to be valid and reliable at the appropriate level (Karakelle & Saraç, 2007).

In the study, Cronbach's alpha reliability analysis was performed to determine the scale's reliability in the gifted sample. Cronbach's alpha coefficient for reliability was .813 for the whole scale. Since item-total correlation values above 0.4 are accepted as very good discriminators (Büyüköztürk, 2002; Mcmillan & Schumacher, 2010), these results indicate that the items in the scale are very good discriminators for gifted students.

Since Form A of the MCAS was adapted for 3rd, 4th, and 5th-grade students and Form B was adapted for 6th, 7th, 8th, and 9th-grade students (Karakelle & Saraç, 2007), CFA was not conducted for these scales in this study.

Data Collection Process and Data Analysis

For the research, permission was obtained from Sakarya University Social and Human Sciences Ethics Committee dated 07.04.2021 and numbered E-61923333-050.99-23997. In line with this, permission was obtained from the Kocaeli Governorship to conduct the relevant research at the Izmit Science and Art Center. The study collected data from students in grades 3-4-5-6-7-8 at Izmit Science and Art Center in Kocaeli province between October 11 and November 28 in the 2021-22 academic year through online forms created by the researcher. The research data were collected from volunteer students in grades 3, 4, 5, 6, 7, and 8. The application time of the data collection tools used to collect the research data was approximately 15 minutes.

In the study, the first of the data analysis procedures was to examine whether the data met the standard spread assumptions. In the examinations conducted in this context, it was found that the skewness value for the total scores of the MECAS for the sample of students studying at the 3-4-5th grade levels was -.523 and the kurtosis value was .277, while the skewness value for the independent learning dimension of the AL scale was -.730, the kurtosis value was .448, the skewness value for the study habits dimension was -.549, the kurtosis value was -.094, and the skewness value for the total scores was -.545 and the kurtosis value was -.240. For the sample of students in grades 6-7-8, the skewness value for the total scores of the MECAS was -.366 and the kurtosis value was -.432, while the skewness value for the independent learning dimension of the ALS was -.296, the kurtosis value was -.110, the skewness value for the study habits dimension was -.666 and the kurtosis value was .065, and the skewness value for the total scores was -.402 and the kurtosis value was -.375. Skewness and kurtosis values were determined at ±1.5 for all variables. Since these values were accepted within the appropriate limits for the normality assumption, according to Kline (2015), the univariate normality criterion was assumed to be met. Parametric statistics were applied after obtaining evidence that the data were normally distributed. The data were analyzed with SPSS version 25. Pearson correlation was used to examine the relationship between students' AL and MCA levels. Büyüköztürk (2002) states that a correlation coefficient value less than 0.30 indicates a weak relationship, between 0.30-0.70 indicates a moderate relationship, and more excellent than 0.70 indicates a high level of relationship.

Findings

The results of the binary relationship between ALS and MCA levels of gifted students studying at the third, fourth, and fifth grade levels are shown in Table 3.

Table 3

3-4-5. Correlation for the Dual Relationship between ALS and MCA Levels of Gifted Students Studying at Grade Levels 3-4-5

		AL	MCA
AL	Correlation Coefficient	1	-,015
	P	.	,836
	N	200	200
MCA	Correlation Coefficient	-0,15	1
	P	,836	.
	N	200	200

When Table 3 is examined, there is no significant relationship between the ALS and MCA of gifted students studying at 3rd, 4th, and 5th grade levels (r= 0.836, p>.05).

Table 4 presents the results of the binary relationship between ALS and MCA levels of gifted students studying at 6th, 7th, and 8th grade levels.

Table 4

6-7-8. Correlation for the Dual Relationship between ALS and MCA Levels of Gifted Students Studying at Grade Levels 6-7-8

		AL	MCA
AL	Correlation Coefficient	1,000	,673**
	P	.	0,002
	N	188	188
MCA	Correlation Coefficient	,673**	1,000
	P	0,000	.
	N	188	188

Table 4 shows a moderate, positive, and significant relationship between the ALS and MCA levels of gifted students studying at the 6th, 7th, and 8th grade levels (r= 0.673, p<.05).

The mean and standard deviation scores of the MCA levels of gifted students studying at the 3-4-5th grade levels are shown in Table 5.

Table 5

3-4-5. MCA Levels of Gifted Students Studying at Grade Levels

MCA	$\bar{X}$	Standard Deviation
Total Score	31.00	3.04

When Table 5 is examined, the MCA levels of the gifted students studying at the 3rd, 4th, and 5th-grade levels ranged between 21-36, with a mean score of 31.00 and a standard deviation of 3.04.

The mean and standard deviation scores of the MCA levels of gifted students studying at the 6-7-8th grade levels are shown in Table 6.

Table 6

6-7-8. MCA Levels of Gifted Students Studying at Grade Levels

MCA	$\bar{X}$	Standard Deviation
Total Score	71.84	8.63

When Table 6 is examined, the MCA levels of the gifted students studying at the 6th, 7th, and 8th-grade levels ranged between 49-90, with a mean score of 71.84 and a standard deviation of 8.63.

The mean scores and standard deviation values for the ALS levels of gifted students studying at the 3-4-5th grade levels are shown in Table 7.

Table 7

3-4-5. ALS Levels of Gifted Students Studying at Grade Levels

AL	$\bar{X}$	Standard Deviation
Independent Learning	28.51	4.58
Study Habits	19.79	3.72
Total Score	48.30	7.51

When Table 7 is examined, the mean scores and standard deviation values of the ALS of the gifted students studying at the 3rd, 4th, and 5th-grade levels participating in the study are 28.51 +4.58 for independent learning and 19.79 +3.72 for study habits. The AL levels of the study participants ranged between 27-60, with a mean score of 48.30 and a standard deviation of 7.51.

The mean scores and standard deviation values for the ALS levels of gifted students studying at the 6th-7th-8th grade levels are shown in Table 8.

Table 8

6-7-8. ALS Levels of Gifted Students Studying at Grade Levels 6-7-8

AL	$\bar{X}$	Standard Deviation
Independent Learning	28.10	3.70
Study Habits	18.89	3.33
Total Score	47.00	6.26

When Table 8 is examined, the mean scores and standard deviation values of the ALS of the gifted students studying at the 6-7-8th grade levels participating in the study are 28.10+3.70 for independent learning and 18.89+3.33 for study habits. The AL levels of the study participants ranged between 29-60, with a mean score of 47.00 and a standard deviation of 6.26.

Discussion

The study concluded that no significant relationship exists between MCA and ALS levels of gifted students studying at the 3-4-5th grade levels. At the same time, there was a moderate positive and significant relationship between MCA and ALS levels of gifted students studying at the 6-7-8th grade levels. This result can be interpreted as a correlation between MCA and ALS of gifted students as their age (grade level) increases.

When the education programs applied to students in Science and Art Centers (SAC) are examined, it can be said that the implementation principles of these programs support the research results (MEB, 2019). In the program principles, the Support Education Program, which is carried out with gifted students studying at the 3-4-5th grade levels, aims to develop the skills of cooperation, communication, entrepreneurship, research, problem solving, critical thinking, creativity, decision-making, awareness of responsibility, effective use of resources, and in this process, planning and implementation belong to teachers (MEB, 2019). In this respect, it is seen that students at this level primarily work with the teacher in the process. When the Individual Talents Awareness and Special Talents Development programs applied to gifted students in grades 6-7-8 are examined, it is seen that they support the results of the research. Students start the Individual Talents Awareness Program at SAC at the 6th-7th-8th grade level. In this program, it is assumed that students begin the program by having acquired the skills listed in the Support Education Program, and it is essential for students to identify their talent areas in this program. In the SAC directive (2019), students can conduct in-depth studies in various disciplines in the program, implemented for no more than two academic years, to recognize students' talents. In addition, counselors take necessary measures to carry out project studies by considering interdisciplinary relations. In the Special Talents Development Program, the student becomes the center of the work and the person who manages the process. In this context, as the directive explains, implementing educational measures that increase and support students' ALS and MCA as they get older supports the research results. However, according to the results of the study conducted by Cotton (2010), it was determined that applying self-regulation skills such as planning, note-taking, and controlling the result as teaching strategies to gifted students supported students' metacognitive development. In addition, Berber's (2019) study determined that out-of-school activities, such as homework organized for gifted

students, used their self-regulation skills of deep learning, goal orientation, and management strategies. In this context, implementing activities designed for the ALS of gifted students will contribute to students' MCA.

In the study, both MCA and ALS levels of gifted students studying at the 3-4-5th grade levels were found to be at a medium level. In addition, it was observed that students' levels of independent learning, one of the sub-dimensions of AL, were significantly higher than their study habits. According to Williams (2003), gifted children have MCA about their learning styles and what helps and hinders their learning processes. Gifted students stand out with their extraordinary cognitive development compared to their peers. In this context, it is essential to understand their abilities at an early stage (Renzulli & Reis, 1986). To support their extraordinary cognitive development, these students need to solve complexities in their areas of interest, conduct in-depth research, examine, and question; they need to acquire metacognitive skills (Koshy, 2002). To recognize the talents of the student, the family, and the teachers have a great deal of work to do first. Morawska and Sanders (2009), in their study of families of gifted children, found that families need support in parenting skills and meeting their children's educational needs. In their study with classroom teachers, Gökdere and Ayvacı (2004) concluded that teachers were not sufficiently aware of their roles in the education of gifted children and thought that gifted children should attend special programs instead of school. In addition, implementing programs that support teaching approaches that emphasize the connections between gifted students and metacognitive skills should be considered (Barfurth, Ritchie, Irving, & Shore, 2009). With the implementation of the SAC model in Turkey, which started in 1993, SACs have assumed great responsibility for the education of gifted students. Based on "early diagnosis," considered a special education requirement, the diagnosis that enables gifted students to enroll in SAC has been reduced to the 1st grade at the earliest (ÖRGM, 2021). When the measures taken for gifted students in Turkey are considered, it is seen that they support the results of the research. As stated in the principles of SAC education and training activities, educational activities are carried out on the premise of individual education plans (IEP) prepared by the student's performance and academic needs, and these plans address all developmental areas of the gifted student in integrity. These student-centered plans include activities for students to acquire high-level cognitive skills (MEB, 2019). Considering the research sample, SAC students (gifted students) in grades 3-4-5 are the student groups who receive education in the first year of the Support Education Program (SEP) and the Individual Talents Recognition Program (ITRP). In this respect, SEP aims to provide students with high-level cognitive skills such as communication, cooperation, critical thinking, creativity, learning to learn, scientific research, effective decision-making, and effective use of resources ..., while in ITRP, activities are planned for students to realize themselves and to realize attitudes and skills specific to each field (MEB, 2019). In this context, it can be said that the moderate level of both AL and MCA of SAC students, especially those studying at the 3rd, 4th, and 5th grade levels, is compatible with the training they receive. The study conducted by De Vreeze Westgeest and Vogelaar (2022) concluded significant changes in students' metacognitive development with the implementation of the cognitive education program prepared for gifted students.

The study determined the MCA levels of gifted students in grades 6-7-8 at a high level. In the literature review, the scarcity of studies on determining students' MCA levels draws attention. However, it has been observed that there are studies with similar results to the results of the research, although they do not contain similarities in sampling (Aydın, 2022; Katman, 2019; Özsoy & Günindi, 2011; Schofield &

Ashman, 1987; Varçın, 2022). Aydın's (2022) study concluded that pre-service teachers' metacognitive knowledge levels, organization of this knowledge, and awareness characteristics were reasonable. In Katman's (2019) study, it was determined that the MCA of secondary school students was at a medium level. In Özsoy and Günindi's (2011) study, it was concluded that pre-service teachers have medium-high level MCA. Schofield and Ashman (1987) found that gifted 5th and 6th-grade students were more successful in acquiring metacognitive knowledge, planning, controlling, and measuring cognitive expertise than their peers. In his study, Uslu (2016) concluded that the general MCA of pre-service teachers was high. Varçın's (2022) study with 6th-grade students determined that students' MCA was above average. These results are consistent with the results of the current study.

The ALS levels of gifted students studying at the 6th-7th-8th grade levels were medium. In addition, it was observed that students' levels of independent learning, one of the sub-dimensions of AL, were higher than their study habits. When the studies conducted in the literature are examined, although the scarcity of studies involving the determination of AL levels draws attention, the result of Ilıman's (2018) study that the AL levels of 11th-grade students are high supports the results of this study. In addition, studies on the learning styles of gifted students (Arseven, 2016; Chan, 2001; Kahyaoğlu & Pesen, 2013; Tüysüz, 2013), which support the research results, found that students preferred independent learning styles.

In terms of their development in SAC, gifted students in grades 6-7-8 continue their education mainly in the ITRP or Special Talents Development (STD) programs. While activities are carried out for the student to realize himself/herself and to develop his/her skills in ITRP, in STD, it is planned to carry out original works with advanced knowledge, skills, and behaviors acquired by conducting in-depth examinations and research in discipline/disciplines by being at the center of the work. The responsibility and functioning of the whole process belongs to the student (MEB, 2019). In this context, it can be said that SAC students, especially those studying at the 6th-7th-8th grade level, have medium ALS levels and high levels of MCA, consistent with the training they receive.

Recommendations

The study found a relationship between the metacognitive awareness and autonomous learning skill levels of gifted students in grades 6, 7, and 8. In this context, activities designed around these concepts can contribute to the cognitive development of gifted students. Furthermore, professional development workshops can be organized for teachers to prepare sample lesson activities to enhance students' metacognitive awareness and autonomous learning skills. New studies can be conducted by creating a sample group of students with different intelligence levels. In conclusion, while this research provides significant findings in understanding the autonomous learning skills and metacognitive awareness levels of gifted students, there is a need for expanded and more diverse studies due to the limited sample and data collection methods.

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