

## An Investigation of Teachers' Classroom Management Style Differences on Students' Attitudes towards Mathematics

**Bengi BİRGİLİ**, MEF University, Department of Mathematics and Science Education, Türkiye,  
ORCID ID: 0000-0002-2990-6717, [birgilib@mef.edu.tr](mailto:birgilib@mef.edu.tr)

**İpek SARALAR**, Ministry of National Education, National Education Expert, Türkiye,  
ORCID ID: 0000-0002-4942-4408, [saralar.ipek@gmail.com](mailto:saralar.ipek@gmail.com)

**İbrahim Burak ÖLMEZ\***, University of Delaware, Department of Mathematical Sciences, USA,  
ORCID ID: 0000-0002-4931-2174, [i.burakolmez@hotmail.com](mailto:i.burakolmez@hotmail.com)

**Gamze Nur KARLIK**, Özel Egebil Schools, Mathematics Teacher, Türkiye,  
ORCID ID: 0009-0009-4601-2166, [karlikg@mef.edu.tr](mailto:karlikg@mef.edu.tr)

---

**Abstract:** The purpose of this study was to investigate whether students' attitudes towards mathematics differed based on their teachers' classroom management styles. Addressing a gap in the literature, this study considered classroom management styles based on teachers' self-reports while examining students' attitudes through student-reported data. The sample consisted of four mathematics teachers and 132 students, enrolled in Grades 5-6 at a public middle school in Türkiye. Teachers' classroom management styles were identified using the Questionnaire of Classroom Management Profile, and students' attitudes were measured with the Attitudes toward Mathematics scale. Employing one-way ANOVA, the results showed significant differences on students' attitudes towards mathematics based on their teachers' particular classroom management styles, ranging from moderate to small effect sizes. Specifically, students' attitudes towards mathematics were significantly higher in a laissez-faire style teacher's classroom than authoritative teachers' classrooms. These findings suggest that classroom environments emphasizing autonomy and emotional support may foster more positive student attitudes toward mathematics.

---

**Keywords:** *Attitudes, Classroom Management, Mathematics, Middle School.*

---

### 1. INTRODUCTION

One main responsibility of teachers is to create a positive, thought-provoking, emotion-triggering classroom environment while effectively managing students' needs and behaviors (Castillo-Sanguino et al., 2025; Zhang et al., 2025). Accordingly, teachers adopt different classroom management styles based on their teaching philosophy, beliefs, personalities, and their students' behaviors. Classroom management styles refer to the managing strategies that teachers usually prefer using strict rules to tolerate student autonomies (Berger & Girardet, 2021; Brannon & Clark, 2024; Clark et al., 2023; Liu et al., 2024). However, this definition can be considered somewhat limited, as classroom management is increasingly conceptualized as a multidimensional construct that encompasses not only rule-setting and behavioral control, but also emotional support, classroom organization, and instructional guidance (Evertson & Weinstein, 2006). Rather than focusing solely on strict rules, these styles also encompass how

**\*Corresponding Author**

University of Delaware, Department of Mathematical Sciences, USA

teachers organize instruction, provide emotional support, and facilitate student engagement. In this sense, classroom management is closely intertwined with teaching practices, as both contributing to create effective and supportive learning environments that influence students' academic and affective outcomes (Liu et al., 2024).

As stated by Evertson and Weinstein (2006), classroom management involves teachers' actions to create an encouraging and effortful environment that supports students' academic performance and their well-being in the learning process. When teachers are proficient in teaching knowledge and skills, they are able to restructure the classroom environment in line with their students' developmental levels, learning needs, socio-emotional development (Bozkuş, 2021; Stronge et al., 2004). In this regard, classroom management skills are not separate from teaching practices; rather, they function as a foundation for implementing effective teaching strategies. Teachers who can successfully manage classroom interactions, time, and student behaviors are better positioned to deliver instruction clearly, maintain student engagement, and adapt their teaching to diverse learner needs. Moreover, Schleicher (2012) reveals a consensus on the pivotal role of teachers' classroom management skills for effective teaching. They state that teachers who could use classroom management skills effectively tend to organize a substantial learning environment for improving students' learning. Thus, effective classroom management skills and teaching strategies operate in a complementary manner, jointly shaping both the instructional quality and the overall classroom climate.

Past research on teachers' classroom management styles has focused on diverse aspects of teaching and learning process. While some studies (e.g., Özsezer & Saban, 2021) examined students' and teachers' views on classroom management styles, some other studies (e.g., Unal & Unal, 2009) relied on more descriptive perspectives to show how teachers' classroom management styles differed based on their teaching experience. Some of those studies found that teachers' classroom management styles did not have any impact on their students' social, behavioral, and academic outcomes (e.g., Brannon & Clark, 2024; Herman et al., 2022; Obispo et al., 2021; Vu et al., 2022). On the other hand, some other studies highlight that particular classroom management styles tend to foster positive outcomes, such as enhanced student engagement in language learning (e.g., Clark et al., 2023). Findings in the literature are also not consistent based on teachers' teaching experience levels, with novice and experienced teachers often diverging in their perceptions of effective strategies despite similar formal training (Vu et al., 2022). In addition to those findings, Brannon and Clark (2024) demonstrated that teachers' disciplinary choices—ranging from punitive strategies that emphasize control, sanctions, and corrective consequences to supportive strategies that prioritize autonomy support, relational engagement, and positive behavior guidance—are less associated with individual teacher factors such as efficacy or stress than with broader contextual conditions, particularly school climate. This finding further indicates that supportive strategies are closely linked to perceived institutional support. Notably, despite evidence that punitive strategies exacerbate misbehavior, their persistence in practice underscores a gap between research and implementation (Brannon & Clark, 2024; Hofman, 2023; Marder et al., 2023). All of those findings taken together, these studies suggest that the relationship between classroom management styles and student outcomes remains inconclusive. Moreover, the impacts of

teachers' classroom management styles on students' cognitive and affective development are highly context-dependent (Hofman, 2023; Marder et al., 2023), and shaped by institutional environments, teacher beliefs, and subject-specific dynamics (e.g., Quane, 2025).

Given that mathematics learning is strongly influenced by affective factors such as mathematics anxiety, self-confidence, and students' willingness to engage with challenging tasks (e.g., Beilock & Maloney, 2015; Ma, 1997; Ölmez, 2020), mathematics is one critical area in which teachers' classroom management styles can make an impact on students' learning in mathematics. In many cases, students may experience fear of making mistakes or negative emotions toward mathematics, which can hinder their participation and learning. Therefore, classroom environments that provide a sense of psychological safety—where errors are viewed as a natural and valuable part of the learning process—are especially crucial in learning mathematics. Depending on particular classroom management styles that teachers demonstrate in classroom settings, students can have the opportunity to enhance their attitudes and motivation towards mathematics, which has the potential for improving their learning mathematics. For instance, management approaches that encourage autonomy, support emotional expression, and normalize mistake-making may reduce mathematics anxiety and promote more positive engagement with mathematical tasks. Thus, it is important to understand each teacher's classroom management style in a classroom, and its possible effects on students' attitudes towards mathematics.

Past research has shown that the connections between mathematics teachers' classroom management styles and students' attitudes towards mathematics have been rarely studied (e.g., Bozkuş, 2021; Chen, 2023; Vidic & Duranovic, 2020). In those studies, students are asked to evaluate their teachers' classroom management approaches, together with other variables such as teacher enthusiasm and support. For example, Vidic and Duranovic (2020) examined elementary and middle school students' perceptions of teacher enthusiasm, support, and classroom management, and found that students with high perceptions about their teacher had also higher positive attitudes towards mathematics. However, teachers' perceptions of their own classroom management style have not been taken into account in their study. In only one study, Chen (2023) examined the relationships between student attitudes towards mathematics and teachers' classroom management styles and instructional clarity from both student and teacher perspectives. Chen (2023) found that teachers' classroom management styles were highly related to students' attitudes towards mathematics. However, Chen's (2023) study primarily focused on the combined effects of classroom management and instructional clarity within a different educational context, without a specific emphasis on comparing distinct classroom management styles. In contrast, the present study extends this line of research by focusing explicitly on classroom management styles and examining their differential effects on students' attitudes towards mathematics. Furthermore, this study contributes to the literature by situating the analysis within the context of middle school students in Türkiye, thereby providing culturally relevant insights into how classroom management styles operate in this setting. By isolating classroom management styles as the primary variable and examining how student attitudes differed based on those styles, this study offers a more focused and context-specific understanding of this relationship. In particular, there is a further need to better

understand whether there exist significant differences in students' attitudes towards mathematics depending on their mathematics teachers' particular classroom management styles, as a predictor variable, rather than examining a reciprocal relationship. Thus, the purpose of the present study was to examine whether students' attitudes towards mathematics differed based on their teachers' classroom management styles. In this study, classroom management styles were identified based on teachers' self-reports, and their association with student attitudes was examined using student-reported data. Based on the data collected from 132 students in grades 5-6 at a public middle school, the research question that guided this study was as follows:

- Are there significant differences in students' attitudes towards mathematics depending on their teachers' classroom management styles?

## 2. LITERATURE REVIEW

### *2.1. Theoretical Background on Teachers' Classroom Management*

Classroom management is a multifaceted concept integral to the educational process. Evertson and Weinstein (2006) define it as the collection of actions undertaken by teachers to establish a supportive environment conducive to both academic and socio-emotional learning. Stronge and colleagues (2004) further elaborate that classroom management encompasses a teacher's proficiency in structuring the learning environment to align with students' developmental characteristics while facilitating high-quality learning experiences. In other words, classroom management comprises a teacher's structural and organizational strategies to guide student learning, establish rules and norms, and maximize quality learning time. It is considered a generic, cross-curricular skill essential to all school subjects, not one tied to a specific discipline (Asp et al., 2025). Past research has underscored the pivotal role of teachers' classroom management styles as a critical variable influencing students' academic, social, and emotional development (Asp et al., 2025; Valiente et al., 2020). As consistent with these descriptions, for the present study, we considered classroom management as a critical factor in fostering an effective educational setting that promotes students' cognitive and affective development.

Because the classroom is not just a physical space, but it is a dynamic environment where ideas, knowledge, and attitudes intermingle to shape the educational experience, teachers possess critical roles in classrooms (e.g., van Driel et al., 2023). Teachers are not just purveyors of information; they are architects of a learning climate that either nurtures or hinders student development (Shulman, 1986). The attitudes and behaviors exhibited by teachers have a ripple effect on students, influencing not only their academic achievements (Blazar & Kraft, 2017; Wilkins, 2008) but also their social and emotional well-being (Oliver et al., 2011; Romi et al., 2011). Scholars concur that teachers' attitudes, behaviors, and beliefs regarding mathematics play a vital role in shaping students' positive attitudes and behaviors toward mathematics (Kulm, 1980; Ma, 1997; Wilkins, 2008). Positive teacher attitudes can create a conducive atmosphere for learning. When teachers convey enthusiasm, encouragement, and a genuine passion for their subjects, students are more likely to be motivated and engaged (Syukur, 2016). This positive energy fosters an environment where curiosity thrives, and students feel

empowered to explore and express themselves (Sokol et al., 2015). On the flip side, teachers need to be vigilant about avoiding attitudes and behaviors that could inadvertently hinder student development. Negative attitudes, lack of patience, or favoritism can create a toxic atmosphere that impedes the learning process (Kahveci, 2023). Students may become disengaged, lose motivation, or even develop negative perceptions about learning and education as a whole (Hassannein, 2014). The impact goes beyond the academic realm; it permeates into students' social and emotional spheres (Asp et al., 2025). That is to say, students who feel supported and valued by their teachers are more likely to develop a positive self-image and social skills. Conversely, a hostile or unsupportive teacher-student dynamic can lead to emotional distress and hinder social development.

In essence, teachers' classroom management styles can have an impact on students' attitudes towards mathematics in classroom settings. According to theorists like Kounin (1970), effective classroom management can enhance student learning experiences. Using a variety of measures such as surveys, interviews, and observations, several studies (e.g., Adedigba & Sulaiman, 2020; Zainuddin & Hardiansyah, 2023) found relationships between teacher's classroom management styles and students' motivation and learning. By following the classroom management styles proposed by Bosworth et al. (1997) and widely accepted since then (e.g., see Aslan 2022; Dunbar, 2004), the present study focused on four classroom management styles that teachers employ in classroom settings. These styles, including *authoritative*, *authoritarian*, *laissez-faire*, and *indifferent* (see Table 1 for details), encompass a spectrum of behaviors and interactions that teachers employ within the classroom, shaping the atmosphere in which mathematics is taught.

**Table 1. Teachers' Classroom Management Styles**

| Classroom Management Style | Teacher characteristic(s)                                                                                               | Student Interaction                                                                                                         | References              |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Authoritative              | Expressing clear expectations and rules;<br>Fostering a structured yet supportive learning environment;                 | Promoting autonomy among students;<br>Applying rules fairly and consistently;                                               | Dunbar (2004)           |
| Authoritarian              | Closely monitoring and controlling students;<br>Enforcing rigid rules without explaining their rationale;               | Often promoting student autonomy and motivation;<br>Enforcing strict rules and discipline;                                  | Zuna & McDougall (2004) |
| Laissez-faire              | Using more hands-off approach;<br>Granting students to considerable freedom;<br>Leading to a potential classroom chaos; | Doing minimal interference with students;<br>Granting students autonomy to develop their potential through their free will; | Dembo (1994)            |
| Indifferent                | Acting lenient and accommodating, but their free approach may result in a lack of structure and direction;              | Involving minimally in the classroom;<br>Rarely engaging students or offering dynamic educational experiences;              | Dembo (1994)            |

In the present study, we decided to use the theoretical framework by Bosworth et al.'s (1997) on four classroom management styles because other frameworks in the literature were more strictly discipline-oriented models (e.g., Dembo, 1994; Dunbar, 2004). On the other hand, Bosworth et al.'s (1997) framework focuses more on the interpersonal dynamics and power-sharing between teachers and students, which can explain student attitudes towards mathematics in the present study.

## ***2.2. Students' Attitudes towards Mathematics***

In order to measure students' attitudes towards mathematics, several instruments were developed by researchers such as the Attitudes toward Mathematics scale (Aşkar, 1986), Fennema-Sherman Mathematics Attitudes scale (Fennema & Sherman, 1978), and the Math Attitude scale (Önal, 2013). Students' attitudes towards mathematics are akin to a compass that guides their academic trajectory and serve as a crucial determinant, influencing not only their performance in mathematics but also shaping their overall educational experience. Studies such as Reyes (1984) and Ma (1997) have extensively explored the intricate relationship between students' attitudes and their success in mathematics. That is, positive attitudes toward mathematics can be a catalyst for academic success. Studies such as Marchesi and Cook (2012) found that when students view mathematics with curiosity, enthusiasm, and a growth mindset, they are more likely to engage deeply with the subject matter. This engagement translates into better understanding, retention, and application of mathematical concepts. Furthermore, these studies suggest that a positive attitude fosters resilience, enabling students to navigate challenges and persist in the face of difficulties. Conversely, negative attitudes toward mathematics can act as a significant impediment to academic achievement. A lack of interest, fear, or anxiety surrounding the subject can create barriers to learning (Kunwar, 2020; Mazana et al., 2019). Students may become disengaged, avoid seeking help when needed, and develop a mindset that inhibits their mathematical growth (Beilock & Maloney, 2015). The impact of such attitudes extends beyond the classroom, influencing students' future educational and career choices. Hence, the significance of addressing and cultivating positive attitudes toward mathematics becomes even more evident in the context of contemporary education, where interdisciplinary skills and problem-solving abilities are increasingly valued (Cahyono et al., 2021). A solid foundation in mathematics attitudes not only contributes to academic success but also equips students with essential skills for navigating the complexities of the modern world.

Teachers, therefore, can play a pivotal role in shaping and influencing students' attitudes toward mathematics. Strategies that promote a positive and inclusive learning environment, along with innovative teaching methods that make mathematics relevant and engaging, can contribute to a shift in attitudes. Additionally, recognizing and addressing individual challenges and misconceptions can help dismantle barriers and foster a more positive outlook on mathematics. Because students' attitudes toward mathematics intertwine with cognitive and affective development, and even future career choices, understanding and addressing these attitudes becomes not just a pedagogical necessity but a key to unlocking each student's full potential in the realm of mathematics and beyond (Castillo-Sanguino et al., 2025; Zhang et al., 2025).

Existing research suggests that a teacher's dominant classroom management style can have an impact on student attitudes and academic outcomes (Oliver et al., 2011; Romi et al., 2011). However, an intriguing gap in the literature emerges, as the specific connection between teachers' particular classroom management styles and students' attitudes towards mathematics has yet to be thoroughly investigated, as reported by various researchers (e.g., Blazar & Kraft, 2017; Wilkins, 2008). Thus, the present study investigated whether students' attitudes towards mathematics significantly differed depending on their teachers' particular classroom management styles.

### 3. METHODOLOGY

#### 3.1. Design of the Study

This study employed a quantitative research design to examine whether there exist significant differences in students' attitudes towards mathematics depending on their teachers' classroom management styles (Fraenkel et al., 2019). As an exploratory study, we sought to understand the possible effects of teachers' classroom management styles on students' attitudes towards mathematics.

#### 3.2. Participants

The sample of this study consisted of four teachers and 132 students (Grades 5-6), who attended four different classrooms at a public middle school in İstanbul, Türkiye. We used convenient sampling to select the teachers and the students. The four teachers taught mathematics within a highly standardized public school environment using the same textbooks. They followed a synchronized instructional schedule and curriculum standards. This consistency in instructional materials and school context ensures that the differences in students' attitudes toward mathematics can be more accurately attributed to the teachers' individual classroom management styles rather than disparities in the subject matter or teaching resources provided to the students. The socio-economic status of the students' families was medium to high depending on the level of income, education level, and occupation.

Table 2 presents the demographics of the teachers and the students in the study sample. All teachers involved in the study had similar professional backgrounds, each having between 10 and 15 years of teaching experience. Students' age ranged from 11 to 13 years.

**Table 2.** *Teachers' and Students' Demographic Characteristics*

| Names of teachers# | Classroom Management Style | N  |
|--------------------|----------------------------|----|
| Teacher Salih      | Authoritative              | 36 |
| Teacher Nalan      | Authoritarian              | 34 |
| Teacher Talat      | Laissez-faire              | 31 |
| Teacher Özlem      | Authoritative              | 31 |

#: Teachers' names are pseudo-names; N: Number of students in each classroom

### 3.3. Instruments

First, we administered the Bosworth et al.'s (1997)'s Questionnaire of Classroom Management Profile (see Appendix A) to the four teachers and identified their classroom management styles based on each teacher's strongest preference for particular style in Table 2. The questionnaire consists of 12 items ranging from "Strongly disagree" to "Strongly agree" as a 5-point Likert scale and has four sub-dimensions based on the following classroom management styles: *authoritative*, *authoritarian*, *laissez-faire*, and *indifferent*. In each sub-dimension, scores range from 3 to 15. Psychometric characteristics of this questionnaire were measured in several studies, and it was found to have good reliability and validity (e.g., adapted into Turkish by Aktan & Sezer, 2018; Debbağ & Fidan, 2020; Ekici, 2004). Notably, Aktan and Sezer (2018) reported high reliability coefficients for the adapted version of the questionnaire, confirming its suitability for assessing classroom management orientations in Türkiye. The present study relied on these established psychometric benchmarks to ensure the accuracy of teacher classifications. In addition, Debbağ and Fidan (2020) reported the reliability of the questionnaire as over 0.70. Second, we administered the Aşkar (1986)'s Attitudes toward Mathematics (ATM) scale (see Appendix B), to the 132 students in four different classrooms for measuring their attitudes towards mathematics. The ATM scale is a 5-point Likert scale with 20 items ranging from "Completely applicable" to "Not applicable at all". Possible scores on the ATM scale range from 20 to 100. For the reliability of the ATM scale, we calculated Cronbach's alpha as 0.93.

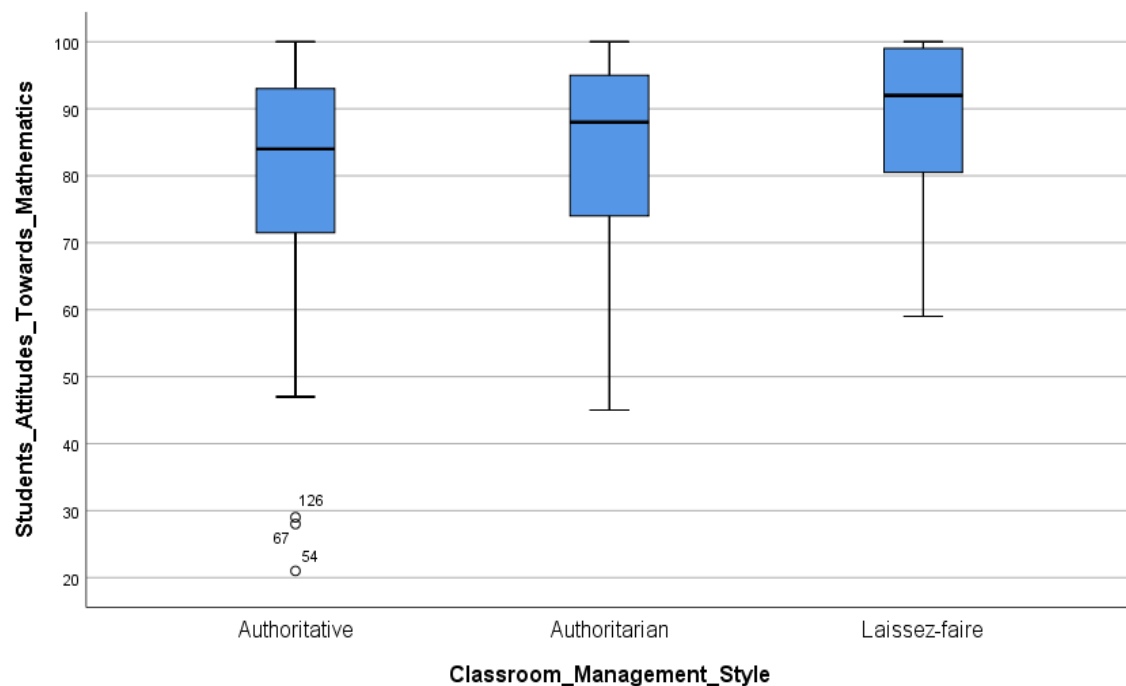
### 3.4. Data Analysis

We collected data from four teachers and 132 students, enrolled in Grades 5-6 at a public middle school in Türkiye. To identify the teachers' classroom management styles, we added up the scores in each sub-dimension for a particular style by following the scoring instruction in Appendix A and considered the highest score for a sub-dimension as the teacher's classroom management style (see Table 2). For example, Teacher Salih received a total score of 12 for the authoritative style, of 5 for the indifferent style, and 10 for the authoritarian and laissez-faire styles. Because his strongest tendency was the authoritative style, we classified his style as the authoritative style. Based on this analysis, while two teachers [Teacher Salih and Teacher Özlem] had predominantly authoritative styles, one teacher [Teacher Nalan] showed the authoritarian style and one teacher [Teacher Talat] had the laissez-faire style as their strongest tendencies (Table 2). Indifferent style was not the strongest tendency for any of the teachers.

In order to measure the students' responses to the ATM scale and compare how students' attitudes towards mathematics differed based on the teachers' classroom management styles, we checked the distribution of the data. Given that the data were normally distributed and the assumption of homogeneity of variance was not violated, we performed one-way ANOVA and multiple comparisons using Tukey HSD. We also calculated general  $\eta^2$  and Cohen's  $d$  to assess the size of the effects (Lakens, 2013). We conducted data analysis using IBM SPSS Statistics 26 Package.

#### 4. FINDINGS

Figure 1 depicts the descriptive statistics using boxplots that demonstrate the distributions of the students' attitudes towards mathematics across the teachers' classroom management styles. Given that none of the teachers had indifferent style as their strongest tendencies for a classroom management style, we present the distributions based on authoritative, authoritarian, and laissez-faire styles. In addition to Figure 1, Table 3 shows that students' attitudes towards mathematics were moderately high and ranged between 80.13 and 88.87, considering that the scores on the ATM scale ranged from 21 to 100. This indicates that the students in general had moderately positive attitudes towards mathematics, with students whose teacher showed the laissez-faire style having the most positive attitude and with those whose teachers showed the authoritative style having the least positive attitude. This descriptive pattern provides an initial indication that teachers' approaches to classroom management might play a meaningful role in shaping students' affective orientations towards mathematics. The relatively higher mean score among students of laissez-faire teachers suggests that a learning climate characterized by autonomy, emotional support, and limited control may foster more positive perceptions and enjoyment of mathematics. Conversely, the lower mean attitude scores among students of authoritative teachers could reflect the potential influence of strict classroom rules and a higher emphasis on control over emotional engagement. Such initial differences warranted further inferential analysis to determine whether the observed variations were statistically significant.



**Figure 1.** *Descriptive Statistics Using Boxplots*

As shown in Table 3, although all three groups demonstrated relatively positive attitudes towards mathematics, the mean differences imply a progressive increase from the authoritative to the laissez-faire style. The standard deviation values indicate that the attitudes in the

authoritative group were more widely dispersed compared to the laissez-faire group, suggesting that the perceived classroom environment under more controlling styles might produce a broader range of affective responses among students. As opposed to the wider dispersion in the authoritative group, the relatively narrower distribution for laissez-faire classrooms may point to a more consistently positive emotional climate among students taught under that management style.

**Table 3.** *Descriptive Statistics based on Teachers' Classroom Management Styles*

| Classroom Management Style | N  | Mean  | SD     | Min | Max |
|----------------------------|----|-------|--------|-----|-----|
| Authoritative              | 67 | 80.13 | 17.557 | 21  | 100 |
| Authoritarian              | 34 | 83.15 | 14.588 | 45  | 100 |
| Laissez-faire              | 31 | 88.87 | 11.351 | 59  | 100 |

*N: Number of students in each classroom; SD: Standard deviation.*

Table 4 presents one-way ANOVA analysis for students' attitudes towards mathematics. Based on Table 4, students' attitudes towards mathematics significantly differed depending on their teacher's particular classroom management style,  $F(2, 129) = 3.344$ ,  $p = 0.038$ ,  $\eta^2 = 0.049$ . Furthermore, the effect size indicated that teachers' classroom management styles appeared to have a significant medium effect on students' attitudes towards mathematics. The significant result, therefore, supports the notion that differences in teachers' classroom management styles can contribute to shaping students' affective engagement with mathematics, warranting post hoc analyses to identify the specific group differences.

**Table 4.** *One-way ANOVA for Attitudes towards Mathematics*

| Source of Variation | SS        | df  | MS      | F     | p      |
|---------------------|-----------|-----|---------|-------|--------|
| Between groups      | 1619.271  | 2   | 809.635 | 3.344 | 0.038* |
| Within groups       | 31231.540 | 129 | 242.105 |       |        |
| Total               | 32850.811 | 131 |         |       |        |

*SS: Sum of squares; df: Degrees of freedom; MS: Mean square; \*: Significant at alpha 0.05*

In order to compare students' attitudes towards mathematics across the teachers' classroom management styles, we performed post hoc multiple comparisons based on Tukey HSD. As can be seen in Table 5, a significant difference was found between students' attitudes towards mathematics in which their teachers had authoritative style and those students whose teacher had a laissez-faire style, ( $p = 0.029$ , Cohen's  $d = -0.55$ ). That is, students' attitudes towards mathematics were significantly higher in a laissez-faire style teacher's classroom than authoritative teachers' classrooms. On the other hand, no significant effects were found between attitudes of students whose teachers had authoritative and authoritarian styles ( $p = 0.629$ ; Cohen's  $d = -0.18$ ) or between those whose teachers had laissez-faire and authoritarian styles ( $p = 0.303$ , Cohen's  $d = -0.44$ ).

**Table 5.** *Post hoc Multiple Comparisons based on Tukey HSD*

| Classroom Management<br>Style Group Comparisons | Mean Difference | SE    | p      |
|-------------------------------------------------|-----------------|-------|--------|
| Authoritative / Authoritarian                   | -3.013          | 3.276 | 0.629  |
| Authoritative / Laissez-faire                   | -8.737          | 3.380 | 0.029* |
| Authoritarian / Laissez-faire                   | -5.724          | 3.864 | 0.303  |

SE: Standard error; \*: Significant at alpha 0.05.

The results of the post hoc analysis further clarified the nature of these differences. The statistically significant contrast between the authoritative and laissez-faire groups ( $p = .029$ ,  $d = -0.55$ ) represents a medium effect size, indicating that the magnitude of the difference in attitudes between these two classroom environments is educationally relevant. Students taught by laissez-faire teachers reported more positive attitudes, which might stem from the autonomy and emotional openness characterizing such classrooms. In contrast, the absence of significant differences between the authoritative and authoritarian groups suggests that both management styles, which emphasize control and rule enforcement to varying degrees, may similarly influence students' affective orientations. Although the difference between the laissez-faire and authoritarian styles is not significant ( $p = .303$ ), there exists a moderate effect size ( $d = -0.44$ ) suggesting that with a larger sample, this contrast might indicate statistical significance.

Overall, these results point to the conclusion that the classroom management style employed by teachers has a considerable impact on developing their students' attitudes towards mathematics. Therefore, students' affective development—such as enjoyment, confidence, and value perceptions—may flourish more in classrooms where teachers adopt a more flexible, emotionally supportive, and autonomy-oriented management approach.

## 5. DISCUSSION

To our knowledge, past research has not explored the connections between teachers' perceptions of their own classroom management style and students' perceptions of their own attitudes towards mathematics yet (except Chen, 2023). In the present study, we aimed to investigate teachers' classroom management style differences on students' attitudes towards mathematics among a sample of four teachers and 132 students. One main result was that students in general had moderately positive attitudes towards mathematics, and students' attitudes towards mathematics significantly differed across their teachers' particular classroom management styles. The results of the present study are consistent with prior studies indicating that students in general had moderate level attitudes towards mathematics (e.g., Alharthi, 2023; Aquilina et al., 2025; Peker & Mirasyedioğlu, 2003; Yaşar et al., 2014).

A second main result of the present study was that students' attitudes towards mathematics were significantly higher in a laissez-faire style teacher's classroom than authoritative teachers' classrooms. No significant differences were found between attitudes of students whose teachers had authoritative and authoritarian styles or between those whose teachers had laissez-faire and authoritarian styles. This indicates that students' attitudes towards mathematics can be higher

in a laissez-faire style teacher's classroom because teachers who predominantly had the laissez-faire style might focus on using mathematical tasks that would support students' emotional development in classroom practices (Sadık & Sadık, 2014). Those teachers may encourage their students when they make mistakes during mathematical tasks. Having seen this opportunity as growth of mind, students may be encouraged to find their own solution errors. In other words, while the laissez-faire teacher might not hurt their students' feelings in the classroom and is more likely to be concerned with the students' emotional well-being rather than classroom control, authoritative teachers might focus more on classroom control rather than students' feelings in classrooms. In this case, the laissez-faire teacher might have a tendency to do minimal interference with their students during mathematics teaching, avoid decision making, and see students' free will as an autonomy. Laissez-faire teachers can be considered as students' most favourite teachers in schools because they provide more freedom to their students. On the other hand, authoritative teachers might focus more on supporting higher mathematics achievement with strict classroom rules. Past research has also shown that teachers often underemphasize the emotional dimension of classroom management, even when other aspects are rated as effective (Poulou et al., 2022). This suggests that the affective domain,—emphasized implicitly by laissez-faire teachers,—deserves explicit attention in mathematics teaching research. These findings align with the argument that classrooms characterized by emotional safety and autonomy support fostering students' engagement and positive attitudes toward mathematics (Wei et al., 2020).

On the other perspective, following the principle that structure and autonomy are complementary rather than contradictory, the positive student attitudes in the laissez-faire classroom suggest a form of “intentional flexibility.” Unlike a chaotic or indifferent environment where learning goals might be lost, this approach likely offered a low-anxiety space that prioritized emotional development. Addressing this distinction is vital. The findings imply that when a lack of rigid control is perceived by students as trust and autonomy support rather than neglect, it can significantly enhance their affective engagement with mathematics. Hence, the findings align with Self-Determination Theory (Deci & Ryan, 2000), which suggests that environments fostering autonomy can lead to more positive affective outcomes. Importantly, as Reeve (2006) emphasizes, autonomy support should not be equated with a lack of structure or classroom chaos. In this study, the laissez-faire style may have functioned as a high-autonomy environment where students felt emotionally safe and empowered to take ownership of their learning, rather than an indifferent or disorganized setting. While the positive attitudes in the laissez-faire classroom suggest a supportive emotional environment, a potential bias should also be acknowledged that students may favour this style primarily due to the absence of rigid disciplinary structures, which can enhance perceived enjoyment without necessarily reflecting deep engagement with mathematics. Addressing this distinction is also crucial for educators, as the high scores towards attitudes might partly reflect a preference for a less demanding classroom climate rather than an intrinsic motivation for the subject itself.

Studies also confirm our results that teacher autonomy support and emotional responsiveness are among the strongest predictors of students' positive affect towards mathematics and engagement (Castillo-Sanguino et al., 2025; Zhang et al., 2025). Likewise, Berger and Girardet

(2021) and Brannon and Clark (2024) emphasize that teachers' self-efficacy and perceived school climate mediate the impact of management style on students' motivational outcomes. These findings suggest that flexibility and socio-emotional sensitivity, often characteristic of *laissez-faire* or student-centered styles, may foster a more relaxed learning climate that reduces mathematics anxiety and enhances intrinsic motivation. In another study, Lazarides et al. (2023) found that students' perceptions of classroom management and instructional clarity were strongly associated with multiple components of their attitudes toward mathematics—such as enjoyment, self-concept, and perceived value—highlighting that teachers' relational and management styles play a crucial role in shaping students' affective responses. Similarly, Shen et al. (2024) found that teachers' social-emotional support, particularly autonomy support and positive emotional tone, significantly predicted students' interest and self-efficacy, which subsequently enhanced their academic achievement levels.

When interpreting those results in the present study, it is important to acknowledge that structure and autonomy should not be seen as opposites but as complementary elements. While *laissez-faire* practices may nurture emotional well-being and reduce anxiety, prior work underscores that instructional clarity and guided autonomy are equally essential for maintaining cognitive engagement and achievement (Chen & Lu, 2022; Yang et al., 2022). Therefore, an optimal classroom climate may balance affective sensitivity with structured guidance, supporting both emotional and cognitive dimensions of mathematics learning.

The results of this study highlight several implications for mathematics education and teacher professional development. As one implication, mathematics teacher preparation programs should integrate reflective practices on classroom management styles, emphasizing emotional support and student autonomy as core competencies. Encouraging teachers to critically analyze how their management decisions influence students' attitudes can promote more balanced and responsive classroom climates. Recent frameworks such as social-emotional learning integration in instruction (Xie et al., 2025; Zhang et al., 2025) suggest that effective management extends beyond discipline—it involves fostering empathy, dialogue, and a growth mindset. As the second implication, professional development workshops could adopt scenario-based or simulation approaches that help teachers recognize the impact of different management styles on student engagement, particularly in mathematics contexts where affective factors like anxiety and self-efficacy are salient. Furthermore, school administrators should support environments that value teacher flexibility and positive discipline rather than rigid rule enforcement, as these conditions appear to enhance students' motivation and enjoyment of learning mathematics (Brannon & Clark, 2024).

One limitation of the present study was that it was conducted with a small sample of teachers and students from grades 5-6 in Türkiye. We were aware that the disparity between the number of teachers and students might possess a challenge for statistical power while this study was designed as an exploratory quantitative analysis. A qualitative approach was not prioritized at this stage because the primary goal was to test the feasibility of the ATM scale in differentiating between teachers' management styles. However, we recognize that the limited number of teachers might be a constraint, and we suggest that future research utilize a larger teacher

sample to examine how students' attitudes towards mathematics differed based on their teachers' classroom management styles. A second limitation was that none of the teachers had indifferent style in the present study. Administering the Questionnaire of Classroom Management Profile to a larger group of teachers will increase the possibility of having teachers with each classroom management style. Moreover, a third limitation was that although we interpreted each teacher with his or her highest score as the strongest tendency for the classroom management style, this does not mean that the teacher did not demonstrate any of the characteristics from other classroom management styles. Future studies might consider selecting teachers who only show characteristics of the particular style as the sample. Given that the number of units (only three units for three classroom management styles) at the teacher level is not enough to estimate a multilevel model (McCoach, 2010), hierarchical linear modelling is not an appropriate technique for use in the present study.

Future research should continue to explore the effects of teachers' classroom management style differences on students' attitudes towards mathematics with a larger and diverse sample of teachers and students including those from both public and private schools. This would depict a more accurate picture of students' attitudes towards mathematics in Türkiye. Because students' attitudes about mathematics is a multifaceted aspect influenced by several variables such as students' socio-economic status and teachers' teaching approaches in the classroom, further research such as a path analysis is needed to explore what variables have direct and indirect effects on students' attitudes towards mathematics. Identifying those variables with direct and indirect effects would support students' learning mathematics.

In addition, longitudinal and mixed-method studies are necessary to understand how shifts in classroom management styles over time influence both cognitive and affective student outcomes (Hasty et al., 2023; Zainuddin & Hardiansyah, 2023). Future research should examine cross-cultural variations in how classroom management influences mathematics attitudes, particularly in relation to cultural norms of authority and autonomy. Also, the power of mixed-method research can boost the similar study's depth. Although the current quantitative approach confirms that classroom management styles influence mathematical attitudes, qualitative insights are needed to uncover the nuances of this impact. Investigating students' lived experiences through interviews would clarify whether their preference for a laissez-faire style is rooted in a sense of autonomy or other contextual factors unique to middle schools in Türkiye. This would bridge the gap between identifying statistical trends and understanding the causal mechanisms behind them. Besides, comparative studies across educational systems could offer valuable insights into how teacher-student relational dynamics mediate mathematical engagement and persistence. By integrating these insights, both researchers and practitioners can contribute to developing classroom environments that support cognitive growth and emotional well-being simultaneously. Lastly, further research is needed to examine the reasons for why there existed a significant difference of attitudes towards mathematics in terms of teachers' being predominantly authoritative or laissez-faire. Conducting interviews with teachers from a range of classroom management styles and students with low, medium, and high attitudes towards mathematics would be helpful for examining those reasons in detail.

## 6. ETHICS

Ethics committee approval was received for this study from MEF University Ethics Committee [Ethics' Document Issue Number 13.05.2019].

## 7. ABOUT THE AUTHORS

**Bengi BİRGİLİ:** She is currently senior researcher and instructor at MEF University, Istanbul and part-time lecturer at the department of mathematics education and curriculum & instruction. Her research interests include neuroeducation, multimodal mixed-methods research design, educational assessment, AI in education.

**İpek SARALAR:** She is currently a national education expert at the Turkish Ministry of National Education and a part-time lecturer at the Department of Mathematics and Science Education at the Middle East Technical University. Her research interests include middle school mathematics teaching, technology enhanced learning and pre-service and in-service mathematics teacher education.

**İbrahim Burak ÖLMEZ:** He is a post-doctoral researcher at the University of Delaware. His research interests are applications of psychometric models to mathematics education including fractions, ratios, and problem posing.

**Gamze Nur KARLIK:** She was a former mathematics teacher at Özel Egebil Schools, Fethiye. Her research interests include classroom management skills, mathematics teaching and learning at the middle school level.

## 8. References

Adedigba, O., & Sulaiman, F. R. (2020). Influence of teachers' classroom management style on pupils' motivation for learning and academic achievement in Kwara State. *International Journal of Educational Methodology*, 6(2), 471–480.

Aktan, S., & Sezer, F. (2018). Investigating the psychometric characteristics of classroom management styles scale. *Kastamonu Education Journal*, 26(2), 439–449. <https://doi.org/10.24106/kefdergi.389803>

Alharthi, M. S. (2023). Investigation of students' attitudes toward mathematics in middle schools in Saudi Arabia. *European Journal of Education Studies*, 10(1), 85–99. <https://oapub.org/edu/index.php/ejes/article/view/4742/0?utm>

Aquilina, G., Di Martino, P., & Lisarelli, G. (2025). The construct of attitude in mathematics education research: Current trends and new research challenges from a systematic literature review. *ZDM – Mathematics Education*, 57, 569–581. <https://doi.org/10.1007/s11858-024-01642-3>

Aslan, S. (2022). An analysis of the primary school teachers' classroom management styles in terms of some variables. *International Online Journal of Education and Teaching (IOJET)*, 9(2), 955–970.

Asp, L., Klapp, A., & Rosén, M. (2025). Does teaching quality matter for Nordic primary school students' mathematics confidence and mathematics achievement? A multilevel structural equation analysis of Nordic TIMSS 2019 grade 4 data. *Large-Scale Assessments in Education*, 13(1). <https://doi.org/10.1186/s40536-025-00238-x>

Aşkar, P. (1986). Development of a Likert type scale that measures the attitude toward the mathematics. *Education and Science*, 62(11), 31–36.

Beilock, S. L., & Maloney, E. A. (2015). Math anxiety: A factor in math achievement not to be ignored. *Policy Insights from the Behavioral and Brain Sciences*, 2(1), 4–12. <https://doi.org/10.1177/2372732215601438>

Berger, J.-L., & Girardet, C. (2021). Vocational teachers' classroom management style: The role of motivation to teach and sense of responsibility. *European Journal of Teacher Education*, 44(2), 200–216. <https://doi.org/10.1080/02619768.2020.1764930>

Blazar, D., & Kraft, M. A. (2017). Teacher and teaching effects on students' attitudes and behaviors. *Educational Evaluation and Policy Analysis*, 39(1), 146–170. <https://doi.org/10.3102/016237371667026>

Bosworth, K., McCracken, K., Haakenson, P., Ritter Jones, M., Grey, A., Versaci, L., James, J., & Hammer, R. (1997). What is your classroom management profile? *Teacher Talk-A Publication for Secondary Education Teachers*, 1(2). <http://protectiveschools.org/drugstats/tt/v1i2/table.html>.

Bozkuş, K. (2021). A systematic review of studies on classroom management from 1980 to 2019. *International Electronic Journal of Elementary Education*, 13(4), 433–441. <https://www.iejee.com/index.php/IEJEE/article/view/1375>

Brannon, J., & Clark, K. N. (2024). Profiles of teacher behavior management style: Perceived school climate, stress, and self-efficacy. *Contemporary School Psychology*, 28, 621–639. <https://doi.org/10.1007/s40688-023-00479-z>

Cahyono, A. N., Asikin, M., Zahid, M. Z., & Laksmiwati, P. A. (2021). The RoboSTE[M] project: Using robotics learning in a STEM education model to help prospective mathematics teachers promote students' 21st-century skills. *International Journal of Learning, Teaching and Educational Research*, 20(7), 85–99.

Castillo-Sanguino, N., del Socorro Ramírez, M., & Castillo-Lucero, S. K. (2025). Pre-service English teachers' classroom management: Between discontinuities and caring for students. In M. Rahmat & A. Osborne (Eds.), *Pedagogies of compassion and care in education* (pp. 273–300). IGI Global Scientific Publishing. <https://doi.org/10.4018/979-8-3693-3613-7.ch012>

Chen, X., & Lu, L. (2022). How classroom management and instructional clarity relate to students' academic emotions in Hong Kong and England: A multi-group analysis based on the control-value theory. *Learning and Individual Differences*, 98, 102183. <https://doi.org/10.1016/j.lindif.2022.102183>

Chen, X. (2023). Instructional clarity and classroom management are linked to attitudes towards mathematics: A combination of student and teacher ratings. *British Journal of Educational Psychology*, 93(2), 591–607. <https://doi.org/10.1111/bjep.12580>

Clark, K. N., Blocker, M. S., Gittens, O. S., & Long, A. C. J. (2023). Profiles of teachers' classroom management style: Differences in perceived school climate and professional characteristics. *Journal of School Psychology*, 100, 101239. <https://doi.org/10.1016/j.jsp.2023.101239>

Debbağ, M., & Fidan, M. (2020). Relationships between prospective teachers' multicultural education attitudes and classroom management styles. *International Journal of Progressive Education*, 16(2), 111–124. <https://doi.org/10.29329/ijpe.2020.241.8>

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268. [https://doi.org/10.1207/S15327965PLI1104\\_01](https://doi.org/10.1207/S15327965PLI1104_01)

Dembo, M. H. (1994). *Applying educational psychology in the classroom* (5th ed.). Longman Publications.

Dunbar, C. (2004). *Best practices in classroom management*. Michigan State University Press.

Ekici, G. (2004). Assessment of teachers' classroom management profiles in first-level elementary education. *Education and Science*, 29(131), 50–60.

Evertson, C. M., & Weinstein, C. (2006). Classroom management as a field of inquiry. In C. M. Evertson & C. Weinstein (Eds.), *Handbook of classroom management: Research, practice, and contemporary issues* (pp. 3–15). Lawrence Erlbaum Associates, Inc.

Fennema, E. H., & Sherman, J. A. (1978). Sex-related differences in mathematics achievement and related factors: A further study. *Journal for Research in Mathematics Education*, 9(3), 189–203. <https://doi.org/10.2307/748997>

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2019). *How to design and evaluate research in education* (9th ed.). McGraw-Hill.

Hasty, L. M., Quintero, M., Li, T., Song, S., & Wang, Z. (2023). The longitudinal associations among student externalizing behaviors, teacher–student relationships, and classroom

engagement. *Journal of School Psychology*, 100, 101242.  
<https://doi.org/10.1016/j.jsp.2023.101242>

Hofman, J. (2023). Classroom management and teacher emotions in secondary mathematics teaching: a qualitative video-based single case study. *Education Inquiry*, 14(3), 389–405.  
<https://doi.org/10.1080/20004508.2022.2028441>

Kahveci, H. (2023). The positive and negative effects of teacher attitudes and behaviors on student progress. *Journal of Pedagogical Research*, 7(1), 290–306.  
<https://eric.ed.gov/?id=EJ1380987>

Kounin, J. S. (1970). *Discipline and group management in classrooms*. Holt, Rinehart and Winston.

Kulm, G. (1980). Research on mathematics attitude. In R. Shumway (Ed.). *Research in mathematics education* (pp. 356–387). National Council of Teachers of Mathematics, Reston.

Kunwar, R. (2020). Mathematics phobia: Causes, symptoms and ways to overcome. *International Journal of Creative Research Thoughts*, 8(8), 818–822.

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. *Frontiers in Psychology*, 4, 863.  
<https://doi.org/10.3389/fpsyg.2013.00863>

Lazarides, R., Schiefele, U., Hettinger, K., & Frommelt, M. C. (2023). Tracing the signal from teachers to students: How teachers' motivational beliefs longitudinally relate to student interest through student-reported teaching practices. *Journal of Educational Psychology*, 115(2), 290–308. <https://doi.org/10.1037/edu0000777>

Ma, X. (1997). Reciprocal relationships between attitude toward mathematics and achievement in mathematics. *The Journal of Educational Research*, 90(4), 221–229.  
<https://doi.org/10.1080/00220671.1997.10544576>

Marchesi, A. G., & Cook, K. (2012). *Social and emotional learning as a catalyst for academic excellence*. White Paper. ICF International (NJ1). <https://eric.ed.gov/?id=ED532586>

Marder, J., Thiel, F., & Göllner, R. (2023). Classroom management and students' mathematics achievement: The role of students' disruptive behavior and teacher classroom management. *Learning and Instruction*, 86, 101746. <https://doi.org/10.1016/j.learninstruc.2023.101746>

Mazana, Y. H., Suero Montero, C., Olifage, C. R. (2019). Investigating students' attitude towards learning mathematics. *International Electronic Journal of Mathematics Education*, 14(1), 207–231. <https://doi.org/10.29333/iejme/3997>

McCoach, B. D. (2010). Hierarchical linear modeling. In G. R. Hancock & R. O. Mueller (Eds.), *The reviewer's guide to quantitative methods in the social sciences: Revise, accept, reject* (pp. 123–140). New York, NY: Routledge.

Obispo, R. T., Magulod, G. C., & Tindowen, D. J. C. (2021). Teachers' classroom management styles and student-teacher connectedness and anxiety. *International Journal of Learning, Teaching and Educational Research*, 20(5), 123–141. <https://doi.org/10.26803/ijlter.20.5.7>

Oliver, R. M., Wehby, J. H., & Reschly, D. J. (2011). Teacher classroom management practices: Effects on disruptive or aggressive student behavior. *Campbell Systematic Reviews*, 7(1), 1–55. <https://doi.org/10.4073/csr.2011.4>

Ölmez, İ. B. (2020). Modeling mathematics achievement using hierarchical linear models. *Elementary Education Online*, 19(2), 944–957. <https://doi.org/10.17051/ilkonline.2020.695837>

Önal, N. (2013). A study on the development of a middle school students' attitudes towards mathematics scale. *Elementary Education Online*, 12(4), 938–948.

Özsezer, M. S. B., & Saban, A. İ. (2021). Towards the development of teachers for the future. *South African Journal of Education*, 41(2), 1–9. <https://doi.org/10.15700/saje.v41n2a1759>

Peker, M., & Mirasyedioğlu, Ş. (2003). Lise 2. sınıf öğrencilerinin matematik dersine yönelik tutumları ve başarıları arasındaki ilişki [The relationship between attitudes towards mathematics and mathematics achievement among high school 2<sup>nd</sup> grade students]. *Pamukkale University Journal of Education Faculty*, 14, 157–166.

Poulou, M. S., Garner, P. W., & Bassett, H. H. (2022). Teachers' emotional expressiveness and classroom management practices: Associations with young students' social-emotional and behavioral competence. *Psychology in the Schools*, 59(3), 557–573. <https://doi.org/10.1002/pits.22631>

Quane, K. (2025). Observing mathematical learning experiences in the primary years to examine how attitudes towards mathematics are enacted in the classroom. *Education Sciences*, 15(4), 417. <https://doi.org/10.3390/educsci15040417>

Reeve, J. (2006). Teachers as facilitators: What autonomy-supportive teachers do and why their students benefit. *Elementary School Journal*, 106(3), 225–236. <https://doi.org/10.1086/501484>

Reyes, L. H. (1984). Affective variables and mathematics education. *The Elementary School Journal*, 84, 558–580. <https://eric.ed.gov/?id=EJ300157>

Romi, S., Lewis, R., Roache, J., & Riley, P. (2011). The impact of teachers' aggressive management techniques on students' attitudes to schoolwork. *The Journal of Educational Research*, 104(4), 231–240. <https://doi.org/10.1080/00220671003719004>

Shen, S., Tang, T., Pu, L., Mao, Y., Wang, Z., & Wang, S. (2024). Teacher emotional support facilitates academic engagement through positive academic emotions and mastery-approach goals among college students. *Sage Open*, 14(2), 1–11. <https://doi.org/10.1177/21582440241245369>

Shulman, L. S. (1986). Those who understand: A conception of teacher knowledge. *American Educator*, 10(1), 43–46. <https://eric.ed.gov/?id=EJ333816>

Sokol, A., Gozdek, A., & Figurska, I. (2015). The importance of teacher leadership in shaping the creative attitudes of students. *Procedia-Social and Behavioral Sciences*, 197, 1976–1982. <https://doi.org/10.1016/j.sbspro.2015.07.569>

Stronge, J. H., Tucker, P. D., & Hindman, J. D. (2004). *Handbook for qualities of effective teachers*. ASCD Publications.

Syukur, A. (2016). Encouraging students to have positive attitudes toward learning English. *Ethical Lingua: Journal of Language Teaching and Literature*, 3(2), 122–130. <https://doi.org/10.30605/25409190.v3.02.122-130>

Unal, Z., & Unal, A. (2009). Comparing beginning and experienced teachers' perceptions of classroom management beliefs and practices in elementary schools in Turkey. *The Educational Forum*, 73(3), 256–270. <https://doi.org/10.1080/00131720902991343>

Valiente, C., Swanson, J., DeLay, D., Fraser, A. M., & Parker, J. H. (2020). Emotion-related socialization in the classroom: Considering the roles of teachers, peers, and the classroom context. *Developmental Psychology*, 56(3), 578–594. <https://doi.org/10.1037/dev0000863>

van Driel, S., Crasborn, F., Wolff, C.E., Brand-Gruwel, S., & Jarodzka, H. (2023). Teachers' interactive cognitions in noticed classroom management events: Does experience matter? *Teaching and Teacher Education*, 126, 104076. <https://doi.org/10.1016/j.tate.2023.104076>

Vidić, T., & Duranović, M. (2020). Students' attitudes towards mathematics and their perceptions of teacher support, enthusiasm, classroom management and their own behavior. *Journal of Educational Sciences & Psychology*, 10(2), 61–73.

Vu, T. V., Nhac, H. T., Binh La, M. N., & Huong Nguyen, L. T. (2022). Differences between novice and experienced teachers in classroom management style at a higher education institution. *Academia*, 26, 62–82. <https://doi.org/10.26220/ACA.3950>

Xie, X., Wang, R., Fu, N., Ding, X., Liu, Z., Liu, X., & Zhang, Z. (2025). The relationships among family environment, teacher autonomy support and learning engagement in the context of home-based online learning among secondary school students during the COVID-19 pandemic: The mediating roles of psychological distress and learning motivation. *Current Psychology*, 44(1), 450–466. <https://doi.org/10.1007/s12144-024-07202-y>

Wei, D., Zhang, D., He, J., & Bobis, J. (2020). The impact of perceived teachers' autonomy support on students' mathematics achievement: Evidences based on latent growth curve modelling. *European Journal of Psychology of Education*, 35(3), 703–725. <https://doi.org/10.1007/s10212-019-00437-5>

Wilkins, J. L. (2008). The relationship among elementary teachers' content knowledge, attitudes, beliefs, and practices. *Journal of Mathematics Teacher Education*, 11, 139–164. <https://doi.org/10.1007/s10857-007-9068-2>

Yaşar, M., Çermik, H., & Güner, N. (2014). High school students' attitudes towards mathematics and factors affect their attitudes in Turkey. *Journal of Faculty of Educational Sciences*, 47(2), 41–64.

Yang, D., Chen, P., Wang, H., Wang, K., & Huang, R. (2022). Teachers' autonomy support and student engagement: A systematic literature review of longitudinal studies. *Frontiers in Psychology*, 13, 925955. <https://doi.org/10.3389/fpsyg.2022.925955>

Zainuddin, Z., & Hardiansyah, F. (2023). Teacher classroom management skills and its implementation in primary school learning. *Mimbar Sekolah Dasar*, 10(1), 92–105.

Zhang, Z., Wang, Y., Deng, W., Ma, X., & Qi, C. (2025). The impact of teacher care on teacher-student relationship: evidence from cross-sectional and longitudinal data. *Frontiers in Psychology*, 16(1), 1–9. <https://doi.org/10.3389/fpsyg.2025.1551081>

Zuna, N., & McDougall, D. (2004). Using positive behavioral support to manage avoidance of academic tasks. *Teaching Exceptional Children*, 37(1), 18–24. <https://doi.org/10.1177/004005990403700102>

## Appendices

### Appendix A. Classroom Management Profile Questionnaire (Bosworth, 1997)

#### What Is Your Classroom Management Profile?

**Instructions:** Answer these 12 questions and learn more about your classroom management profile. The steps are simple:

- Read each statement carefully. Write your response, from the scale below, on a sheet of paper.
- Respond to each statement based upon either actual or imagined classroom experience.
- Then, follow the scoring instructions below. It couldn't be easier!

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

| Items                                                                                                  | 5 | 4 | 3 | 2 | 1 |
|--------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| 1. If a student is disruptive during class, I assign him/her to detention, without further discussion. |   |   |   |   |   |
| 2. I don't want to impose any rules on my students.                                                    |   |   |   |   |   |
| 3. The classroom must be quiet in order for students to learn.                                         |   |   |   |   |   |
| 4. I am concerned about both what my students learn and how they learn.                                |   |   |   |   |   |
| 5. If a student turns in a late homework assignment, it is not my problem.                             |   |   |   |   |   |
| 6. I don't want to reprimand a student because it might hurt his/her feelings.                         |   |   |   |   |   |
| 7. Class preparation isn't worth the effort.                                                           |   |   |   |   |   |
| 8. I always try to explain the reasons behind my rules and decisions.                                  |   |   |   |   |   |
| 9. I will not accept excuses from a student who is tardy.                                              |   |   |   |   |   |
| 10. The emotional well-being of my students is more important than classroom control.                  |   |   |   |   |   |
| 11. My students understand that they can interrupt my lecture if they have a relevant question.        |   |   |   |   |   |
| 12. If a student requests a hall pass, I always honour the request.                                    |   |   |   |   |   |

#### **To score your quiz,**

- Add your responses to statements 1, 3, and 9. This is your score for the authoritarian style.
- Statements 4, 8 and 11 refer to the authoritative style.
- Statements 6, 10, and 12 refer to the laissez-faire style.
- Statements 2, 5, and 7 refer to the indifferent style.

The result is your classroom management profile. Your score for each management style can range from 3 to 15. A high score indicates a strong preference for that particular style. After you have scored your quiz, and determined your profile, read the descriptions of each management style. You may see a little bit of yourself in each one. (Bosworth, 1997)

## Appendix B. Attitudes Toward Mathematics (ATM) Scale (Askar, 1986)

### Attitudes Toward Mathematics Scale

**Instructions:** After carefully reading each of the items below, please indicate the extent to which each item applies to you by marking the relevant option. There are no right or wrong answers.

Completely Applicable=5, Applicable=4, Undecided=3, Not Applicable=2, Not Applicable at All=1

| Attitude Scale Items                                                      | 5 | 4 | 3 | 2 | 1 |
|---------------------------------------------------------------------------|---|---|---|---|---|
| 1. I enjoy mathematics as a subject.                                      |   |   |   |   |   |
| 2. I feel a great deal of discomfort when entering a mathematics class.   |   |   |   |   |   |
| 3. Life as a student would be more enjoyable without mathematics classes. |   |   |   |   |   |
| 4. I enjoy discussing mathematics with my friends.                        |   |   |   |   |   |
| 5. I wish there were more hours allocated to mathematics classes.         |   |   |   |   |   |
| 6. I get bored when studying mathematics.                                 |   |   |   |   |   |
| 7. Mathematics class is a burden for me.                                  |   |   |   |   |   |
| 8. I like mathematics.                                                    |   |   |   |   |   |
| 9. Time seems to fly when I'm in a mathematics class.                     |   |   |   |   |   |
| 10. I feel anxious about mathematics exams.                               |   |   |   |   |   |
| 11. Mathematics is interesting to me.                                     |   |   |   |   |   |
| 12. Mathematics is the subject I fear the most.                           |   |   |   |   |   |
| 13. I could study mathematics for years without getting tired of it.      |   |   |   |   |   |
| 14. Compared to other subjects, I enjoy studying mathematics more.        |   |   |   |   |   |
| 15. Mathematics class makes me restless.                                  |   |   |   |   |   |
| 16. Mathematics intimidates me.                                           |   |   |   |   |   |
| 17. Mathematics class is enjoyable.                                       |   |   |   |   |   |
| 18. I feel joy in mathematics class.                                      |   |   |   |   |   |
| 19. Among all the subjects, mathematics is the least likable.             |   |   |   |   |   |
| 20. I would prefer to dedicate most of my study time to mathematics.      |   |   |   |   |   |