

Agile Leadership as An Antecedent of School Effectiveness: A Relational Investigation on Teachers*

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Abstract

Uncertainty, competition, and changes in needs arising from developments in the fields of globalization, science, and technology affect not only for-profit organizations but also schools providing education services. Since schools are expected to be effective in this challenging situation, agile leadership characteristics are searched for in school managers. The purpose of the study was to see if school administrators' agile leadership attributes predicted school effectiveness, and it was conducted using the relational survey model. Data is collected by 605 public school teachers in Istanbul from 2020 to 2021 with the School Effectiveness Index and Marmara Agile Leadership Scale. While the prominent findings do not create a significant difference in agile leadership perceptions according to teachers' gender, education level, seniority, and age, they do create a significant difference according to school levels. While the effectiveness of school as perceived by teachers does not show great differences based on their gender or amount of education. It has been determined that there are considerable differences according to the school levels, ages, and seniority of the teachers. Finally, it was found that school administrators' agile leadership characteristics predicted school effectiveness in a positive and significant way.

Keywords: Leadership, Agility, Agile Leadership, School Effectiveness

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Okul Etkinliğinin Bir Öncülü Olarak Çevik Liderlik: Öğretmenler Üzerine İlişkisel Bir İnceleme*

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Öz

Küreselleşme, bilim ve teknoloji alanlarında yaşanan gelişmeler ile ortaya çıkan belirsizlik, rekabet ve ihtiyaçların değişmesi kâr amacı güden örgütleri etkilediği kadar eğitim hizmeti sunan okulları da etkilemektedir. Bu zorlu durumda okulların etkili olması beklendiğinden okul müdürlerinin çevik liderlik özelliklerine sahip olması beklenmektedir. Araştırmada okul müdürlerinin çevik liderlik özelliklerinin okul etkililiğini yordayıp yordamadığı amaçlanmış ve araştırma ilişkisel tarama modeline göre gerçekleştirilmiştir. Araştırmada veriler İstanbul'da devlet/ kamu okullarında eğitim öğretim 2020-2021 yılında görev yapan 605 öğretmenden Okul Etkililiği İndeksi ve Marmara Çevik Liderlik Ölçeği yardımıyla toplanmıştır. Öne çıkan bulgular göre öğretmenlerin cinsiyetlerine, eğitim düzeylerine, kıdemlerine ve yaşlarına göre çevik liderlik algılarında anlamlı bir farklılık oluşturmazken, okul kademelerine göre anlamlı farklılık oluşturmaktadır. Öğretmenler tarafından algılanan okul etkililiği öğretmenlerin cinsiyetlerine, eğitim seviyelerine göre anlamlı bir farklılık göstermezken; öğretmenlerin görev yaptığı okul kademelerine, yaşlarına ve kıdemlerine göre anlamlı farklılık gösterdiği belirlenmiştir. Son olarak okul müdürlerinin çevik liderlik özelliklerinin okul etkililiğini olumlu yönde ve önemli ölçüde yordadığı tespit edilmiştir.

Anahtar Sözcükler: Liderlik, Çeviklik, Çevik Liderlik, Okul Etkililiği

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Introduction

The institutions that provide formal education services are schools. According to Şişman (2020), schools are social education institutions created to ensure the continuity and stability of countries, social integration, and the transfer of cultural and social heritage within the education system. In this sense, schools as an organization are expected to reach their desired goals and be effective. In other words, effectiveness can be defined as the ability to achieve the desired result in general terms. A successful school is one that contributes to all aspects of student development (Özdemir, 2000). The view that an effective school has a great contribution to student achievement (Weber, 1971) allows the development of education policies (Edmonds, 1979). The “Coleman Report” is based on an examination of the inputs and outputs that exist in the education process and draws attention to the importance of the link between school inputs and student performance (Coleman et al., 1968; Hanushek, 1979). School effectiveness research has focused on the process and examined the examples of small schools in more depth (Brookover, 1978; Edmonds, 1979; Rutter, 1980). Later research involves pilot applications with developed training programs (Hanushek, 1979; Miller et al., 1985). Effective schooling, conceptually, can be defined as the outcomes that reflect the teaching, demonstrate the availability of quality (acceptably high levels of achievement) and equality (Lezotte, 1989).

There are many studies determining the characteristics of an effective school. For example, Weber (1971) identified the most prominent features of an effective school as strong leadership, high expectations, a positive atmosphere, a strong emphasis on reading, use of phonetics, individualization, and careful evaluation of student development as school success factors. Strong instructional leadership, high expectations of student achievement, stress on basic skills, a secure and good school climate, and regular evaluation of student growth are the five most critical features of an effective school, according to Scheerens and Creemers (1989). As emphasized in the examples, “leadership” is a common variable that should be examined for an effective school (Hallinger & Heck, 1996; Harris, 2004; OFSTED [Office for Standards in Education], 2000). There are many studies proving that an effective leadership is a necessary and important variable for an effective school, and that leadership plays an important role in school, teacher performance and student success/outcomes (Cameron, 2003; Cerit & Yıldırım, 2017; Ellet & Teddlie, 2003; Eker & Özgenel, 2021; Ermeydan, 2019; Hallinger, 1998; Kazan & Özgenel, 2021; Leithwood & Jantzi, 1999; Leitwood et al., 2004; Louis, 2007; Mert & Özgenel, 2020a; Mert & Özgenel, 2020b; Mert et al., 2021; Murphy, 2007; Murphy et al., 2007; Namlı, 2017; Özgenel & Karsantik, 2020; Özgenel & Ankaralıoğlu, 2020; Özgenel & Dursun, 2020; Özgenel & Hıdıroğlu, 2019; Özgenel, 2020; Özgenel & Aksu, 2020; Özgenel & Aktaş, 2020; Özgenel & Canuylasi, 2021; Özgenel & Canuylasi, 2021; Özgenel et al., 2020; Şahin & Özgenel, 2020). In summary, the leadership styles, characteristics, or behaviors exhibited by school administrators have an impact on school management processes, staff, and student outcomes.

Flexible and agile leaders are needed to support organizational change, increase productivity, adapt to change, and overcome inertia (Boyer & Robert, 2006). In other words, for organizational success to be sustainable, organizations need to reach a level of agility. It seems possible for organizations to reach this level of agility, and it seems only possible with the existence of agile leaders (Joiner & Josephs, 2007). Agile leadership, volatility, uncertainty, complexity, and ambiguity (VUCA), are the abilities to provide a fast and effective solution to situations, to adapt their skills to different situations, and to show flexible behaviors (Joiner & Josephs, 2007; Joiner, 2009). Researches that peruse the effects of agile leadership qualities of managers on the institution and its employees support these claims (Abbasi & Ruf, 2020; Joiner & Josephs, 2007; Klopper & Pendergast, 2017; Özdemir, 2019; Parker et al., 2015; Swisher, 2013). Because agile leaders have an intellectual mindset (McPherson, 2016) to understand complex problems, benefit from the ideas of others, see the bigger picture, and have the ability to handle tensions caused by needs (McKenzie & Aitken, 2012). Agile leaders approach problems with creative solutions and are very effective at managing conflicts. They are individuals who can learn from challenging work experiences, embrace change, motivate, and inspire employees easily (Swisher, 2013).

Agile leadership, as a leadership approach based on teamwork and team learning, where they can get rapid feedback, and where quality and perpetual learning continue, are among the characteristics

of this type of leadership (Breakspear, 2017). The dimensions of (i) interaction style, (ii) innovation/exploration tendency, (iii) change approach, (iv) knowledge acquisition, and (v) visionary abilities were determined regarding the leadership roles of agile managers. (Bonner, 2010). Joiner and Josephs (2006) stated that managers have achieved agile leadership by mastering the areas of (i) expert, (ii) successful, (iii) catalyst, (iv) co-creator, and (v) synergist. According to Breakspear (2017), agile leadership is very beneficial in making changes in the education process. It creates dynamism in the education process with a repertoire beyond both technical knowledge and other change approaches.

The most important factor affecting a school's efficacy and performance is the school principal's leadership and the way he or she displays it. In other words, it has been detected that managers' leadership styles play a crucial role in school effectiveness (Tatlah & Iqbal, 2012). It is accepted that school principals' being creative, innovative, and entrepreneurial is necessary for increasing the effectiveness and development of schools and that the leadership styles displayed by school principals determine school success. (Day & Sammons, 2016; Hung & Ponnusamy, 2010). The importance of leadership in school effectiveness has brought up the investigation of the effect of agile leadership, which emerged as a new leadership approach, on school effectiveness. For example, the agile leadership characteristics of school principals affect teachers' professional development, performance (Yalçın & Özgenel, 2021), organizational justice, job satisfaction (Özgenel, Şebnem, & Asmaz, 2022) and emotional professional commitment (Yazıcı, Özgenel, Koç, & Baydar, 2022). These findings have given an idea about examining the agile leadership approach with school effectiveness. From this perspective, the goal is to see if the agile leadership traits of education administrators predict school effectiveness based on educator perceptions. In addition to this primary purpose, "(i) Do school principals' agile leadership characteristics perceived by teachers differ significantly according to teachers' gender, age, graduation level, school level and professional seniority? (ii) Do teachers' perceptions of school effectiveness differ significantly according to their gender, age, graduation level, school level and professional seniority? (iii) Is there a correlation between school principals' agile leadership characteristics and school effectiveness? (iv) Do school principals' agile leadership characteristics predict school effectiveness in a significant way?" sub-objectives were sought to be answered.

Method

Research Model

As a research method, quantitative research was preferred, and a relational survey design was applied. In the relational survey design, the change in more than one variable, the degree of this change is determined, and the research design's goal is to uncover the link between the variables (Sönmez & Alacapınar, 2011).

Study Group

In the academic year 2020-2021, the study's population consisted of 168,165 teachers working in Istanbul's public schools. Since it is not possible to reach the whole universe, 605 teachers participated with an easily accessible sampling method from the universe. Easy-to-reach sampling methods are defined as saving time, effort, and money for information and reliability by choosing the easy one. (Baltacı, 2018). The size of the sample can be said to represent the universe. There were 356 female instructors (58.8%) and 249 male teachers (41.2%) among the participants. 71 of the teachers are under the age of 30, 238 are between the ages of 31 and 40, 238 are between the ages of 41 and 50, 207 are between the ages of 41 and 50, and 89 are between the ages of 51 and 50. (14.7%) years old. Of the teachers, 243 (40.2%) work in primary schools, 174 (28.8%) in secondary schools and 188 (31.1%) in high schools. Of the teachers, 480 (79.3%) graduates, and 125 (20.7%) graduates. 77 of the teachers are 5 years and below (12.7%), 105 of them are 6-10 years (17.4%), 104 of them are 11-15 years (17.2%), 116 of them are 16-20 years (19.2%) and 203 of them (33.6%) have a seniority of 21 years or more.

Research Tools and Process

The research data were obtained by applying the Information Form (gender, educational status, age, professional seniority, education status, school level), the "School Effectiveness Index (SE-INDEX)" and the "Marmara Agile Leadership Scale".

School Effectiveness Index: The index was first created by Mott (1972) to measure the efficacy of hospitals and was then extended to measure the effectiveness of schools with the help of several researchers (Miskel et al., 1979; Hoy & Ferguson, 1985; Hoy & Miskel, 1991; Hoy et al., 1991, cited Hoy, 2022). It was translated into Turkish by Yıldırım and Ada (2018). The index includes a 6-point Likert type, is one-dimensional, and has total of 8 items. It contributes to the determination of school effectiveness according to teacher perceptions. A score between 0 and 136 is obtained from the scale.

Marmara Agile Leadership Scale: Yazıcı and Özgenel (2020) established the Marmara Agile Leadership Scale to define the agile leadership traits of school administrators. The scale, which is a 5-point Likert scale (Never=0; Rarely=1; Sometimes=2; Often=3; Always=4), consists of 3 factors and 34 items. A score between 0 and 136 is obtained from the scale.

Analysis of Data

Kurtosis, skewness, and reliability values were examined before the data were analyzed (Table 1).

Table 1

Kurtosis and Skewness Values and Confidence Coefficients of the Scales

	N	Mean	Kurtosis	Skewness	Cronbach Alpha
School Effectiveness	605	4.10	.09	.77	.94
Agile Leadership	605	2.56	.57	.67	.99

The kurtosis and skewness values of the data are between 1 and demonstrate a normal distribution, according to Table 1, and the dependability coefficient is quite high. Because the data had a normal distribution, parametric tests were used. The groups of data independent from parametric tests were analyzed by t-test, ANOVA (Post-hoc Sheffe after Anova), correlation, and regression analysis.

Ethical Procedures

Necessary permissions were obtained from the relevant authorities in the study (Istanbul Sabahattin Zaim University Ethics Committee, approval dated January 28, 2021, and numbered E-20292139-050.01.04-2007).

Results

The t-test findings for the comparison of teachers' perceptions of school effectiveness and agile leadership based on their gender and education level are presented in Table 2.

Table 2

T- Test Results According to Teachers' Gender and Seniority

Variables	Groups	N	M	ss	t	sd	p
School Effectiveness	Female	356	4.10	1.13	-.002	603	.998
	Male	249	4.10	1.24			
Agile Leadership	Female	356	2.59	1.09	.67	603	.498
	Male	249	2.52	1.18			
School Effectiveness	Undergra-	480	4.13	1.16	1.28	603	.198
	Graduate	125	3.98	1.21			
Agile Leadership	Undergra-	480	2.60	1.13	1.67	603	.095
	Graduate	125	2.41	1.12			

When Table 2 is examined, teachers' perceptions of school effectiveness and agile leadership vary by gender ($t[603]=-0.002$; $p<.05$; $t[603]=.67$; $p<.05$) and education level ($t[603]=1.28$; $p<.05$; $t[603]=1.67$; $p<.05$).

Table 3 presents the ANOVA findings for the comparison of teachers' perceptions of school effectiveness and agile leadership based on their school levels.

Table 3

The ANOVA Test Results According to the School Levels of the Teachers

	Type of School	N	M	SD	F	p	Sig.
School Effectiveness	A-Primary	243	4.27	1.13	8.45	.000	A>C; B>C
	B-Secondary	174	4.18	1.12			
	C-High	188	3.82	1.23			
	Total	605	4.10	1.17			
Agile Leadership	A-Primary	243	2.71	1.05	7.47	.001	A>C; B>C
	B-Secondary	174	2.64	1.11			
	C-High	188	2.30	1.20			
	Total	605	2.56	1.13			

According to Table 3, the instructors' assessed school effectiveness varies significantly depending on the school levels where they work at ($F=8.45$; $p<.01$). According to the Scheffe test results, teachers working at primary schools ($M=4.27$) and secondary schools ($M=4.18$) perceive their schools as more effective than teachers working at high schools ($M=3.82$). Similarly, it was shown that teachers' perspectives of agile leadership vary greatly with the school levels they were assigned to ($F=7.47$; $p<.01$). According to the results of the Scheffe test, teachers ($M=2.73$) working at primary schools ($M=2.73$) and secondary schools ($M=2.64$) think that school principals display agile leadership characteristics higher than teachers working at high schools ($M=2.30$).

The ANOVA findings for the comparison of teachers' school effectiveness and agile leadership perceptions by age are presented in Table 4.

Table 4

The T-Test Results According to the Ages of the Teachers

	Okul Türü	N	M	SD	F	p	Sig.
School Effectiveness	A-age 30 and under	71	3.77	1.22	4.33	.005	D>A
	B-age 31-40	238	4.02	1.20			
	C-age 41-50	207	4.18	1.07			
	D-age 51 and over	89	4.39	1.23			
	Total	605	4.10	1.17			
Agile Leadership	A-age 30 and under	71	2.48	1.20	1.19	.310	---
	B-age 31-40	238	2.53	1.16			
	C- age 41-50	207	2.53	1.08			
	D-age 51 and over	89	2.77	1.11			
	Total	605	2.56	1.13			

According to Table 4, teachers' views on school effectiveness varied significantly depending on their age ($F=4.33$; $p<.01$). In the Sheffe test, the perceptions of school effectiveness of teachers aged 51 and over ($M=4.39$) are higher than the perceptions of school effectiveness of teachers aged 30 and younger ($M=3.77$).

Table 5 shows the ANOVA results for comparing teachers' perceptions of school effectiveness and agile leadership based on their seniority.

Table 5
T-Test Results According to the Seniority of the Teachers

	Seniority	N	M	SD	F	p	Sig.
School Effectiveness	A- 5 years and under	77	3.81	1.20	4.76	.001	E>A; E>C
	B- 6-10 years	105	4.13	1.16			
	C- 11-15 years	104	3.91	1.24			
	D- 16-20 years	116	3.99	1.16			
	E- 21 years +	203	4.36	1.10			
	Total	605	4.10	1.17			
Agile Leadership	A- 1-5 years	77	2.55	1.12	.53	.713	
	B- 6-10 years	105	2.55	1.11			
	C- 11-15 years	104	2.50	1.22			
	D- 16-20 years	116	2.48	1.14			
	E- 21 years +	203	2.65	1.09			
	Total	605	2.56	1.13			

According to Table 5, when the perceived school effectiveness of teachers is compared with their seniority, the difference is not significant ($F=4.76$; $p<.01$). According to the Scheffe test results, the perceived school effectiveness ($M=4.36$) of teachers with 21 or more seniority is higher than the perception of school effectiveness of teachers with 5 or less seniority ($M=3.81$) and 11 to 15 ($M=3.91$). In other words, teachers with 21 or more years of experience perceive schools as more effective than teachers who have worked for 1 to 5 and 11 to 15 years. When teachers' perceptions of agile leadership are compared to their seniority, there is no significant difference ($F=.53$; $p>.05$).

Table 6 displays the results of the correlation study between teachers' perceptions of school effectiveness and agile leadership.

Table 6
Correlation Analysis Results

Variables	School Effectiveness	
	r	.588**
Agile Leadership	p	.000
	N	605

Table 6 shows that there is a positive, moderate, and significant relation between teachers' agile leadership characteristics as school principals and their perceptions of school effectiveness ($r=.588$; $p<.01$).

The simple regression analysis findings, which were conducted to determine the level of predictability of school effectiveness based on school principals' agile leadership characteristics, are shown in Table 7.

Table 7
Regression Analysis Results

Independent variable	Dependent variable	B	Std. Error	(β)	t	p
Constant		2,537	,096		26,411	,000
Agile Leadership	S. Effectiveness	,612	,034	,588	17,854	,000

$R=.558$; $R^2=.346$; $F=318.77$; $p<.001$

Table 7 reveals that teachers' perceptions of school administrators' agile leadership traits strongly predicted school effectiveness ($r^2=.346$; $p<.001$). The agile leadership characteristics of school principals explain approximately 35% of the total variance in teachers' perceptions of school ethics ($\beta=.558$; $r=.558$; $r^2=.346$; $F=318.77$; $p<.001$). In other words, the more school principals exhibit their agile leadership characteristics, the more effective the school becomes.

Discussion, Conclusion and Recommendations

Agility is seen as the ability to detect emerging problems quickly, to be sensitive to stakeholders and the environment, to evaluate opportunities, to adapt in a short time, and to learn quickly. Changes in the structure and purpose of schools necessitate greater adaptability (Caldwell & Spinks, 2013; Hannon & Peterson, 2017; Walsh, 2015). In this sense, agile leadership can adapt to new competitive environments with the individual's ability and willingness to learn and gain new experiences in various conditions (Saputra et al., 2018). Therefore, agile leadership has an important role in enhancing management effectiveness (Yadav & Dixit, 2017). In this study, which was carried out to discover the level of predicting school effectiveness of school principals' agile leadership characteristics, it was found that while the agile leadership of school principals does not change significantly based on teachers' gender, education level, seniority, or age, primary school teachers and secondary school teachers consider school principals to be more agile than high school teachers. Özdemir (2020) in a study comparing teachers working in Turkey and England, found that the gender of the teachers did not make a difference in their perceptions of agile leadership; he reported that there is a significant difference in favor of undergraduate teachers in Turkey, but that there is no significant difference according to the education level of teachers in England. Again, Özdemir (2020) stated that there is no significant difference in the perceptions of agile leadership according to the seniority and age of the teachers in Turkey; however, it was found that as the seniority and age of teachers in England increased, their perceptions of agile leadership decreased. Yazıcı et al. (2022) stated that the agile leadership characteristics of school principals do not make any difference to the genders and educational levels of teachers, and the agile leadership perceptions of teachers with 5 years or less seniority and teachers 30 years of age or younger are more positive than those of teachers with more seniority and age. In addition, it was revealed that the agile leadership perceptions of the teachers at the primary and secondary school levels were higher than those of the teachers working at the high school level. Yalçın and Özgenel (2021), on the other hand, determined that male teachers, undergraduate and primary school teachers, have higher agile leadership perceptions than female teachers, graduate and secondary school teachers, and high school teachers. According to the same research, school principals' agile leadership abilities are unaffected by the age or seniority of the teachers. When the research findings in the literature are considered together, it can be thought that consistent results have not been achieved in teachers' perceptions of the agile leadership characteristics of school principals, and the concept of agility, which is a new concept in the literature, does not make any difference on teachers. We suggest that more studies be conducted in this area.

Teachers' perceptions of school effectiveness are unaffected by their gender or educational degree. Teachers in primary and secondary schools deem their schools to be more effective than teachers working at the high school level; teachers over the age of 51 compared to teachers aged 30 and below, and teachers with 21 or more years of seniority compared to teachers with 15 years or less seniority. When studies on school effectiveness are examined; teachers' *gender* (Çevrik, 2022; Çiftçi, 2019; Çobanoğlu Kasap, 2008; Koç, 2019; Karabeke, 2022; Küçük, 2020; Namli, 2017; Özgenel & Mert, 2019; Şişman, 1996), *ages* (Karabeke, 2022; Özgenel & Koç, 2020; Özgenel & Topal, 2019), *seniorities* (Çevrik, 2022; Koç, 2019; Karabeke, 2022; Namli, 2017; Özgenel & Mert, 2019; Mert et al., 2021), *education levels* (Çevrik, 2022; Karabeke, 2022; Koç, 2019; Küçük, 2020; Namli, 2017) and *the school levels they work* (Mert et al., 2021) are studies reporting that there is no variable that makes a difference in their perceptions. Contrary to these findings, male teachers school effectiveness perception is higher than female teachers' (Akan, 2007; Kanmaz & Uyar, 2016; Kuşaksız, 2010), female teachers perceive their school more effectively than male teachers (Özgenel & Topal, 2019), the effectiveness of a school decreases as it progresses from kindergarten to primary school to high school (Çevrik, 2022; Gökmen, 2011; Tural, 2019; Turgut, 2021); bachelor's degree (Özgenel & Koç, 2020; Ontai-Machado, 2016) and teachers with higher seniority perceive their schools more effectively (Akan, 2007; Ayık, 2007; Küçük, 2020; Ontai-Machado, 2016; Sivri, 2019; Şahin Dinçsoy, 2011) research can be found. The reason for the inconsistency between the findings of the studies may be the difference between the sample groups in which the studies were conducted and the data measurement tools used in the studies.

In general, the leadership roles and styles of school principals affect the happiness of schools (Şahin & Özgenel, 2020), school development (Kazan & Özgenel, 2021), teacher performance (Mert & Özgenel, 2020; Özgenel & Aktaş, 2020), learning culture at school (Özgenel, 2020b); it has been determined that the effect of different leadership styles and behaviors displayed on school effectiveness also differs (Turgut, 2021; Yumaşak & Korkmaz, 2021). In particular, there are studies reporting that agile leadership increases teachers' organizational commitment (Özdemir, 2021), supports their professional development, and affects their performance positively (Yalçın & Özgenel, 2021). A similar finding was obtained in this study as well. The agile leadership characteristics of school principals affect school effectiveness both positively and significantly. These results point out the importance and necessity of the role played by agile leaders for organizational effectiveness and organizational life. It is stated that agile leaders increase organizational effectiveness (Joiner, 2019) and have the power to lead organizations (Parker, Holesgrove, & Pathak, 2015), have a positive perspective, manage time effectively, work for continuous improvement, and aim to make change meaningful (Breakspear, 2017). In this context, it can be said that as school principals develop their agile leadership characteristics and exhibit them in school management, they will provide an important transformation and contribute to increasing the effectiveness of schools. The positive increase in school effectiveness with school principals fulfilling their agile leadership roles can be considered a promising result for the Turkish education system, which can make education staff happy. In this respect, our research findings support the general belief that school principals contribute to school effectiveness and development. Ultimately, the effectiveness of schools means the success of the education system. Although this study provides significant and strong evidence for the relationship between school principals' agile leadership characteristics and school effectiveness, there are some limitations. Even though school principals' agile leadership characteristics significantly predict school effectiveness, this finding does not provide us with an idea of how school principals' agile leadership characteristics affect school effectiveness. In addition, research data were obtained from teachers and collected cross-sectionally. Evaluation and generalization of the findings reached in the research should be done within these limitations.

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