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Examining the relationship between school principals' instructional leadership behaviors, teacher self-efficacy, and collective teacher efficacy

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Abstract

Purpose – The purpose of this paper is to examine the relationship between school principals' instructional leadership behaviors, teacher self-efficacy, and collective teacher efficacy.

Design/methodology/approach – The participants were a total of 427 teachers working in elementary, middle, and high schools located in the Cekmekoy district of Istanbul. The data were gathered through the "Effective School Leadership Scale," the "Teacher Self-Efficacy Scale," and the "Collective Efficacy Scale." Arithmetic mean, Pearson product-moment correlation coefficient, and multiple linear regression analysis were used in the data analysis.

Findings – The results revealed positive and significant relationships between school leadership, teacher self-efficacy, and collective teacher efficacy. In addition, effective school leadership behaviors and teacher self-efficacy perceptions were found to be positive and significant predictors of collective teacher efficacy perceptions.

Originality/value – School principals can implement practices to enhance teachers' competence, to make them feel more effective and competent as a group. In this sense, teachers who do not feel competent can be guided by those who have more experience in the profession. Additionally, opportunities through which they can experience success can be created for these teachers.

Keywords School principal, Instructional leadership, Teacher self-efficacy

Paper type Research paper

1. Introduction

"Collective teacher efficacy is a promising construct for promoting understanding of ways schools can foster student achievement" (Tschannen-Moran and Barr, 2004, p. 189). Collective teacher efficacy refers to teachers' perceptions that their efforts at school can have a positive influence on student achievement (Goddard *et al.,* 2000). It is a significant organizational variable in student learning and achievement (Goddard, 2001; Goddard *et al.,* 2004; Hoy *et al.,* 2002; Tschannen-Moran and Barr, 2004). Goddard (2001) reported that, when certain student demographic variables and prior achievements were controlled for, collective efficacy was a significant variable in enhancing student achievement. Moreover, collective teacher efficacy is also regarded as significant in the differences in student achievement across schools (Goddard *et al.*, 2004; Hoy *et al.*, 2002; Tschannen-Moran and Barr, 2004). It can thus be argued that teachers' perceptions of their collective efficacy are an important variable in ensuring student achievement and improving teacher and school effectiveness, and that understanding collective efficacy is significant in terms of enabling the development of the school as a whole. On the other hand, Goddard (2001) stated that studies on the formation of collective efficacy mostly concentrated on the theoretical

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framework, and there is thus a need for new studies to better understand this concept. Klassen (2010) also indicated that studies on the premises of collective teacher efficacy should be carried out. In this respect, it seems necessary to investigate collective efficacy in association with different personal and organizational variables, in order to better understand the concept and its implications for practice.

In the literature, there are studies that report relationships between collective teacher efficacy, and certain personal and organizational variables (e.g. Caprara *et al.,* 2003; Klassen, 2010; Lee *et al.,* 2011). In the present study, the relationships between teacher self-efficacy and school leadership behaviors, which are thought to be related to collective teacher efficacy, were examined. According to Bandura (1997), self-efficacy is what lies behind perceptions of collective efficacy. Teacher self-efficacy enhances teachers' beliefs related to ensuring student achievement, and encourages them to put more effort into instructional processes. In that case, increasing student achievement and performance strengthens teachers' beliefs that they are competent as a group at school, when they work hard enough. In other words, beliefs in collective teacher efficacy get stronger as student achievement improves (Bandura, 1997). This argument is supported by findings in the field of education (e.g. Çalık *et al.*, 2012; Demir, 2008; Ninković and Knežević Florić, 2016).

Furthermore, it is thought that teachers' perceptions of collective efficacy are related to school principals' leadership behaviors. School leadership comprises influencing and directing the school staff to accomplish common objectives (Leithwood and Reihl, 2005). The sense of collective efficacy can develop in teachers, depending on school leadership behaviors (Sosik *et al.*, 1997; Chen and Bliese, 2002; Ross and Gray, 2006). Collective efficacy beliefs are expected to increase as school leaders increase the sense of efficacy in teachers and their beliefs that they can improve the quality of education as a group. In this respect, because it is thought that teacher self-efficacy and school leadership behaviors are related to collective teacher efficacy, the relationships between these variables are the focus of this study. Although studies similar to the present study can be found in the literature (e.g. Kurt, 2009; Ninković and Knežević Florić, 2016), there is still a need for more studies that examine the premises of collective efficacy (Goddard, 2001; Klassen, 2010). Therefore, this study can contribute to expanding the literature on collective teacher efficacy. In addition, the results of this study are expected to have implications for practitioners.

1.1 School leadership

There is considerable amount of evidence indicating that school leadership has an effect on student achievement (e.g. Abdurrezzak and Uğurlu, 2016; Leithwood *et al.,* 2008; Leithwood and Montgomery, 1982; Robinson *et al.*, 2007, 2008). School leadership requires taking responsibility for setting objectives, ensuring harmony and solidarity, administering the organization based on shared values, creating opportunities, modeling practices, and supervising (Sergiovanni, 1996). In the literature, school leadership has been discussed with reference to different leadership types. The leadership types that are more frequently mentioned include instructional leadership, administrative leadership, transformative leadership, moral and authentic leadership, distributive leadership, teacher leadership, system leadership, and contingent leadership (Bush and Glover, 2014). It can be stated that school leadership involves different types of leadership, because of the efforts required to provide students with high quality education.

The responsibilities and duties of school administrators have undergone changes over the course of time. While school administrators focused more on the technical and humanistic aspects of educational organizations in the 1950s, they cared less about the activities regarding the quality of education and student outcomes. However, later developments in the school environment made it necessary to put more emphasis on

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educational aspects, along with the administration of the school (Sergiovanni, 2001). The increasing expectations from schools with changes in different areas have been influential in the emergence of administrative behaviors focused on meeting students' educational needs. In this process, school administrators first assume the principal-teacher role. They then switch to the role of institutional administrator. However, the increasing drop-out rates at schools, cultural problems, the belief that every student can learn, and increasing expectations of accountability have led to a transition in school leadership toward a focus on the quality of education (Wilmore, 2002). Thus, the concept of school leadership underwent a transformation from educational administration and management to educational leadership (Gunter, 2004). In the literature, the concepts of educational leadership and school leadership are used interchangeably (e.g. Leithwood and Reihl, 2005; Waters *et al.*, 2003). Accordingly, it can be stated that the consideration of school administration in the framework of school leadership has been due to increasing expectations of student learning and is a reflection of various societal changes in the field of education. Besides, school leadership has continued to be approached from different points of view.

School leaders should exhibit certain leadership behaviors. Sergiovanni (1984) stated that school administrators should have technical, humanistic, educational, symbolic, and cultural leadership skills. According to Bolman and Deal (1991), school administrators' skills can be discussed with reference to organizational models that they refer to as human resources, bureaucratic, symbolic, and political models. Effective school leaders perform leadership and administrative duties at the same time, act as experts who ensure teacher and student development, have values and a vision for the school's development, and carry out activities that support teacher development (Harris *et al.,* 2003). In addition, as reported in different studies, school leadership comprises certain leadership behaviors that are common and effective. These include creating a vision for the school, planning and evaluating the curricula, making good use of the school's resources, forming a support culture at school, providing individuals with a context that is open to communication, knowing about the school community, being agents for change, sharing authority, dealing with administrative issues effectively, ensuring teacher development, and creating high expectations (Krüger, 2009; Leithwood and Montgomery, 1982; Marzano *et al.,* 2005; Murphy *et al.*, 2010; Robinson *et al.*, 2007, 2008). In this regard, practices related to student learning and school development are expected to be addressed in the scope of school leadership. Consequently, it is important that school leaders have the qualifications to comprehend the system as a whole, such as a vision to achieve the technical essence of the school, curriculum studies, and collaboration with school stakeholders.

The present study is focused on effective behaviors of school leaders (Interstate School Leaders Licensure Consortium, 2008; Ata, 2015). The leadership behaviors that can be performed in this sense are as follows: creating a vision for learning and implementing activities toward practice; developing a school culture and curriculum to improve student learning and enabling the development of the school staff; reviewing administrative and operational processes, forming an environment where authority is shared, and providing the resources to create a positive learning environment; collaborating with different stakeholders in the school and establishing productive relationships with them; acting in accordance with ethical conventions to ensure the academic and social achievement of every student; and putting forth a new set of leadership strategies by perceiving the social, political, economic, legal, and cultural variables in the social structure as a whole. Based on these standards and the research findings mentioned above, it can be argued that effective school leadership behaviors refer to the behaviors of school administrators that enhance the quality of education.

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1.2 Teacher self-efficacy, collective teacher efficacy, and their relationship with teacher self-efficacy

Self-efficacy is a concept that is based on social cognitive theory. Social cognitive theory explains how certain behavioral constructs are acquired and maintained (Bandura, 1977). Self-efficacy comprises the ways in which individuals perceive themselves in relation to achieving a task. These perceptions determine the degrees of individuals' efforts to overcome difficulties in their selection of different activities (Bandura, 1994). Teacher self-efficacy, on the other hand, refers to teachers' perceptions regarding their performance of an instructional activity in a powerful way (Guskey, 1987), and their beliefs or judgments about their roles in improving student learning (Bergman *et al.,* 1977; Ruble *et al.,* 2011). Teacher self-efficacy can be considered as teachers' personal opinions of their ability to select, plan, and implement activities with the goal of improving the quality of education (Goddard *et al.,* 2004). It can thus be concluded that teacher self-efficacy is teachers' beliefs that, given the right efforts, they can yield results in improving student learning, and uncover and improve students' potential.

Self-efficacy is supported by four interacting sources (Bandura, 1977, 1986). These are successful experiences, others' experiences, verbal persuasion, and physiological and affective states. Successful experiences refer to individuals yielding successful results in a task at different times, and developing positive attitudes toward this accomplishment, depending on experience. Others' experiences are related to individuals following models of successful practices, and observing and modeling the success others obtained in their tasks (Schunk, 2003). Behaviors that are rewarded are more open to experimentation. Verbal persuasion refers to persuading and encouraging behaviors related to tasks that can be accomplished. In persuasion, the expertise and personal characteristics of the persuader are of importance. Physical and affective states are related to how individuals interpret their states. Coping with emotions and having a positive attitude toward physical and affective states influence individuals' self-efficacy. It can thus be inferred that the development of self-efficacy is affected by individuals' successful experiences and the models in which they can observe socially positive behaviors. Moreover, it can be argued that individuals' positive approaches to their own behaviors and self-beliefs in accomplishing tasks are of significance in developing self-efficacy.

Individuals who are committed to their self-efficacy beliefs set more challenging goals and control their emotions more easily in the face of a difficult task. Those who have confidence in their abilities can also put in more effort for a longer period of time. They can perform more successful behaviors in controlling their lives (Bandura, 1997). On the other hand, the importance of teacher self-efficacy lies behind increasing teacher effectiveness. While teachers with low self-efficacy beliefs experience various problems related to instruction and school (Battersby and Cave, 2014; Tschannen-Moran and Hoy, 2001), those with high self-efficacy beliefs act more effectively in enhancing the quality of education and instruction (Main and Hammond, 2008; Tschannen-Moran *et al.,* 1998; Woolfolk and Hoy, 1990). Teachers' self-efficacy beliefs are related to their classroom management skills and instructional skills (Gibson and Dembo, 1984). Teachers with high self-efficacy beliefs better organize and plan the practices at school to improve the quality of education, and implement more humanistic classroom management skills (Goddard *et al.*, 2004). Therefore, teachers' self-efficacy beliefs can be said to be an important variable in student learning, students' using their capacities, teachers' making use of their professional competencies, and instructional practices.

1.3 Collective teacher efficacy

Efficacy beliefs can be evaluated at the collective level as well as at the individual level (Bandura, 1986). With changing conditions, it can sometimes be difficult to live a good

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quality life, and people then have to find a wide range of solutions to their problems. This requires individuals to be more bound to common goals. Individuals mutually strengthen each other to produce solutions. Groups or organizations show continuity in this way. Collective efficacy beliefs ensure that the group keeps functioning (Bandura, 1997). Collective efficacy refers to "the shared group belief related to the abilities of organizing and managing the action steps necessary for acquiring skills at different levels" (Bandura, 1997, p. 477). Collective efficacy emerges in a dynamic way, as a result of mutual communication and interaction (Goddard *et al.*, 2000). Collective teacher efficacy is about teachers' beliefs about their ability to organize and manage different actions to create positive effects on student development (Goddard *et al.*, 2004). It can thus be stated that the teachers' positive feelings about the school as a group and their actions in yielding positive results are beliefs and behaviors related to collective efficacy.

Similar to self-efficacy, collective efficacy relates to the level of effort exhibited by the group, its work, and the beliefs shared by group members (Goddard *et al.*, 2000). If teachers strongly believe that their students can learn, students tend to demonstrate higher performance levels. In this way, students can achieve better outcomes in different areas. In other words, teachers' perceptions of their individual self-efficacy affect the quality of education and academic achievement in their classes. In schools with intense interaction, a school culture emerges with the reactions formed by teachers' positive or negative perceptions (Bandura, 1993). Individual teacher self-efficacy explains student achievement, whereas collective efficacy explains the influence on student achievement at the organizational level (Goddard *et al.*, 2000). Accordingly, it can be concluded that, since schools are organizations with intense communication, teachers' strong beliefs that they can achieve common objectives and improve student learning are of significance in their collective behaviors.

1.4 The relationship between teacher self-efficacy and collective teacher efficacy

Bandura (1986) emphasized reciprocal causality in social cognitive theory. Social cognitive theory hypothesizes that, in a school context, collective efficacy beliefs interact with teachers' behaviors (Bandura, 1997). In reciprocal causality, individual and organizational factors affect each other bidirectionally. This interaction is of great importance in terms of the development of individuals' cognitive, social, and behavioral competencies, recognizing and using their abilities, and increasing their motivation to achieve the objectives (Wood and Bandura, 1989). The school functions as a social environment. Teachers share a set of beliefs at school. At this point, the social effect stemming from these beliefs shapes teachers' self-efficacy (Bandura, 1995). Furthermore, sources, obstacles, and opportunities within the system reveal individuals' levels of effectiveness. This existing situation enables teachers to engage in collective efforts related to different cases (Tschannen-Moran *et al.*, 1998). For instance, teachers' negative statements can cause negative expectations of students, and thus, teachers' inefficacy beliefs increase (Bandura, 1993). As a result, teacher self-efficacy may improve depending on positive experiences gained in a school with high collective efficacy. Moreover, as teachers' perceptions of their self-efficacy increase, their level of collective efficacy may also increase. Collective efficacy, on the other hand, may improve teachers' beliefs regarding student achievement. Teachers' beliefs about their competencies and that they can enhance the quality of education increase with achievements at school (Goddard *et al.*, 2000). Besides, it can be stated that teachers' feelings of competence in implementing practices for student learning is important in terms of putting forth a shared performance for ensuring student achievement at school. In addition, teachers' beliefs regarding planning and implementing activities to increase student achievement at school can enable them to make more effort to improve student learning.

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Strong relationships among individuals influence the development of social norms. These norms are also reflected in the beliefs, attitudes, and behaviors of the whole group (Coleman, 1985, 1987). When strong teacher collaboration and sincere relationships increase in schools, positive or negative thoughts and beliefs develop in relation to instruction and student performance. In that case, teachers can be observed to be more effective in different areas of activity at school (Cybulski *et al.,* 2005). In other words, teachers' efficacy beliefs related to teaching students create a norm that affects both individual activities and the success of the school (Goddard *et al.*, 2000). Additionally, teachers influence students and other teachers through different practices. They receive feedback from their colleagues and students occasionally. These pieces of feedback are the verbal persuasive sources of self-efficacy. At the same time, they gain expertise. In this respect, the feedback and experiences of expertise increase or decrease the teaching staff's collective efficacy. As a result, the level of collective efficacy can increase depending on students' school performance, which supports Bandura and Coleman's assumptions (Cybulski *et al.*, 2005).

Different studies have been conducted that reveal the relationships between self-efficacy and collective efficacy. In their study on different companies, Wu *et al.* (2010) found that collective efficacy increased when individuals who perceived themselves as highly competent worked with those who had self-confidence. There are also results reported in the literature that show that teacher self-efficacy can be used to predict collective teacher efficacy (Çalık *et al.*, 2012; Demir, 2008; Ninković and Knežević Florić, 2016). Kurt (2009) revealed that collective teacher efficacy was related to teacher self-efficacy, and collective efficacy predicted teacher self-efficacy. The differences in the results of these studies can be explained by the reciprocal causality of the relationship between self-efficacy and collective efficacy, and teachers' beliefs about their personal competencies (Tschannen-Moran and Hoy, 2007). Based on these results, it can be said that there is a reciprocal causal relationship between teacher self-efficacy and collective efficacy.

1.5 The relationship between school leadership and collective efficacy

Different leadership behaviors of school administrators can be related to collective teacher efficacy (e.g. Brinson and Steiner, 2007; Chen and Bliese, 2002; Çalık *et al.*, 2012; Demir, 2008; Kurt, 2009; Ninković and Knežević Florić, 2016; Ross and Gray, 2006; Sosik *et al.*, 1997). According to the results reported in the literature, the importance of leadership behaviors can be seen in teachers' perceptions of themselves as a competent group (Goddard *et al.*, 2000). Strong leadership can help overcome difficulties and improve student achievement by increasing collaboration among teachers (Bandura, 1993).

The four aspects that Bandura (1997) stated are of importance in the context of leadership behaviors in the development of collective teacher efficacy are as follows: being open to organizational learning through professional experiences, following school models by experiencing success and making observations, verbal persuasion that student achievement can be enhanced at school, and turning schools into healthy organizations (Bandura, 1997; Goddard *et al.*, 2000). Students' characteristics, the resources at school, leadership, social support, and positive or negative results in student performance at school can also influence the development of collective teacher efficacy (Goddard *et al.*, 2000). Additionally, teachers' collective efficacy can be developed by motivating them to engage in group work (Chen and Bliese, 2002), rewarding their successes, and highlighting the school's success (Marzano *et al.*, 2005). It can thus be stated that school administrators taking an encouraging approach and creating a supportive environment are of great importance in the development of a belief in the collective leadership. Factors that can also be seen as important in the development of collective efficacy include forming a strong vision for the school; improving the processes of educational leadership, learning, and instruction; ensuring collaboration and understanding; and ensuring teachers' inclusion in the school's

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decision-making processes. School leaders' creation of a powerful vision can develop collective efficacy (e.g. Demir, 2008; Kurt, 2009). Leaders who create a strong sense of purpose enable teachers to overcome various difficulties in instructional practices and student learning. In this way, teachers develop an optimistic understanding of student achievement and create a positive school atmosphere (Bandura, 1993). Strong leadership behaviors regarding improving instruction are frequently observed in schools with high levels of efficacy (Bandura, 1997) and school leaders should help teachers form beliefs in their self-efficacy related to student learning.

In order to develop collective efficacy, school leaders can work on teamwork and communication by enhancing teachers' skills through practices for improving instruction (Supovitz and Christman, 2003). If leaders organize programs for the development of teachers' instructional skills, teachers will then have the opportunity to employ these skills in their classes. For instance, a school administrator who wants to experiment with a new curriculum in their school can visit other schools that have already used it. In this way, teachers' beliefs in overcoming the challenges brought by the curriculum can be strengthened through cooperation (Brinson and Steiner, 2007). Therefore, educational leadership behaviors can contribute to teachers' collective efficacy by improving their beliefs in their own competency.

School administrators' evaluation of teachers and ensuring of participation in the decisions made at school are regarded as important, as well as their provision of feedback to teachers regarding the quality of education. Sharing detailed and quality results with teachers and discussing solutions with them are of significance in forming collective efficacy regarding possible future challenges (Brinson and Steiner, 2007). Additionally, teachers' views on different practices can be solicited. This can be about issues related to curriculum studies, decisions on instructional practices, teachers' professional development, and disciplinary actions (Ross and Gray, 2006). Hence, if teachers feel that they have control over events, their beliefs in their efficacy can be strengthened (Bandura, 1997). When teachers' participation in the decisions at school is ensured and they are authorized, their feelings of control over their job increase. Consequently, collective efficacy beliefs can develop (Brinson and Steiner, 2007; Goddard *et al.*, 2004).

Based on the arguments above, if collective efficacy is regarded as developing teachers' positive belief in the question "Can we do it?" it can be stated that the behaviors of school leaders and teacher efficacy are important variables in teachers' gaining a sense of efficacy as a group. In this regard, the following research questions will be addressed in this study:

RQ1. Is there a relationship between school principals' effective school leadership behaviors, teacher self-efficacy, and collective teacher efficacy based on teachers' perceptions?

RQ2. Are effective leadership and teacher self-efficacy significant predictors of collective teacher efficacy based on teachers' perceptions?

2. Method

2.1 Model

This study was designed following the relational model to examine the relationships between school principals' effective school leadership behaviors, teacher self-efficacy, and collective teacher efficacy, based on teachers' perceptions. The dependent variable of the study was collective teacher efficacy, while the independent variables were effective school leadership behaviors and teacher self-efficacy.

2.2 Population and sample

The population of the study consisted of elementary, middle, and high school teachers working in the Cekmekoy district of Istanbul in the 2016-2017 school year, selected through

random sampling considering the availability of the research conditions. In total, the participants were 427 teachers, of whom 309 were female (72 percent) and 118 were male (28 percent). Their average duration of service in their schools was 4.76 years, and the average age was 35.12 years. Their average duration of service in the profession was 12.04 years. There were 157 elementary school teachers (37 percent), 157 middle school teachers (37 percent), and 113 high school teachers (26 percent).

2.3 Data gathering tools

The information gathered with regard to the participants' demographic characteristics included gender, age, years of service in the current school, years of service in the profession, and the level of their school. The "Effective School Leadership Scale," the "Teacher Self-Efficacy Scale," and the "Collective Efficacy Scale" were employed to gather the data.

2.3.1 Effective School Leadership Scale. This scale, developed by Ata (2015), consists of 39 items and six sub-dimensions. It measures school principals' level of effective school leadership behaviors based on teachers' perceptions. The sub-dimensions of the scale are: visionary leadership; personal characteristics; educational leadership; understanding and improving learning and instructional processes; combining, planning, and evaluating resources; and placing emphasis on cooperation, communication, and teamwork. Sample items are as follows: "The school principal designs ideas for school administration for the future," "He/she is good at personal relationships," and "He/she develops educational and instructional strategies." The loading values of the items in the scale were 0.40 and above. The Cronbach's α reliability coefficient was 0.99 for the whole scale. The variance explained by the scale was 81.68 percent. A seven-point Likert-type grading scale is used, comprising options ranging from "(1) Strongly disagree" to "(7) Strongly agree" (Ata, 2015). As scores increase in the scale, the levels of effective leadership behaviors exhibited by the school principals also increase.

Confirmatory factor analysis (CFA) was performed to determine whether the 39 items and six-dimension structure of the Effective School Leadership Scale showed a good fit with the research data. However, it was found that the fit indexes were not at a sufficient level, and some modifications were made, which did not yield a satisfactory level of goodness-of-fit either. Exploratory factor analysis (EFA) was then performed, and the scale was found to show a unidimensional structure. Seven items with low factor loading values were excluded from the scale, which then consisted of 33 items and a single subdimension. The variance explained by the scale was 63.82 percent. Cronbach's α coefficient calculated for the reliability of the scale was found to be 0.98.

2.3.2 Collective Efficacy Scale. This scale was developed by Goddard *et al.* (2000) and was translated into Turkish by Kurt (2009). The adapted version of the scale consists of a single subdimension and 16 items, and the total variance it explained was 31.5 percent. Cronbach's α coefficient calculated for the reliability of the scale was found to be 0.80. A six-point Likert-type grading scale is used and comprises options ranging from "(1) Strongly disagree" to "(6) Strongly agree." Sample items related to collective efficacy are as follows: "Teachers in this school really believe that every child can learn" and "Teachers here are skillful in implementing a variety of instructional methods." High scores in the scale imply high collective efficacy perceptions (Kurt, 2009).

CFA was performed to determine whether the unidimensional structure of the Collective Efficacy Scale was suitable for the data in the present study. However, the goodness-of-fit indexes were not at a sufficient level, in spite of modifications and the exclusion of certain items. EFA was then performed, and four factors were excluded from the scale, due to low factor loading values. As a result, the variance explained was 59.20 percent, and the scale

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had a unidimensional structure. Cronbach's α coefficient calculated for the reliability of the scale was found to be 0.93.

2.3.3 Teacher Self-Efficacy Scale. This scale, developed by Tschannen-Moran and Hoy (2001), was translated into Turkish by Çapa *et al.* (2005). It consists of three dimensions and 24 items based on a nine-point scale with options ranging from "(1) Nothing" to "(9) A great deal." The sub-dimensions of the scale include efficacy related to student engagement, instructional strategies, and classroom management. Each subdimension contains eight items. Çapa *et al.* (2005) reported Cronbach's α coefficients as 0.82 for student engagement, 0.86 for instructional strategies, 0.84 for classroom management, and 0.93 for the whole scale. Sample items for each dimension include "How much can you do to get through to the most difficult students?" in student engagement, "How well can you respond to difficult questions from your students?" in instructional strategies, and "How well can you respond to defiant students?" in classroom management.

CFA was performed to see whether the three-dimensional structure and 24 items of the teacher self-efficacy scale had a good fit with the research data. The results of the analysis did not yield a satisfactory level of goodness-of-fit; therefore, EFA was then performed. The results of the EFA revealed a single factor with 24 items. The variance explained was 64.5 percent. The single dimension was named as teacher self-efficacy perception. Cronbach's α reliability coefficient was calculated as 0.97 for the whole scale. Low scores in the scale point to low teacher self-efficacy perception, whereas high scores imply high teacher self-efficacy perception.

2.4 Data analysis

SPSS Statistics software was employed in the data analysis. The normality assumption was first checked to test the suitability of the data for analysis. In the study, the skewness values for the variables of school leadership, teachers' self-efficacy, and collective efficacy were between −0.91 and −0.29. Additionally, histogram and normal Q-Q graphs were examined. Mean, mode, and median values were found to be close to each other. Skewness and kurtosis values between +1 and −1 show that data are close to or distant from normal distribution (Şencan, 2005). When all these results were evaluated together, it was assumed that the data were distributed normally.

Since regression analysis was to be performed in the study, the features of autocorrelation, multicollinearity, and homoscedasticity were examined. The lowest tolerance value was 0.79, and the highest variance inflation factor (VIF) value was 1.26. The highest condition index (CI) value was found to be 15.6. The tolerance value being lower than 0.20, the VIF value being higher than 10, the CI value being higher than 30, and the correlations between independent variables being 0.80 and above are indicators of multicollinearity (Büyüköztürk, 2010). Moreover, the Durbin-Watson value was found to be between 1.5 and 2.5 (1.65). The highest correlation between the independent variables was $r = 0.45$. Consequently, there was no evidence of multicollinearity. Based on these results, it was decided that the data were suitable for regression analysis.

In the analysis of the data gathered to answer the research questions, arithmetic means were calculated for the school principals' effective school leadership behaviors, teachers' self-efficacy beliefs, and collective teacher efficacy perceptions. The analyses were conducted based on these mean values. The Pearson product-moment correlation coefficient (*r*) was used to determine the relationships between the variables. In order to determine the predictive power of teacher self-efficacy beliefs and effective school leadership behaviors over the teachers' collective efficacy perceptions, a multiple linear regression analysis was performed. Effective school leadership behaviors and teacher self-efficacy perceptions were taken as the independent variables, whereas collective teacher

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efficacy perceptions were considered to be the dependent variable. In the interpretation of the regression analyses, standardized β coefficients and t-test results for their significance were considered. The significance level was set at 0.05.

CFA was carried out to see whether the factor structures of the scales used in the study were a good fit with the research data. The reference values for the goodness-of-fit indexes are as follows: GFI is accepted as good if the coefficient obtained from AGFI is 0.85 (Anderson and Gerbing, 1984; Cole, 1987) or 0.90 (Kline, 2005; Schumacker and Lomax, 1996) and above. Values obtained from RMSEA that are 0.10 and below are regarded as sufficient for fitness. A ratio of χ^2/df between 2 and 5 is a good fit, whereas lower than 2 is a perfect fit (Jöreskog and Sörbom, 2001).

3. Findings and results

In this section, mean and standard deviation values for school leadership, teacher self-efficacy, and collective teacher efficacy, as well as the results of the correlation and regression analyses are presented.

3.1 Means, standard deviations, and correlations between variables

The means, standard deviations, and the correlations between variables are shown in Table I.

As can be seen in Table I, the arithmetic mean of school principals' effective leadership behaviors based on the teachers' perceptions was $\overline{X} = 5.71$. The teachers stated that their school principals usually exhibited effective school behaviors. The arithmetic mean of teacher self-efficacy perceptions was $\overline{X} = 6.92$. The teachers perceived their self-efficacy to be considerably high. Lastly, the arithmetic mean of collective teacher efficacy was $\overline{X} = 4.63$. The teachers' collective efficacy perceptions were mostly at the level of "I agree."

The correlations between the variables are shown in Table I. The results revealed positive and significant relationships between effective school leadership, teacher self-efficacy, and collective teacher efficacy. There was a positive and significant relationship between effective school leadership and teacher self-efficacy, $r = 0.45$, $p < 0.05$. In addition, there was also a positive and significant relationship between effective school leadership and teacher collective efficacy, $r = 0.42$, $p < 0.05$. Teacher self-efficacy and collective teacher efficacy were found to be positively and significantly related as well, $r = 0.49$, $p < 0.05$.

3.2 Predicting collective teacher efficacy

The results of the multiple linear regression analysis regarding the predictive power of effective school leadership and teacher self-efficacy over collective teacher efficacy are shown in Table II.

As can be seen in Table II, school principals' school leadership behaviors and teacher self-efficacy perceptions were both significantly related to teacher collective efficacy, $r = 0.54$, $p < 0.05$. These predictor variables explained 29 percent of the variance in

Variables	$\overline{X}$	SD	Effective school leadership	Teacher self-efficacy	Collective teacher efficacy
Effective school leadership	5.71	0.93	1.00	0.45**	0.42**
Teacher self-efficacy	6.92	1.09		1.00	0.49**
Collective teacher efficacy	4.63	0.71			1.00

Note: **$p < 0.01$

Table I. Correlations regarding school leadership, teacher self-efficacy, and collective teacher efficacy

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collective teacher efficacy. According to the results of the regression analysis, teacher self-efficacy ($\beta = 0.38$, $p < 0.05$) and effective school leadership ($\beta = 0.25$, $p < 0.05$) were significant and positive predictors of collective teacher efficacy.

4. Conclusions and discussion

The aim of this study was to examine the relationships between school leadership behaviors, teacher self-efficacy, and collective teacher efficacy. The results showed positive and significant relationships between school leadership, teacher self-efficacy, and collective teacher efficacy. Furthermore, school leadership behaviors and teacher self-efficacy were found to be significant predictors of collective teacher efficacy.

In this study, a positive and significant relationship was revealed between collective teacher efficacy and teacher self-efficacy. In other words, as the teachers' self-efficacy levels increased, the level of collective teacher efficacy also increased, and vice versa. Similar findings are also reported in the literature (Goddard, 2001; Ninković and Knežević Florić, 2016). The relationship between these two concepts is discussed with regard to reciprocal causality in social cognitive theory (Bandura, 1997). Goddard (2001) explained the relationship between collective efficacy and teacher self-efficacy with the norms for ensuring achievement at school, collective experiences, and contextual characteristics. Expectations of high achievement among teachers enable them to make greater efforts to improve student achievement. Moreover, teachers own the achievements yielded at school and, in this way, gain collective experience. In addition, contextual factors like the school environment influence the relationship between self-efficacy and collective teacher efficacy. Consequently, collective efficacy leads to an increase in teacher self-efficacy (Goddard, 2001). When teachers' beliefs in their own competence increase, they make more effort to enhance student learning, which leads to improvements in student achievement and performance. Teachers who realize that students can perform better when they make sufficient effort feel more confident in their own competence (Bandura, 1986; Goddard, 2001; Ninković and Knežević Florić, 2016). Bandura (1986) stated that the sources that feed individual and collective self-efficacy are similar. These are experiencing success, others' experiences, oral persuasion, and affective state. Experiencing success is the most significant of these sources. With this experience, individuals feel more confident that they can achieve future tasks, depending on their previous success, which is the same in organizations. Therefore, the success that the school and students have strengthens the belief that they can overcome future difficulties. Additionally, teachers' sharing their beliefs of competence at school shapes other teachers' self-efficacy perceptions. In this way, teachers can model others' successful experiences. Similarly, schools can model the methods that other schools implement (Bandura, 1997). Accordingly, it can be inferred that, as teachers' beliefs in their competence increase, collective teacher efficacy would also increase, or as teacher self-efficacy decreases, collective teacher efficacy would also decrease in the same way. It can then be stated that supporting teachers' self-efficacy as well as collective efficacy beliefs is important in terms of strengthening teacher efficacy beliefs in schools.

In this study, teacher self-efficacy was found to be a significant and positive predictor of collective teacher efficacy. This finding is similar to those reported in other studies

Table II. Multiple linear regression analysis regarding the prediction of collective teacher efficacy

Variables	B	SE	β	t	p
Constant	1.85	0.22		8.57	0.000
Effective school leadership	0.19	0.04	0.25	5.39	0.000
Teacher self-efficacy	0.25	0.03	0.38	8.18	0.000

Notes: $R = 0.54$, $R^2 = 0.29$, $F = 85.71$, $p < 0.05$

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(Çalık *et al.*, 2012; Demir, 2008; Ninković and Knežević Florić, 2016; Wu *et al.*, 2010). It supports Bandura's (1997) view that self-efficacy is what lies behind collective efficacy. According to Bandura (1977), self-efficacy is fed from various sources that include experiences, others' experiences, verbal persuasion, and affective state. As teachers ensure student learning, they feel more effective. They think they can overcome similar situations if they try hard enough. At school, as a social environment, teachers observe each other's successful experiences, and apply them in their own classes. On the other hand, their efficacy beliefs increase with positive feedback from colleagues or students. In the same way, as they are satisfied with their work, they become more resistant to difficulties, depending on their affective state. Opportunities or obstacles that emerge at school encourage teachers to collaborate (Tschannen-Moran *et al.*, 1998). The relationships among teachers at school influence their perceptions of their efforts related to student learning (Cybulski *et al.*, 2005). As the number of teachers with high self-efficacy increases, there will be a dynamic interaction between individuals at schools. With this interaction, teacher perceptions regarding the effort collectively made at school have a positive effect on student learning and are strengthened to a certain extent. The consciousness of being a team member is then formed in teachers (Çalık *et al.*, 2012). Various studies report that collective efficacy predicts teacher self-efficacy (Kurt, 2009). These different results can be explained by reciprocal causality (Bandura, 1997). In other words, individual and organizational factors affect each other bidirectionally. When these results are evaluated as a whole, it can be inferred that supporting teachers' self-efficacy beliefs is of significance in terms of developing their collective efficacy.

In the present study, a positive and significant relationship was revealed between school leadership behaviors and teacher self-efficacy. This finding means that, as school leadership behaviors increase, teachers' self-efficacy also increases, and vice versa. Teacher self-efficacy is related to teachers' beliefs about their ability to ensure student achievement (Guskey, 1987). School leaders can strengthen teachers' beliefs in their efficacy by emphasizing common objectives, providing them with a variety of resources, and allowing them to be flexible in their classes (Tschannen-Moran and Hoy, 2007). School principals are models in their behaviors for teachers; rewarding them for their successes (Hipp and Bredeson, 1995; Lee *et al.,* 1991), and including them in school decision-making processes increase teacher self-efficacy (Moore and Esselman, 1992). Moreover, there are findings showing that school leadership behaviors indirectly affect teacher self-efficacy. Nir and Kranot (2006) highlighted the importance of positive work experiences in enhancing individuals' job satisfaction, and the potential contribution of a transformative leadership style in shaping these experiences. They also stated that leaders who provide more support in overcoming the difficulties encountered enhance teachers' job satisfaction and positively influence their self-efficacy. School principals can also increase teachers' self-efficacy by stating that they have high expectations, enabling teachers to observe each other, and facilitating activities to reduce teacher stress (Ross and Gray, 2006). In addition, providing teachers with feedback improves their effectiveness (Chester and Beaudin, 1996). Teachers' self-efficacy can also be increased by rewarding behaviors and verbal persuasion (Bandura, 1997). In this sense, school leaders' effective leadership behaviors can be seen as a variable that strengthens the feelings of efficacy in teachers. Therefore, school principals' demonstration of individual interest in teachers with low self-efficacy, and giving them opportunities and responsibilities that they are able to fulfill can positively contribute to their self-efficacy.

In the study, school principals' school leadership behaviors were found to be positively and significantly related to collective teacher efficacy. In other words, as school principals' effective leadership behaviors increased, teachers' collective efficacy beliefs also increased in their schools. At the same time, school principals' effective school leadership behaviors

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positively and significantly predicted collective teacher efficacy. These findings of the study are similar to those that report a relationship between school administrators' different leadership behaviors and collective teacher leadership (Brinson and Steiner, 2007; Chen and Bliese, 2002; Çalık *et al.*, 2012; Demir, 2008; Kurt, 2009; Ninković and Knežević Florić, 2016; Ross and Gray, 2006; Sosik *et al.*, 1997). Strong leadership facilitates teacher collaboration and enables teachers to overcome difficulties (Bandura, 1993). School leadership pertains to influencing and directing others for the accomplishment of common objectives to improve the quality of education at school (Leithwood and Reihl, 2005). Enhancing teachers' collective efficacy is related to improving certain organizational and personal characteristics. Bandura (1997) stated that collective efficacy and self-efficacy are fed from similar sources. These sources include experiencing success, others' experiences, verbal persuasion, and affective states; the most important of these sources is experiencing success. Therefore, practices that support these sources can be said to increase teachers' collective efficacy. In this regard, there are studies that explain the influence of leadership behaviors on collective teacher efficacy. Accordingly, school leaders rewarding teacher success and featuring the achievements at school (Marzano *et al.*, 2005), activities related to organizational learning, and conversations with teachers about ensuring student achievement (Bandura, 1997; Goddard *et al.*, 2000) strengthen perceptions of collective efficacy. Furthermore, school administrators' practices in enhancing teachers' skills improve teamwork (Supovitz and Christman, 2003), and their support of teachers to overcome problems at school and including them in the decision-making process are of great importance in the development of collective efficacy (Brinson and Steiner, 2007). Leithwood (1993) stated that leaders' contributions to the school set the tone of a school culture that can develop teacher collaboration and a collective identity. School leaders raising a powerful vision reveal collective leadership (Bandura, 1993).

In the present study, school leadership was considered a unidimensional construct, and thus, leadership behaviors refer to different leadership styles. In this respect, it would be more meaningful to compare the findings with studies on transformative leadership and instructional leadership in particular. There are different studies that report that a transformative leadership style, considered in the context of school leadership, increases collective teacher efficacy (e.g. Demir, 2008; Kurt, 2009). Transformative leadership provides a vision to teachers and enables them to enhance their capacity by increasing their expectations. The wishes and goals of followers are combined with organizational objectives (Leithwood *et al.,* 1999). There are also findings showing that instructional leadership increases collective efficacy (Çalık *et al.*, 2012). School principals' instructional leadership behaviors consist of characteristics such as supervision and evaluation, coordinating the curriculum, and monitoring student development (Hallinger and Murphy, 1985). Instructional leadership is the pattern of behaviors that school principals personally exhibit, or make the staff perform, in order to ensure student learning (DeBevoise, 1984). For this reason, both styles of leadership behaviors may strengthen collective teacher efficacy by fostering cooperation to maximize student learning. It can then be stated that school leaders can increase collective teacher efficacy beliefs by behaviors to make the teachers feel competent as a group. In this regard, collective efficacy can be expected to develop with school leaders forming a sense of common purpose, including teachers in the decision-making processes, creating opportunities for implementing successful practices used in other schools, organizing events to improve communication with teachers, and ensuring that teachers are motivated.

The results of this study can be summarized as follows: a significant relationship was found between collective teacher efficacy and teacher self-efficacy, teacher self-efficacy positively and significantly predicted collective teacher efficacy, and school leadership positively and significantly predicted collective teacher efficacy. Consequently,

school principals can implement practices to enhance teachers' competence, to make them feel more effective and competent as a group. In this sense, teachers who do not feel competent can be guided by those who have more experience in the profession. Additionally, opportunities by which they can experience success can be created for these teachers. The development of social norms through which the school can become successful can be ensured among teachers through strong interpersonal relationships. This is because beliefs and attitudes that develop with social norms affect the whole group (Coleman, 1985, 1987). Teachers can do their jobs better with expectations raised by these norms. In order to establish strong interpersonal relationships, schools can be structured as learning communities. On the other hand, awareness-raising activities can be implemented to improve school principals' school leadership behaviors. School leaders can work with themes in schools to develop collective teacher efficacy, make use of their resources, and take steps to enhance teacher practices. The feeling of "us" can be encouraged in school to foster collective teachers' efficacy. In the present study, school leadership was taken as a unidimensional construct, and thus, a finding regarding which leadership behaviors play a role in the development of collective teacher efficacy could not be reported. Further studies should thus be conducted to investigate which characteristics of school leadership lead to collective teacher efficacy. The relationships between collective efficacy, self-efficacy, school leadership, and student achievement can also be examined through structural equation modeling. Finally, school leadership scales that address school leadership practices in the school context should be developed.

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