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The Relationship between Mathematics Teachers' Democratic Behavior and Students' Mathematics Success

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ABSTRACT

Here the correlation between mathematics teachers' democratic behavior in the learning process and elementary school students' success in mathematics is investigated. For this purpose, descriptive and relational survey models are used. The study sample comprised 276 female and 246 male, 6th to 8th graders in the city of Diyarbakir, Turkey. The sample was chosen at random from six different elementary schools and undertaken during the second term of the 2011-2012 academic year. Data were collected using a "Democratic Behavior (DB) Scale" developed by the researchers. Data analysis was subject to mean and standard deviation, non-parametric MWU and KWH tests as well as the Spearman and Brown Prediction Formula reliability coefficient. Respectively, a moderate, positive and meaningful correlation was found between math teachers' democratic conduct in the learning process and students' success in mathematics.

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Keywords:
Democratic behavior, students' success, mathematics, mathematics teacher.

Introduction

The term *democracy*, meaning a system in which people make decisions on varying subjects in consensus or collaboration, was first introduced and commonly used in ancient Greece, combining the words "demos" (people) and "krates" (laws) (Woolf, 2007). A system created for controlling political authority, democracy is considered to be the best governing system upholding human principles; bringing equality and freedom; and assuring human rights (Can, 2007; Lansford, 2007). A population in which democracy is well established guarantees and protects freedom of speech (Glickman, 1999). In democratic societies tolerance, responsibility, respecting human rights and equality are highly valued (Büyükdüvenci, 1990).

Democracy is a system for controlling political authority; however, it is also a way of life and a social philosophy (Uluğ, 1997). The role of education is vital in democracy becoming a way of life (Aydemir & Aksoy, 2010). According to Glickman (1999), democracy is a way of life and a theory of how people learn. Research conducted internationally indicates that education is the vital component differentiating between an individual having a democratic reaction to an event and one that does not (Özalper, 2006).

Democracy is not genetic, but rather a learned behavior. Thus, democratic values and behavior are acquired through listening and reading (Harber & Serf, 2006, 986). Through these methods, individuals are able to reach their own potential (Knight & Pearl, 2000, 214).

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Schools are the initial (Glickman, 1999) and most fundamental institutions for nurturing educated individuals for a democracy (Bay, Kaya, & Gündoğdu, 2010). In particular, contemporary scholars such as John Dewey, Paulo Freire, Henri Giroux, Stuart Hall, and Ben Levin's thoughts on democracy and learning (Daniel & Soloman, 2008) have influenced education.

Concepts such as: critical thinking, dialog, debate, tolerance, open and liberal choices, group participation, equality, creativity and accepting variety have been incorporated into the education system through their efforts (as cited in Daniel & Soloman 2008, Portelli & Soloman). According to Dewey (1966), school is a social environment which prepares students to join society, teaching them their rights and responsibilities as an individual. Children nourished in such an environment will later become individuals who can influence communal decisions, know their rights and responsibilities, thus advancing democracy and raising their life standards (Özalper, 2006).

Democracy does not appear out of thin air; on the contrary, it is nourished by learned societies which incorporate democratic ideas and applications into their own lives (Jenlink & Jenlink, 2008).

For democratic culture to flourish in schools, democratic teaching environments are needed. Within such environments, students learn independent decision making, self-control (Demircioğlu, Mutluer, & Demircioğlu, 2011), creative thinking (Gümüş, 2002), critical thinking, displaying objectives, taking responsibility, utilizing research, seeking alternatives, defending their beliefs rationally and being open to new ideas (Kocoska, 2009). Students are educated according to their interests, abilities and capabilities (Yazıcı, 2011). Students also gain a democratic awareness and personality, displaying democratic values, attitudes and behaviors. They adhere to the social structure and construct a democratic lifestyle (Biçer, 2010; Erdem & Sarıtaş, 2006; Gömleksiz & Çetintaş, 2011; Gömleksiz & Kan, 2008; Köse, 2009). In short, a democratic education must apply democracy's fundamental principles and satisfy education's essential necessities (Oelkers, 2000, 15).

According to Gömleksiz (1998), an education system's ultimate role is to raise individuals with democratic values, because teaching the student the practical applications, values and skills of democracy is of the utmost importance (Özalper, 2006). Kıncal & Işık (2003) deem that democratic values develop from concepts such as: equality, respect for life, freedom, impartiality, honesty, comprehension, collaboration, confidence, tolerance, sensitivity, responsibility, accepting divergence, security and peace. It is only possible to raise individuals who have adopted democratic values into their own lives into a democratic learning environment with teachers who fully believe in these values (Çankaya & Seçkin, 2004).

An egalitarian teacher educates their class with democratic values, such as sovereignty, freedom, equality, individualism and social awareness (Wraga, 1998, 2-9). A democratic teacher should have the following attitudes toward education: He or she envisions the classroom as a laboratory for applying a democratic lifestyle (Wyett, 1997), forms a participatory classroom, is equal and respectful of student rights (Demir, 2010), is neither too strict nor too casual (Güleç & Balçık, 2009), uses motivation instead of the punishment/reward system (Yalçın, Durmuş, & Demirtaş, 2009), incorporates subjects the students are interested in into the schedule, and displays students' work (Mclennan, 2009), should consider students interests and abilities (Ektem & Sünbül, 2011), uses a student centered education approach, teaches the student how to reach and learn information (Hecht & Ram, 2010), takes individual differences into account and applies specialized teaching techniques (Friedman, Galligan, Albano, & O'Conner, 2009), encourages improvement in students problem solving, inquiry and critique skills (Sişman, Güleş, & Dönmez, 2010), considers the student to be a valuable individual, and supports articulation of thought (Gözübüyük, 2011), creates awareness in students of their learning and behavior responsibilities (Mullins, 1997), gives students tasks and responsibility in governing the class (Gözübüyük, 2011); organizes the classroom so as to promote students' talents, helps students understand such concepts as human rights, tolerance, responsibility, freedom, etc. (Yeşil, 2003), encourages collaborative work and communication among contemporaries (Angell, 1991), makes decisions centered on student resolve to make the classroom more democratic, and uses life-oriented activities (Harwood, 2001), assures all students partake in the curriculum equally (Wraga, 1998).

It is imperative that teachers appreciate the criteria which have been shaped according to democratic principles and values and uphold democratic continuation through their behavior (Genç, 2006, 44).

According to Ackley, Colter, Marsh, and Sisco (2003), Ercoşkun and Nalçacı (2008), Gökçe (2002), Ozan, Türkoğlu, and Şener (2009) and Raywid (1976), democratic learning environments improve students' academic success. Indeed, Glickman (1999) asserts that students learn better than ever in a democratic learning environment. Is it possible to affirm the same assumption for the subject of mathematics, which is thought to be the hardest subject to learn in Turkey (Basar, Ünal, & Yalçın, 2002), because learning mathematics is considered, by students, to be a difficult process to begin with (Gürbüz, Toprak, Yapıcı, & Doğan, 2004)?

In Turkey, as in other countries, students tend to dislike mathematics, are apprehensive and even fear the subject (Işık, Çiltaş, & Bekdemir, 2008). This situation arises in elementary school and progressively gets worse through each school year. The students have a negative view of mathematics and develop self-doubt. Even worse, students start to believe they are not smart enough to learn mathematics and decide it is not a subject for them. Mathematics education and teachers' attitudes play an important role in this dilemma (Baykul, 1999). Most teachers are unaware that their attitudes are negative and hurtful during the learning process (Özalper, 2006). Teachers' lesson instruction, attitude toward the student, lesson wording, actions and manners can be off putting to the student, thus creating a dislike towards mathematics education (Başar, Ünal & Yalçın, 2002). Getting students to like mathematics lies in the teachers' hands. The teacher should be objective, trustworthy, respectful, tolerant, patient, understanding, mature, impartial, interested, happy, kind, courteous and polite in the learning environment (Özalper, 2006). These attributes should also be democratic teachers' behavior.

It is clear that a great deal of research has been conducted concerning teachers' and prospective teachers' democratic attitudes and behavior in learning (Aydemir & Aksoy, 2010; Daniel & Solomon, 2008; Demir, 2010; Demircioğlu, Mutluer, & Demircioğlu, 2011; Ercoşkun & Nalçacı, 2008; Ektem & Sünbül, 2011; Genç, 2006; Gömleksiz & Çetintaş, 2011; Harwood, 2001; Rainer & Guyton, 1999; Şimşek, 2011; Yalçın-Durmuş, & Demirtaş, 2009; Yazıcı, 2011). However, no research results have been found explaining the correlation between teachers' democratic attitudes and student success in mathematics. Do mathematics teachers' democratic attitudes have an effect on student success? Is there a correlation between mathematics teachers' democratic attitudes and student success? The answers to these questions are a point of conjecture. The hypothesis of this research is the positive correlation between mathematics teachers' democratic behavior in the learning process and students' success in mathematics. However, this hypothesis must be supported by research results. The lack of study on this subject must therefore be addressed. This has been achieved to some extent with this study, where the correlation between mathematics teachers' democratic behavior in the learning process and students' success in mathematics has been explored. It is believed this research will be beneficial to the Ministry of Education, experts in program development and teachers alike.

The main aim of this study is to find if a correlation exists between mathematics teachers' democratic behavior in the learning process and students' success in mathematics. In pursuit of this aim, the following sub-aims must be addressed.

- What are students' opinions on the democratic behaviors of middle grades mathematics teachers?
- Do students' opinions on the democratic behaviors of middle grades mathematics teachers differ statistically according to gender?
- Do students' opinions on the democratic behaviors of middle grades mathematics teachers differ statistically according to class?
- Is there a meaningful statistical correlation between elementary mathematics teachers' democratic behaviors and students' mathematics success?

Method

Descriptive and relational survey methods were used to find if there is a correlation between middle grades mathematics teachers' democratic behavior and student success in mathematics (via grade). Survey methods reflect the situation exactly as it is being studied (Karasar, 2009; Balcı, 2004). On the other hand, the relational survey is a research method that focuses on finding differences between two or more variables and/or the amount to which a variable fluctuates (Karasar, 2009).

Population and Sampling

The population consisted of 6th to 8th graders in the city of Diyarbakır, Turkey, during the second term of the 2011-2012 academic year. A sample was chosen at random from 6th to 8th graders in six different Diyarbakır elementary schools and consisted of 276 females and 246 males, 523 students in total.

The Development of the Data Collection Tool

To develop the data collection tool for this study, a literature review was conducted. Next, middle grades mathematics teachers based in Diyarbakır were asked their opinions and thoughts on the democratic education structure. An item pool was developed using these thoughts and opinions. Consequently, a Democratic Behavior (DB) Scale was prepared, comprised of 10 negative and 32 positive items. These were presented to faculty members at Dicle University College of Education Elementary School Education and Educational Sciences to verify their validity for data collection (Karasar, 2009). After being analyzed by the experts, the 42 item data collection tool was converted to a 5-point Likert type rating scale. The necessary corrections were made on the draft scale in accordance with the experts' views and assessment, making it suitable for the pre-trial.

The data collection tool is composed of two parts. The first part consists of students' personal history (these being gender, classroom and mathematics grade from the previous term). The second part is the DB Scale.

The draft scale was tested on 105, 6th to 8th graders at Şair Sırrı Hanım Elementary School in Diyarbakır to gauge validity and reliability. The initial analysis report of the scale showed the KMO (Kaiser-Meyer-Olkin) coefficient as 0.67 and the Bartlett test value as 1843.262. The Bartlett test result is significant at 0.05 levels (p=0.000). According to Büyüköztürk (2002) if the KMO coefficient is higher than 0.60 and the Bartlett test is significant, the test is suitable for factor analysis of the data. The analysis result shows a Component Matrix with 29 functioning items, consisting of 2 negative 0.35 and >0.35 items and 27 positive items. These 29 functioning items were also analyzed using factor analysis and the results were KMO=0.85, Bartlett test=1403.163. The Bartlett test result is significant at 0.05 levels. The scale has one factor and explains 47.701% of the variation in total. The scale's Cronbach Alpha reliability coefficient was found to be .92. With these results in mind, the scale has been found to be highly reliable.

In preparing the data collection questionnaire, the following alternatives were presented: *totally agree, highly agree, agree, vaguely agree, and don't agree.* Middle grades students were asked to choose one of these options. The scales alternatives were scored for positive items as: totally agree 5 points, highly agree 4 points, agree 3 points, vaguely agree 2 points, don't agree 1 point and vice versa for the negative items.

Once the validity and reliability of this data collection tool was confirmed, a questionnaire was produced by the researchers and given to the students during class. Students were given a specific time to answer before the questionnaires were collected.

The Analysis of the Data

The data collected from the students were analyzed using the computer package program SPSS 17.0 (Statistical Package for Social Sciences). The analysis sought to determine middle grades mathematic teachers' democratic behavior as perceived by their students' using; "gender", "class" and "mathematics class report card grade". To see if the DB scale responses were normally distributed, the Kolmogorov Smirnov Z (KSZ) test was applied to the findings. The results of this test are shown in Table 1.

Table 1. Normal distribution test

Test	n	$\overline{X}$	SD	KSZ	p
DB Scale	523	2.15	.67	2.75	.000*

p<0.05

The results of the KSZ test in Table 1 show that the DB Scale scores were not normally distributed (p<.05). According to Büyüköztürk (2010), if the variant is constant but does not have a standard

distribution, Spearman and Brown's Prediction Formula reliability coefficient can be used to determine the relationship between two variables. Thus, this study used non-parametric Mann Whitney U (MWU) and Kruskal Wallis H (KWH) tests as well as the Spearman and Brown Prediction Formula reliability coefficient.

Findings

The findings of this study have been listed below according to the answers being sought.

Findings on the Democratic Behavior of Middle Grades Mathematics Teachers

The sample mean and standard deviation assessment of students' opinions on middle grades mathematic teachers' democratic behavior is given below in Table 2.

Table 2. The results of the sample mean and standard deviation assessment of students' opinions on middle grades mathematic teachers'

Item	$\overline{X}$	SD
I find the teachers behavior fair in class.	4.04	1.26
I find the teachers attitude and behavior democratic in class.	4.01	1.25
Our teacher lets us have our say in class.	4.56	0.80
Our teacher values all the students' equally.	3.97	1.36
Our teacher treats successful and unsuccessful students the same.	3.92	1.40
Our teacher calls all students by their name.	4.33	1.08
I believe my teacher likes me.	3.96	1.33
Our teacher treats all students equally.	4.00	1.30
Our teacher tends to call on students' that are in the front of the class.	4.13	1.35
Our teacher relates to our predicaments equally.	3.98	1.30
Our teacher takes criticism from the students seriously.	3.88	1.34
We determine the subjects of class projects and performance work with our teacher.	3.22	1.64
We determine class rules with our teacher.	3.22	1.65
Our teacher values our thoughts.	4.23	1.11
Our teacher gives students the grades they deserve.	4.39	1.15
Our teacher is interested in us.	4.24	1.10
Our teacher is more interested in unsuccessful students.	2.87	1.52
Our teacher takes into consideration our opinion on lecture function.	4.16	1.16
Our teacher considers our input on lecture activity.	4.07	1.26
We determine the seating arrangement with our teacher.	3.06	1.69
I get an answer when I ask my teacher a question.	3.92	1.37
My teacher does not force me when I don't want to get up in front of the class.	4.49	0.98
My teacher encourages me to solve problems.	3.98	1.37
I can freely tell my teacher if I don't understand a subject.	4.17	1.16
Our teacher conducts the lesson so we can understand it.	3.66	1.62
If we don't understand the subject, our teacher goes over it again.	4.40	1.04
I can freely express my thoughts in class.	3.92	1.28
Our teacher gives us ample time to solve problems.	4.05	1.26
If I have a problem with the lesson, my teacher helps me.	4.03	1.31

When we evaluate the sample mean and standard deviation assessment of students' opinions on middle grades mathematic teachers' democratic behavior in Table 2 (Max:5, Min:1), we find the lowest sample mean to be ($\overline{X}$=2.87) in answer to "*Our teacher is more interested in unsuccessful students'*" and the highest sample mean to be ($\overline{X}$=4.56) in answer to *"Our teacher lets us have our say in class."*. The sample mean of the 29 items in the DB Scale is the "*highly agree"* answer, with 3.96. To the questions *"Our teacher calls all students' by their name"*; *"Our teacher gives students' the grades they deserve"*; *"Our teacher is interested in us."*; *"My teacher does not force me when I don't want to get up in front of the class."*; *"If we don't understand the subject,*

our teacher goes over it again." the students mostly answered *"totally agree"*. To the questions *"I find the teachers behavior fair in class."; " I find the teachers' attitude and behavior democratic in class."; " Our teacher values all the students' equally."; " I believe my teacher likes me."; " Our teacher treats all students' equally."; " Our teacher considers our input on lecture activity."; " My teacher encourages me to solve problems."; " If we don't understand the subject, our teacher goes over it again."; " Our teacher behaviors the lesson so we can understand it."; " I can freely express my thoughts in class."* the students mostly answered *"highly agree"*. To the questions *"We determine the subjects of class projects and performance work with our teacher."; " We determine class rules with our teacher."; " We determine the seating arrangement with our teacher"* the students answered *"agree"*.

Findings on the Gender Variable

The results of the MWU test on students' views in the DB Scale according to gender is shown in Table 3.

Table 3. The results of the MWU test according to gender

gender	n	$\overline{X}$	ss	t	p	MWU	p	Average
female	276	3.93	.780	.963	.336	33490.0	.790	259.84
male	246	3.99	.667					263.36

According to the findings in Table 3, no meaningful deviation was seen in the DB Scale according to the *"gender"* variable (U=33490.00, p>.05). All students had a positive response to the DB Scale. Taking into account the means, we see both male and female students answered *"agree"* in general. In other words, both male and female students believed their mathematic teachers behave democratically in class.

Findings on the Class Variable

The results of the KWH test on students views in the DB Scale according to the *"class"* variable is shown in Table 4.

Table 4. The results of the KWH test according to class

Class	n	Average	sd	KWH	p
6th year	173	273.90			
7th year	185	263.47	2	2.532	.282
8th year	165	247.88			

According to the findings in Table 4, no meaningful deviation was seen in the DB Scale according to the *"class"* variable (p>.05). When the averages are calculated, we see 6th graders find their mathematic teachers more democratic than 7th and 8th graders.

Findings on the Correlation Between Mathematics Teachers' Democratic Behavior in the Learning Process and Students' Success in Mathematics

To investigate a possible correlation between mathematics teachers' democratic behavior in the learning process and students' success in mathematics, the Spearman and Brown Predictability Formula reliability coefficient has been used. The results are shown in Table 5.

Table 5. The correlation between mathematics teachers' democratic behaviors and students' success in mathematics

	Mathematics Teachers' Democratic Behaviors		
	n	r	p
Students' Success in Mathematics	521	.310	.000

*p<0.01

According to the findings in Table 5, there is a moderate, positive and meaningful correlation between mathematics teachers' democratic behaviors in the learning process and students' success in mathematics ($r=0.310$, $p<0.01$). Thus, it can be stated that as mathematics teachers' democratic behaviors increase, students' mathematic success increases. According to the reliability coefficient ($r=0.096$), it is likely that the total variant of 9.6% in students' mathematic success is related to teachers' democratic behaviors.

Conclusion and Discussion

When the correlation between mathematics teachers' democratic behavior in the learning process and students' success in mathematics was researched here, it was found that middle grades students rated their teachers behavior as democratic ($\overline{X}=3.96$). With this result, it can be said that students agree that their middle school mathematics teachers display democratic behavior in the learning process. The findings of this study show similarities to the results of Demir's (2010) study where it was found that 5th year students believed their teachers to have democratic behavior in the learning process. However, other studies have reported negative findings. For example, Yalçın-Durmuş and Demirtaş (2009) found that high school students believed their teachers did not display democratic behavior in governing the class room, while teachers, contrary to the students, thought their behavior was completely democratic. Findings like these seem to indicate an area for future study. A mixed methods research study with observations of teacher-student interactions and teacher interviews would be helpful in trying to explain what students are perceiving in their classes.

Teachers' democratic behavior positively impacts on the learning process in many ways. For example, there are results which show teachers' democratic behavior contributes favorably to students' behavior towards learning (Rainer & Guyton, 1999; Şimşek, 2011) and strengthens the social structure of the class room (Diessner, 1991). In a study of elementary school mathematic classes conducted by Ryan and Patrick (2001), it was found that teachers' perceived support favorably strengthened self-regulatory learning ability as well as lessening disruptive behavior.

Teachers' behavior, attitude and deeds clearly have an effect on student behavior (Dickinson, 1990). Teachers' democratic behavior encourages students' to learn (Harwood, 2001), to make decisions in democratic groups and to actively take part in class room discussions (Harwood, 2001; Sehr, 1997; Wraga, 1998). In this study, it was found that students believed teachers actively encouraged problem solving ($\overline{X}=3.98$). Thus, it can be said that middle grades students believed that their mathematics teachers encouraged them in the learning process.

Democratic education begins with taking into account students' notions and thoughts (Clapper, Downey, Hauger, & Riggan, 2010) and it is paramount students' can freely express themselves (Clapper, Downey, Hauger, & Riggan, 2010). According to Kocoska (2009), democratic class rooms give students a great freedom to express their viewpoints. In a democratic class room, it should be possible to express your views without any restrictions or interference from the teacher. Teachers should not require students to listen, investigate, remember or create again subjects and projects they have taught in the learning process. They must organize the learning process to suit students' needs (Kocoska, 2009). In this study, it is apparent students thought that they could freely express their thoughts in class ($\overline{X}=3.92$) and teachers paid attention to these views ($\overline{X}=4.23$). In a study conducted by Şimşek (2011) on elementary school students, it was also found that students freely expressed themselves in the class room. Thus the results of the present study support Şimşek's findings.

For teachers to treat all students equally is of vital importance in the democratic learning process. There are no privileges in democratic education (Özalper, 2006) and the notion of equality is a fundamental principle (Wraga, 1998). According to Karakütük (2001), it is important in democratic education for the teacher to be unbiased and treat students equally in the learning process. Contrary to these views, White (1969), Norman (1975), Wellington (1986) and Ahston and Watson (1998) argue that teachers cannot be impartial in the learning process, because teachers' personal values and prejudices will affect their decision making (cited in Harwood, 2001). However, teachers should put their personal values and prejudices to one side during the learning process otherwise - as well as being undemocratic - it could potentially damage the relationship between teacher and student. Wraga's (1998) proposed solution to this problem is of particular

significance. If the relationship between teacher and student is poor, the students' views could be considered for the solution. In this study, it was found that students thought teachers treated them equally ($\overline{X}$=4.00). With this result, it seems that middle grade students believed that mathematics teachers behaved with the principle of equality toward their students. On this subject, a study conducted by Şimşek (2011) and Gökçe (2002) found teachers behaved equally to students in the learning process. Also, a study by Genç (2006) found students believed their teachers did not discriminate between them. Thus, it can be stated this study supports the findings of Şimşek, Gökçe, and Genç.

The feedback from the study showed that students felt that they could freely tell their teachers they did not understand the subject ($\overline{X}$=4.17) and subsequently teachers repeated the subject ($\overline{X}$=4.40). This feedback is similar to the findings of Gökçe's study (2002). Thus, it can be concluded that mathematics teachers repeat a subject when students do not understand it.

In democratic education, respect is shown to every individual student's character (Özalper, 2006). Thus, teachers must be respectful and understanding towards their students. Also, teachers' should display a positive attitude, manner and behavior. Consequently, students might start imitating their teachers (Harber & Serf, 2006). According to the findings of these studies, students believed their mathematics teachers knew every individual's name ($\overline{X}$=4.00), cared about students' input in class activities ($\overline{X}$=4.07) and their expectations ($\overline{X}$=4.16). In other words, it seemed that mathematics teachers in this study displayed a positive attitude, manner and behavior towards their students.

Based on student perceptions, it can be stated that mathematics teachers who consider the thoughts and expectations of students during class preparation, use a student-centered education approach. According to Samancı (2010), it is extremely difficult to teach democratic behavior and manner in a teacher-centered education approach. Therefore, teachers should apply student-centered education methods and techniques in elementary school to teach students democratic behavior and manner. Hecht and Ram (2010) also advocate teachers using student-centered education methods in their democratic classrooms, because a student-centered education approach completely fulfills democratic educations objectives criteria (Yılmaz, 2009).

In this study, we found that gender has little or no impact on student views of democratic behavior of their mathematics teachers. This finding shows similarities to the results of Genç's (2006) research. Another important finding of the present study is that (age) grade has no influence upon students' views regarding their teachers' democratic behavior in the classroom. If we consider the averages between groups, it is seen that 6th graders find their mathematics teachers' to be more democratic in their classroom manner than 7th and 8th graders. What is interesting here is that as students progress in grade, they find their teachers to be less democratic. This finding may be explained by 6th graders being new to their schools, perhaps not knowing their teachers as well as other students, through wanting to obey school rules and wanting to avoid conflict with their teachers. The results shown in the Yalçın-Durmuş and Demirtaş' (2009) study support this conclusion.

The study results show a moderate, positive and meaningful relationship between students' mathematic success and teachers' democratic behavior ($r=.310$, $p<0.01$). Moreover, a study conducted by Ackley, Colter, Marsh, & Sisco (2003) shows teachers who encouraged student participation in class favorably affected academic success. With this conclusion, it can be stated that teachers' democratic behavior is an important variable to student success. Also, a study conducted by Levpuscek and Zupancic (2009) and Wallace (2009) concluded that there was a positive correlation between teachers' attitudes in class and academic success. Thus, the results of the present study support the findings of Ackley, Colter, Marsh, and Sisco, Levpuscek and Zupancic and Wallace. All of this research indicates that as democratic manner in teachers increases, so does academic success.

It seems, as indicated by students in this study, that advice and suggestions given on democratic education has been heeded by mathematics teachers. We conclude that mathematics teachers value their students (Gözübüyük, 2011), highly regard the equality principle (Wraga, 1998) and allow students to comfortably and freely express their thoughts (Samancı, 2010). Taking into account the findings of this study, elementary school teachers are advised that they can enhance the academic achievements of their

classes by behaving more democratically. Especially, teachers instructing older students at an advanced level of education should show the necessary sensitivity towards democratic teacher behavior.

By implication our findings support assertions that education curricula must enable democratic traditions to form in elementary schools and should be revised accordingly. To this end, teachers and students should be given training seminars to strengthen democratic culture. All teachers should therefore receive applied education on student-centered learning methods. To cultivate democratic teachers, all pre- and in- service education programs should incorporate appropriate knowledge of human rights and those of the child. While this study advances, from a student perspective, our understanding of the link between mathematics teachers' democratic behavior and success in learning the subject, the effects of teachers' democratic manner when teaching different educational levels and diverse subjects remains to be further investigated.

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