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Understanding the complex interplay of victimization experiences, empathy and school climate in Tunisian schools

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Aim: Our study aims to examine the interactions between empathy, victimization, and the school climate in Tunisian primary schools.

Method: In total, 312 school children (158 boys and 154 girls), with a mean age of 10.75 ± 1.32 years old participated voluntarily in the study. The students answered three scales that measure the School Climate, the Victimization, and the Empathy.

Result: The results indicate a predominantly positive perception of the school climate by the students, both for the overall score (2.67 ± 0.64) and the scores of the different components of the school climate (ranging from 2.61 to 2.86). Also, girls seemed to have a more positive perception of the overall school climate, displaying higher scores (2.86 ± 0.54) compared to boys' scores (2.45 ± 0.67). Moreover, other results showed positive and statistically significant correlations ($p < 0.01$) between the different dimensions of the school climate.

Conclusion: The findings highlight the importance of creating a safe and inclusive school environment where empathy is encouraged, and effective measures are in place to prevent and address victimization.

KEYWORDS

school climate, empathy, victimization, wellbeing, students

1 Introduction

Similar to the family, the school is a primary socializing institution (Fraser, 1994; Peterson and Skiba, 2000; Skiba and Peterson, 2000). Its crucial role in the processes of socialization and identity construction is well established. It is at school that today's students and tomorrow's citizens internalize the standards and values specific to their social environment (Gayet, 1999; Darmon, 2001). Interacting with various stakeholders and elements at play, such as teachers, peers, school activities, and educational rules, shapes the student's experience and thus creates the school climate (Haynes et al., 1997; Juvonen, 2007). The school climate is defined as the "pattern of students', parents', and school personnel's experience of school life [that] reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures" (Cohen et al., 2009). Substantial research suggests that a positive, serene, and respectful school climate not only promotes academic success (Hoy et al., 2006; Wang and Degol, 2016) but also fosters socio-emotional growth and prevents risky behaviors (Steffgen et al., 2013; Espelage et al., 2014b). However, schools are not immune to deviant and delinquent events. Violence, aggression, and bullying are also possible within school

settings. Repeated violence in schools often leads to significant problems for the victims, including disengagement, absenteeism, and depressive tendencies (Gini and Pozzoli, 2009; Lereya et al., 2015; Huang et al., 2019). Despite efforts to prevent victimization in the school environment through anti-bullying programs (Farrington and Ttofi, 2009; Evans et al., 2014; Yeager et al., 2015) that have proven highly effective in reducing victimization rates, it may be impossible to completely eradicate bullying in schools (Huitsing and Veenstra, 2012; Garandeau et al., 2018). In this regard, Salmivalli (2018) discussed the healthy context paradox, where the negative impact of victimization can be particularly severe. This paradox highlights that, in such contexts, victimization can become more psychologically damaging because it is less normative, leading to increased feelings of isolation and self-blame among victims (Bellmore et al., 2004; Nishina and Juvonen, 2005). This negatively impacts the overall school climate (Sourander et al., 2010; Bayar and Uçanok, 2012).

Some prior studies have focused on the school climate as a predictor of victimization incidents (Jones et al., 2008; Duffy and Nesdale, 2009; Turner et al., 2014; Schultze-Krumbholz et al., 2020; Montero-Carretero et al., 2021), while others have examined the impact of victimization on the school climate (Younes et al., 2011; Blaya, 2015; Debarbieux, 2015; Tamara et al., 2016; Konold et al., 2017; Poulin et al., 2018). Given the reciprocal influence between these two factors, we suggest that studying victimization as a social phenomenon that encompasses both individual and contextual factors is crucial (Kasen et al., 2004). On one hand, various studies have indicated that when students perceive a lack of structure, safety, belongingness, and wellbeing in their school environment, they are more likely to adopt the idea that they can deliberately and repeatedly harm others (Hinduja and Patchin, 2012). On the other hand, recent research reviews have shown an individual predisposition to violence and antisocial behaviors, sometimes explained by biological factors (Rutter et al., 1998; Susman and Finkelstein, 2001) or psychosocial factors (Loeber and Farrington, 1998; Farrington, 2000). Indeed, a low level of empathy among some young individuals may prevent them from understanding others' perspectives, thereby promoting their transformation into aggressors or engaging in acts of violence, which can be explained by a temporary "empathy anesthesia" (Mitsopoulou and Giovazolias, 2015; Zanna, 2015).

Understanding the different dimensions of victimization and its associated factors, notably, the level of empathy as a significant moderator, will help develop more effective interventions to prevent and reduce this problem and consequently improve the school climate (Bonell et al., 2013; Bear and Soltys, 2020). However, very few studies have taken into account psychosocial variables and individual characteristics to understand and explain the reality of the school climate (Lee, 2011; Sahin et al., 2019). Drawing inspiration from Bronfenbrenner's ecological systems theory, which conceptualizes school as an essential element of the microsystem acting as a foundational framework influencing child development through reciprocal interactions with multiple nested and continually evolving ecological systems (Bronfenbrenner, 1974, 1994). Therefore, this study aims to examine the impact of individual characteristics (empathy level, age, gender) and contextual experiences (victimization, bullying, etc.) on the school climate in Tunisian primary schools. By understanding these

dynamics, we can identify the reality of the school climate in these institutions, comprehend the reciprocal influence among these different variables, and recognize the factors that promote a positive and inclusive school climate, as well as the obstacles to overcome to prevent victimization.

After exploring the context and the main issues of our study, we formulate the following hypotheses that will guide our investigation.

We assume that the perception of the school climate, as a multidimensional construct, is strongly mediated by individual psychological dispositions of students such as empathy levels on one hand, and experiences of victimization as a collective process on the other hand. More specifically, students with higher levels of empathy may be more sensitive to the social dynamics of their school environment. Thus, students who experience less victimization tend to perceive a more positive school climate, characterized by a sense of security, social support, and positive relationships with teachers and peers.

We presume that the presence of high levels of empathy can buffer the negative impact of victimization on school climate. Those who possess empathy may be better equipped to empathize with the experiences of victims, leading to increased support, solidarity, and efforts to address and prevent victimization within the school community.

2 Materials and methods

2.1 Participants

We recruited children from public schools by sending a consent form to all parents. Only children whose parents provided written informed consent were included in the study. In total, we contacted 340 Tunisian families and successfully recruited 312 schoolchildren (158 boys and 154 girls), with a mean age of 10.75 ± 1.32 years. These participants were enrolled in the fourth to sixth grades of primary education and attended public schools in Gafsa, Tunisia. All participants belonged to an urban region. The duration of their enrollment in their respective schools was 4.44 ± 1.49 years, ranging from 1 to 7 years.

2.2 Measurement tools

2.2.1 School climate measurement

The School Climate Index (SCI) (Debarbieux and Fotinos, 2010) was used to measure the school climate from the students' perspective. This tool was translated and adapted into Arabic by Elhaddadi (2019). The scale consists of 12 items that measure various aspects of the school climate, including wellbeing (items 1 and 5). A sample item includes: "Are you doing well in your school?" peer relationships (items 2 and 3) (example: "Do you have friends in your school?"), student-teacher relationships (items 4 and 6). A sample item includes: "Is there any aggression in the relationships between students and teachers?" relationships with adults in the school (item 7), quality of learning (items 8 and 9), and feelings of safety within and around the school (items 10, 11, and 12). Each item has four response options, ranging from high satisfaction to

low satisfaction on a 4-point Likert scale (from 1 to 4). The items were reverse-coded to obtain a scale ranging from 1 (indicating a poor school climate) to 4 (indicating a very good school climate).

2.2.2 Victimization

The victimization questionnaire used in this study was created by Debarbieux and Fotinos (2010) and translated into Arabic by Elhaddadi (2019). This self-reported questionnaire, consisting of 29 questions, aims to measure various forms of victimization or harassment to which students may be exposed in a school context during a reference period (e.g., since the beginning of the school year). These include physical violence, verbal violence, psychological violence, racial or regional violence, sexual violence, humiliation, harassment, and theft. Similarly, the victimization questionnaire helps identify the perpetrators of these victimizations (aggressors). Indeed, the majority of the questions first inquire about the frequency of the experienced incidents (number of times: on a Likert scale from 1 to 4). Then, they inquire about the actor of these acts of violence (a student, a group of students, a teacher...). A sample item includes: “*Since the beginning of the school year, have you been called a bad name?*”; “*Since the beginning of the school year, either in this school or on the way to it, have you been physically assaulted?*”

2.2.3 Empathy

We used the Basic Empathy Scale in Children (Bensalah et al., 2016), an 18-item scale specifically designed to assess three components of empathy in children: emotional contagion (equivalent of emotional empathy) (items 1, 3, 4, 9, 13, and 15). A sample item includes: “*When I’ve been with a (female/male) friend who’s sad, I feel sad,*” cognitive empathy (items 2, 7, 8, 10, 12, 14, and 18). A sample item includes: “*I can often understand how people feel even when they don’t tell me,*” and emotional disconnection (items 5, 6, 11, 16, and 17). A sample item includes: “*I don’t feel anything when I see that one of my (female/male) friends is sad.*” Children rated each item on a 5-point Likert scale (1–5). The alphas ranged from 0.79 to 0.88.

2.3 Data collection

All questionnaires were completed collectively in the classroom. The process involved the experimenter reading the instructions to the children on how to evaluate each item on the Likert scale. The experimenter was available to answer any questions the children might have had regarding the questionnaire items, for instance, if they didn’t understand an item or if they thought two items were very similar. To facilitate the evaluation process, the Likert scale featured two smiling faces on the left (indicating agreement between characters) and one smiling face paired with a sad face on the right (indicating disagreement between characters). Responses to the paper-format questionnaires were entered into an Excel file where the data were appropriately coded for the various tools used.

2.4 Statistical analysis

We opted for IBM SPSS 27 to analyze the essential characteristics of both participants and items: mean, standard deviations and normality of the distribution. Any quantitative variable was described using means and standard deviations, and any qualitative variable was described using proportions or frequencies. To determine the internal consistency of the instruments used, we calculated Cronbach’s alpha and McDonald’s omega. Subsequently, to identify potential differences in the study variables based on participants’ age and gender, Spearman correlation analyses and independent samples *t*-tests were conducted. Finally, binary logistic regression is employed to analyze the relationships between a binary variable (dependent variable: school climate) and a set of explanatory variables (independent variables). This method was used to elucidate the nature of the school climate based on other factors such as gender, tenure at the school, empathy, and victimization.

3 Results

3.1 Internal consistency of the school climate index and the basic empathy scale

In order to determine the internal consistency of the instruments used, we calculated Cronbach’s alpha and McDonald’s omega for each scale. McDonald’s omega was 0.79 for the school climate index and 0.71 for the basic empathy scale. The Cronbach’s alpha was 0.83 and 0.79, respectively. These results demonstrate good internal consistency for the school climate index and the Basic Empathy Scale.

3.2 The actual state of the school climate

The scores of the different dimensions of the school climate index were obtained by averaging the responses to the items for each component and all items collectively to calculate the overall score. The results indicate a predominantly positive perception of the school climate by the students, both for the overall score (2.67 ± 0.64) and the scores of the different components of the school climate (ranging from 2.61 to 2.86). The results also reveal statistically significant differences between girls and boys in their perception of the school experience. In general, girls seem to have a more positive perception of the overall school climate, displaying higher scores (2.86 ± 0.54) compared to boys’ scores (2.45 ± 0.67). This difference is statistically significant according to the independent samples’ *t*-test ($t = -4.36$; $df = 281.74$; $p < 0.001$). Regarding the underlying components of the school climate presented in Table 1, girls consistently have higher scores than boys. The observed mean differences are statistically significant ($p < 0.001$), suggesting that girls generally feel more comfortable, safe, and enjoy their interactions at school more than boys (see Table 1).

The results of this study show that nearly 81% of students expressed a positive evaluation by stating that the school climate was rather good (46.5%) or very good (34.3%), indicating a generally favorable atmosphere within the school and an overall

TABLE 1 Descriptive scores (mean \pm standard deviation) for the different measured dimensions of school climate.

	All participants (<i>N</i> = 312)	Males (<i>N</i> = 158)	Females (<i>N</i> = 154)
Wellbeing	2.77 \pm 0.96	2.58 \pm 1.03	2.94 \pm 0.85
Peer relationship	2.66 \pm 0.96	2.46 \pm 1.05	2.82 \pm 0.84
Student-teacher relationship	2.62 \pm 1.01	2.42 \pm 0.98	2.80 \pm 1.01
Student-adult relationships	2.39 \pm 1.06	2.07 \pm 1.05	2.66 \pm 1.00
Quality of learning	2.61 \pm 1.01	2.47 \pm 1.05	2.73 \pm 0.96
Safety inside the school	2.74 \pm 1.01	2.38 \pm 1.03	3.05 \pm 0.90
Safety around the school	2.86 \pm 1.08	2.70 \pm 1.13	3.00 \pm 1.01
School climate	2.67 \pm 0.64	2.45 \pm 0.67	2.86 \pm 0.54

positive school climate. However, 19% of students responded that the school climate was not very good, suggesting that some students do not feel well in their school environment and have a negative perception of the school climate in their institution (see Table 2). This negative perception of the school climate is more prevalent among boys (14.1%) than girls (5.1%). This difference is also statistically significant according to the chi-square test ($\chi^2 = 26.67$; *df* = 2; *p* < 0.001).

3.3 Correlation between the different dimensions of the school climate

The relationships between the different dimensions of the school climate were tested by conducting correlation analyses on calculated scores. The results presented in Table 3 show positive and statistically significant correlations (*p* < 0.01) between the variables. The highest correlations were observed between the sense of wellbeing at school and both the sense of safety around the school (*r*s = 0.66; *p* < 0.01) and inside the school (*r*s = 0.56; *p* < 0.01). This implies that when the perceived level of safety increases among students, they tend to experience a higher sense of wellbeing at school.

Furthermore, the relationship between students and teachers was positively correlated (*r*s = 0.45; *p* < 0.01). This suggests that students who have positive relationships with their peers are also more likely to have favorable relationships with their teachers. The quality of learning was more strongly correlated with the student-teacher relationship (*r*s = 0.42; *p* < 0.01) and to a lesser extent with the peer relationship (*r*s = 0.20; *p* < 0.01) (see Table 3).

3.4 Empathy level among students

The BES-C allowed us to assess the underlying components of empathy, namely cognitive empathy, emotional contagion, and emotional disconnection. The results revealed that students exhibited a high level of cognitive empathy (3.88 \pm 0.94) and emotional contagion (3.44 \pm 0.90). This suggests that overall, students demonstrated a strong ability to understand the emotions

TABLE 2 Distribution of students according to their perception of the school climate.

	Frequency	Percent	Classification
Not good at all	0	0	Negative school climate
Not very well	60	19.2	
Rather well	145	46.5	Positive school climate
Very well	107	34.3	
Total	312	100.0	

and perspectives of others. Similarly, they were relatively sensitive to the emotions of others and could be influenced or affected by them. Regarding emotional disconnection, the results showed a low level with a score of 1.77 \pm 0.83.

The data analysis highlights interesting differences between genders. The independent samples' *t*-test shows statistically significant differences between girls and boys in terms of emotional contagion (*p* < 0.001; Cohen's *d* = 0.98) and emotional disconnection (*p* < 0.01; Cohen's *d* = 0.33). Specifically, girls exhibited a significantly higher average (3.82 \pm 0.72) than boys (3.02 \pm 0.90) in terms of emotional contagion. On the contrary, for emotional disconnection, girls displayed lower scores compared to boys. However, no significant difference was observed between girls and boys in terms of cognitive empathy (*p* > 0.05; Cohen's *d* = 0.14).

3.5 Prevalence of victimization among students

The victimization questionnaire allowed us to determine the forms and levels of violence experienced by students in the school environment. Our results show that students, overall, experienced a degree of violence and victimization ranging from low to moderate (scores ranging from 1.10 to 2.09). However, the standard deviations are relatively high, indicating remarkable inter-individual differences. Gender differences are also notable, as boys are more likely than girls to experience different forms of violence (see Table 4).

Specifically, physical violence is the most frequently reported form of violence by boys, with a rate of 2.35 \pm 1.06. This rate decreases to 1.85 \pm 0.88 among girls. The independent samples *t*-test confirms the existence of a statistically significant difference between the two genders (*p* < 0.001; Cohen's *d* = 0.51). Regarding verbal violence, boys' average scores (2.20 \pm 1.10) were slightly higher compared to girls (1.87 \pm 1.02). Additionally, the *t*-test yielded a statistically significant result (*p* < 0.01). The effect size, as indicated by Cohen's *d*, was found to be 0.30, suggesting a small but discernible difference between the two groups.

The results also show that for racial regional violence and psychological violence, the average scores were similar for all participants, indicating a similar presence of these undesirable behaviors among both girls and boys without any remarkable statistical difference (*p* > 0.05).

TABLE 3 Correlation between the different measured dimensions of the school climate.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Wellbeing (1)	1.00						
Peer relationship (2)	0.38**	1.00					
Student-teacher relationship (3)	0.15**	0.45**	1.00				
Student-adult relationships (4)	0.13*	0.26**	0.45**	1.00			
Quality of learning (5)	0.14*	0.20**	0.42**	0.14*	1.00		
Safety inside the school (6)	0.56**	0.24**	0.22**	0.22**	0.16**	1.00	
Safety around the school (7)	0.66**	0.28**	0.18**	0.18**	0.16**	0.65**	1.00

**significant at 0.01; *significant at 0.05.

Bullying was less prevalent in this sample, with relatively low average scores (1.10 ± 0.39). However, the independent samples *t*-test showed differences between girls and boys ($p = 0.04$; Cohen's $d = 0.23$). Similarly, a statistically significant difference was observed between girls and boys regarding theft ($p < 0.001$; Cohen's $d = 0.41$), indicating that this type of victimization is equally abundant among boys and girls.

As for sexual violence, the percentages were higher among boys (14.1%) than girls (9.6%), suggesting a higher prevalence of these forms of violence among boys. This is confirmed by the chi-square test ($p = 0.03$). However, no statistical difference is observed between girls and boys regarding humiliation ($p = 0.3 > 0.05$).

3.6 Correlation between different forms of victimization

The correlation matrix between the different variables measuring forms of victimization allows us to better understand the relationships between these different forms of violence and their possible reciprocal influence. Our results show strong positive correlations between verbal violence and both physical violence and psychological violence, with correlation coefficients of 0.73 and 0.72, respectively. There is also a moderate correlation with theft ($r_s = 0.45$; $p < 0.01$). Similarly, physical violence is strongly correlated with psychological violence ($r_s = 0.68$, $p < 0.01$) and theft ($r_s = 0.6$; $p < 0.01$). On the other hand, theft and bullying show weaker correlations with other forms of victimization (see Table 5).

3.7 Correlation between school climate, empathy, and victimization

The results obtained in this study highlight the complexity of the relationships between the various dimensions of the school climate, the forms of violence that students face in their institution, as well as the different underlying components of empathy (see Table 6).

In particular, the victimization experienced by students is the variable that has the most influence on the school climate. There are strong negative correlations between physical violence and both the sense of wellbeing ($r = -0.65$), safety inside ($r = -0.69$), and

TABLE 4 Descriptive scores (mean \pm standard deviation) for the different measured dimensions of victimization.

	All participants ($N = 312$)	Males ($N = 158$)	Females ($N = 154$)
Verbal violence	2.02 ± 1.07	2.20 ± 1.10	1.87 ± 1.02
Psychological violence	2.09 ± 1.13	2.14 ± 1.11	2.05 ± 1.15
Racial/regional violence	1.29 ± 0.62	1.32 ± 0.65	1.27 ± 0.59
Physical violence	2.09 ± 1.00	2.35 ± 1.06	1.85 ± 0.88
Acts of theft	1.81 ± 0.75	1.97 ± 0.83	1.67 ± 0.64
Harassment	1.10 ± 0.39	1.14 ± 0.48	1.05 ± 0.28
Sexual violence	24.7 %	14.1%	10.6%
Humiliation	20.2%	10.6%	9.6%

around ($r = -0.67$) the school. Acts of theft seem to have similar impacts on these components of the school climate (Spearman correlation coefficients ranging from -0.66 to -0.58), indicating a strong association between theft and a decrease in the perceived sense of safety among students, as well as a decrease in wellbeing at school.

The correlations remain quite strong between verbal violence and both safety within ($r = -0.5$) and around ($r = 0.53$) the school on the one hand, and the sense of wellbeing in the school environment ($r = 0.49$; $p < 0.001$) on the other. This indicates that verbal violence is associated with a lower perception of safety and reduced wellbeing among students.

Thus, we found significant negative correlations between psychological violence and wellbeing ($r = -0.61$) as well as with safety inside ($r = -0.51$) and around the school ($r = -0.59$). This suggests that psychological violence has a detrimental effect on students' perception of safety and overall wellbeing.

The results of this study reveal a positive and statistically significant correlation between cognitive empathy and both the student-teacher relationship ($r = 0.20$; $p < 0.001$) and the quality of learning ($r = 0.18$; $p < 0.001$), suggesting that when students demonstrate cognitive empathy, they are more likely to have good relationships with their teachers and benefit from a better learning quality. Similarly, we observe positive and statistically significant correlations between emotional contagion and both safety within

TABLE 5 Correlation between the different measured dimensions of victimization.

	(1)	(2)	(3)	(4)	(5)	(6)
Verbal violence (1)	1.00					
Psychological violence (2)	0.72**	1.00				
Racial/regional violence (3)	0.23**	0.19**	1.00			
Physical violence (4)	0.73**	0.68**	0.13*	1.00		
Acts of theft (5)	0.45**	0.42**	0.05	0.60**	1.00	
Harassment (6)	0.17**	0.22**	-0.053	0.29**	0.33**	1.00

**significant at 0.01; *significant at 0.05.

the school ($r = 0.20$; $p < 0.001$) and the sense of wellbeing among students ($r = 0.25$; $p < 0.001$).

However, there are negative and statistically significant correlations between emotional contagion on one hand and physical violence ($r = -0.27$; $p < 0.001$) and acts of theft ($r = -0.26$; $p < 0.001$) on the other hand. This suggests that emotional contagion may be associated with a decrease in violent behaviors and incidents of theft in the school environment.

3.8 Modeling determinants of school climate

3.8.1 Statistical model development

In order to interpret the scores correctly for the weighted averages calculated from the School Climate Index, we followed the method suggested by Pimentel (2010). This method involves creating intervals of averages to provide interpretations for the weighted average, ensuring that the difference in each interval has a uniform difference. The Table 7 presents the descriptive interpretation of the weighted average of items for 4-point Likert scales.

The dependent variable (to be explained) in this study is a nominal variable with two classes: the school climate (CS). It takes the value 0 in case of a positive climate and the value 1 otherwise.

The independent variables (explanatory variables) consist of quantitative variables (age, seniority, cognitive empathy, emotional contagion, emotional disconnection, verbal violence, psychological violence, physical violence, racial violence, harassment, and theft) and two qualitative variables [(nominal: gender, sexual violence, humiliation) and (ordinal: educational level)].

The variables selected for logistic regression are summarized in Table 8.

Thus, the statistical model can be written as:

$$\text{Logit (Negative school climate)} = -5.297 - 0.393 * \text{Cognitive empathy} + 1.126 * \text{Harassment} + 0.656 * \text{Acts of theft} + 0.913 * \text{Physical violence} + 0.811 * \text{Gender}.$$

To study the importance of the selected factors, an analysis of odds ratios [Exp(B)] and their confidence intervals (CI) was conducted. The results show that harassment increases the risk of having a negative school climate 3-fold. Theft and physical violence increase this risk by approximately 2-fold. Additionally, the gender of the student has a significant influence on predicting a negative school climate. Specifically, being male is associated

with a significant increase in risk of 2.25 (with a 95% confidence interval between 1.07 and 4.74) compared to females. On the other hand, cognitive empathy is a protective factor, decreasing the risk of having a negative school climate.

Based on the provided information (Table 9), the performance of the model can be evaluated using several key indicators. Sensitivity (Se), also known as the true positive rate, is calculated by dividing the number of true positives by the sum of true positives and false negatives. In this case, the sensitivity is 88.47%, indicating that the model correctly detects 88.47% of positive cases. Specificity (Sp), or the true negative rate, is obtained by dividing the number of true negatives by the sum of true negatives and false positives, resulting in a specificity of 67.44%. Finally, accuracy (ACC), which measures the proportion of correct classifications among all observations, is equal to 85.57%.

Furthermore, the current model has an Area Under the Curve (AUC) value of 0.88, indicating a very good discriminative ability. AUC is a commonly used measure to evaluate the performance of a classification model. An AUC score of 0.88 suggests that the model is able to effectively discriminate between categories or classes, providing a strong indication of its ability to make accurate predictions.

4 Discussion

The aim of our study is 2-fold. Firstly, it seeks to deepen our understanding of the reality of the school climate as perceived by students within Tunisian schools. Secondly, it strives to gain a better understanding of the complex relationships between different dimensions of the school climate, the forms of violence that students encounter in their institutions, and the underlying components of empathy. By identifying these dynamics, we will be able to better discern the factors that influence students' perception of the school climate.

4.1 School climate: a generally positive appreciation, divergent perceptions by gender

The results of this study show that the school climate is generally perceived positively by learners. Students feel that they are in an environment conducive to learning, where they feel supported and valued. Our findings align with those of Elhaddadi (2019)

TABLE 6 Correlation between the dimensions of: school climate, victimization, and empathy.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Wellbeing (1)	1.00															
Peer relationship (2)	0.38**	1.00														
Student-teacher relationship (3)	0.15**	0.45**	1.00													
Student-adult relationships (4)	0.13*	0.26**	0.45**	1.00												
Quality of learning (5)	0.14*	0.20**	0.42**	0.14*	1.00											
Safety inside the school (6)	0.56**	0.24**	0.26**	0.22**	0.16**	1.00										
Safety around the school (7)	0.66**	0.28**	0.18**	0.18**	0.16**	0.65**	1.00									
Verbal violence (8)	-0.49**	-0.17**	-0.19*	-0.17**	-0.12*	-0.50**	-0.53**	1.00								
Psychological violence (9)	-0.61**	-0.16**	-0.05	-0.12*	-0.09	-0.51**	-0.59**	0.72**	1.00							
Racial/regional violence (10)	-0.06	0.03	0.03	0.05	-0.02	-0.12*	-0.10	0.23**	0.19**	1.00						
Physical violence (11)	-0.65**	-0.25**	-0.16**	-0.19**	-0.15**	-0.69**	-0.67**	0.73**	0.68**	0.13*	1.00					
Acts of theft (12)	-0.58**	-0.24**	-0.16**	-0.16**	-0.05	-0.62**	-0.66**	0.45**	0.42**	0.05	0.60**	1.00				
Harassment (13)	-0.35**	-0.17**	-0.19**	-0.17**	-0.08	-0.34**	-0.37**	0.17**	0.22**	-0.05	0.29**	0.33**	1.00			
Cognitive empathy (14)	0.10	0.08	0.20**	0.09	0.18**	0.07	0.05	0.04	-0.02	0.05	-0.02	0.02	-0.03	1.00		
Emotional contagion (15)	0.25**	0.08	0.12*	0.14*	0.12*	0.20**	0.16**	-0.15**	-0.06	0.04	-0.27**	-0.26**	-0.09	-0.05	1.00	
Emotional disconnection (16)	0.01	-0.06	-0.05	-0.05	-0.07	-0.05	0.05	-0.08	-0.09	0.04	-0.045	0.02	-0.02	-0.19**	0.01	1.00

**significant at 0.01; *significant at 0.05.

TABLE 7 Mean intervals for 4-point Likert scales (Pimentel, 2010).

Likert scale	Interval	Difference	Description	Classification
1	1–1.75	0.75	Not good at all	Negative school climate (1)
2	1.76–2.51	0.75	Not very well	
3	2.52–3.27	0.75	Rather well	Positive school climate (0)
4	3.28–4.00	0.72	Very well	

TABLE 8 List of variables derived from the backward method.

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Gender*	0.811	0.380	4.546	1	0.033	2.250	1.068	4.742
Physical violence	0.913	0.235	15.139	1	0.000	2.492	1.573	3.946
Acts of theft	0.656	0.293	5.004	1	0.025	1.927	1.085	3.424
Harassment	1.126	0.463	5.910	1	0.015	3.083	1.244	7.644
Cognitive empathy	−0.393	0.181	4.729	1	0.030	0.675	0.474	0.962
Constant	−5.297	0.968	29.959	1	0.000	0.005		

*Gender = Male.

conducted in Morocco, a culturally similar context to Tunisia, where it was found that 79.3% of students aged 11 to 14 perceive the school climate positively in their institutions (Elhaddadi, 2019). Similarly, the results of our study corroborate the conclusions of numerous previous studies conducted in various countries, such as France (Younes et al., 2011; Debarbieux, 2015; Hubert, 2015), the United States (Shukla et al., 2016; Konold et al., 2018), Turkey (Sözer et al., 2018; Akyürek, 2024), and Spain (Montero-Carretero et al., 2021). These results suggest that the school climate is generally perceived positively by students, regardless of the sociocultural context. This reflects the universal efforts to improve the school climate; indeed, many countries implement policies and programs aimed at promoting safety, wellbeing, and inclusion, as well as efforts to reduce violence and bullying in schools to improve the overall school climate (Farrington and Ttofi, 2009; Yeager et al., 2015; Jordan and Hamilton, 2020).

Nevertheless, it is important to note that a significant proportion of schoolchildren express negative perceptions of the school climate. We suggest that it is crucial to pay special attention to these students in order to identify areas for improvement and promote a more positive and inclusive educational environment for all learners. Indeed, recent studies have found that in environments considered healthy and supportive, the most vulnerable subjects can experience even more psychological problems in these contexts than in less healthy contexts; this phenomenon is referred to as the “healthy context paradox” (Salmivalli, 2018; Huitsing et al., 2019; Pan et al., 2021; Laninga-Wijnen et al., 2023). Although our study did not deeply explore the underlying mechanisms explaining the healthy context paradox, we aim to enrich future perspectives by encouraging further investigations in this area.

Additionally, our study also highlighted differences in the perception of the school climate based on gender. In fact, girls tend to perceive the school climate more positively than boys. These results are in line with several previous studies that have shown

TABLE 9 Confusion matrix of the statistical model.

		Predicted school climate	
		Positive	Negative
Observed school climate	Positive	238	14
	Negative	31	29

that the female gender is associated with a better perception of the school climate (Sinclair and Fraser, 2002; Koth et al., 2008; Debarbieux and Fotinos, 2010; Younes et al., 2011; Wang et al., 2014; Hubert, 2015; Elhaddadi, 2019). However, it should be noted that there are discrepancies between these results and those of a study conducted by Sortkær and Reimer (2018) on a sample from five Scandinavian countries, which stated that boys perceived the school climate more positively than girls. Similarly, other research does not always find this gender difference in the perception of the school climate (Warrington et al., 2000; Samuelsson and Samuelsson, 2016).

Regarding the reciprocal influence between different dimensions of the school climate, the results of this study provide interesting findings. Firstly, strong correlations were observed between wellbeing at school and safety both around and within the school premises. A higher perception of safety contributes to better student wellbeing, which aligns with previous research findings (Debarbieux, 2015; Hubert, 2015; Aldridge et al., 2016; Cornell et al., 2020). Similarly, the results of the present study demonstrate that the quality of learning is strongly influenced by the quality of relationships established between students and teachers. These findings are consistent with previous studies that highlight the importance of a positive teacher-student relationship in promoting better learning outcomes (Hamre and Pianta, 2001; Baker, 2006; Mameli et al., 2020).

4.2 Bidirectional influences of victimization and school climate

The results of this study also indicate the impact of victimization experiences, bullying, and theft on students' perception of the school climate in their institution. When faced with such negative experiences, students develop an overall negative perception of their school environment. According to ecological systems theory, school is an essential environment where a child's primary social interactions take place. These interactions with peers and adults at school play a crucial role in shaping a student's perception of their school environment (Bronfenbrenner, 2000; Rudasill et al., 2018). Indeed, power dynamics among peers, including bullying, discrimination, rumor-spreading, harassment, and violent behavior—whether physical or verbal—can have a profound and lasting impact on a student's wellbeing and development. These negative dynamics can influence not only the sense of safety and belonging but also academic engagement and school success. In short, all facets of the school climate can be affected (Arseneault, 2018; Garandeanu and Salmivalli, 2019; Zhao and Li, 2022; Huang et al., 2023; Laninga-Wijnen et al., 2023). Thus, it is firmly established that a positive school climate contributes not only to better academic achievement, as numerous studies have demonstrated (Maxwell et al., 2017; Lenz et al., 2021; Zysberg and Schwabsky, 2021), but also to a significant reduction in violent and problematic behaviors within schools (Steffgen et al., 2013; Reaves et al., 2018).

In line with this, students' perceptions of safety inside and around the school were significantly and negatively associated with experiences of victimization. In other words, students who felt less safe at school were more likely to report more frequent incidents of victimization. These findings are consistent with previous research indicating that victimization increases as the school climate deteriorates (Brighi et al., 2013; Espelage et al., 2014a; Reaves et al., 2018; Dorio et al., 2020; Bradshaw et al., 2021). Furthermore, we found that experiences of victimization have negative repercussions on student wellbeing and peer relationships at school, replicating previous findings (Juvonen et al., 2000; Tsiantis et al., 2013; Turner et al., 2014). Victimized students are more likely to be isolated from their peers, feel excluded, and lack friends. As a result, victimization experiences reduce victims' opportunities to form friendships (Pan et al., 2021). They may also be more prone to being involved in conflicts or fights with other students. Studies indicate that young victims of bullying often tend to form friendships with other victims (Sentse et al., 2013; Lodder et al., 2016). Furthermore, victimization experiences can elicit unfavorable reactions from those around them, such as distancing and lack of support, leading to a more negative perception of the school environment by the victim (O'Connor et al., 2020).

4.3 Empathy, a moderating variable of the school climate and victimization experiences

It was also expected and observed that a high level of empathy among learners contributes to the establishment of a positive

school climate. Learners who display a high level of cognitive empathy are more likely to develop positive relationships with their teachers and have a better appreciation of the quality of learning in their institutions. Similarly, a positive association was found between emotional contagion and most specific elements of the school climate. These findings align with previous studies that have demonstrated the link between empathy and the school climate (Eisenberg, 2014; Acosta et al., 2019; Montero-Carretero et al., 2021).

Furthermore, the results of the present study demonstrate that emotional contagion was negatively correlated with physical violence, verbal aggression, and theft. This indicates that individuals who are more sensitive to the emotions of others are less likely to engage in violent behaviors, corroborating previous findings (Barlińska et al., 2013; Zych et al., 2019). However, no association was observed between different forms of victimization and other underlying components of empathy (cognitive empathy, emotional disconnection). It is possible that the sample size used in this study was insufficient. By increasing the sample size, it might have been possible to detect interactions between cognitive empathy, emotional disconnection, and victimization in the school context.

This study complements the existing literature by examining certain psychosocial moderators of the school climate. Victimization, as a collective social experience involving both the aggressor and the victim, and empathy, which is considered a personality trait, are the focal variables. We posit that it is difficult to determine the direction of influence between these variables with certainty (Debarbieux et al., 2012; Debarbieux, 2015). Intuitively, one might think that a higher victimization rate leads to a deteriorating school climate. However, it is also possible to reverse this reasoning by considering that a positive school climate reduces the risk of victimization. Moreover, it is likely that these variables influence each other mutually. This raises the need to interpret the results within an explanatory model that establishes clear causality between the variables. In this regard, we employed binary logistic regression to propose a model that confirms at least one direction of influence, whereby experiences of victimization, such as physical violence, theft, and bullying, are considered risk factors that create a negative perception of the school climate among students. However, cognitive empathy plays a protective role against the degradation of the school climate. It is important to note that this explanatory model does not argue for a strictly unidirectional relationship, as the impact of a positive school climate on students' experiences of victimization has not been explored by this model.

5 Conclusions

In conclusion, the results of our study confirm the observations of numerous authors regarding the complexity of the relationships between the school climate and moderating variables such as gender, experiences of victimization, and level of empathy among students. We found that the school climate is primarily affected by experiences of victimization. However, it is important to highlight that empathy plays a protective role in this context. Future research should therefore explore the relationship between

empathy, victimization, and the school climate, taking into account different variables and specific contextual factors in Tunisia. In summary, our findings highlight the importance of creating a safe and inclusive school environment where empathy is encouraged, and effective measures are in place to prevent and address victimization. This will contribute to improving the overall school climate and promoting student wellbeing.

5.1 Implications of the findings

The practical implications of this study are numerous and aim to improve the school climate and student wellbeing in schools. Firstly, it is essential to implement training programs for teachers and school staff on conflict management, violence prevention, and empathy promotion, while also organizing workshops for students on these same themes. Additionally, the enforcement of strict anti-bullying policies, accompanied by confidential reporting mechanisms, is crucial. Moreover, improving physical security in and around schools through measures such as increased surveillance and the presence of security personnel contributes to a climate of safety. Finally, regular evaluations of the school climate and programs aimed at developing empathy from an early age, integrated into the school curriculum, are necessary to ensure an inclusive and positive school environment that fosters the wellbeing and academic success of all students.

6 Limitations and perspectives

This study has certain limitations. Although it highlights several potentially important variables for understanding the complex relationships between the school climate, experiences of victimization, and the level of empathy among students, there are some areas that should be addressed in future research. It is important for future studies to consider additional variables such as the sense of school belonging and the socio-economic characteristics of the environment to better identify the impact of victimization in the school setting. It would be opportune to expand the sample by including a larger number of participants, covering a wider age range, and representing populations from diverse backgrounds, both rural and urban. Furthermore, to deepen the understanding of this complex subject, it would be pertinent to adopt a longitudinal research design. Such a design would allow for the tracking of participants over an extended period, providing valuable insights into the evolution of school climate dynamics, victimization experiences, and levels of empathy over time. Additionally, it is important to highlight a significant limitation of the current contribution, namely the exclusive use of self-report instruments. While these tools can offer valuable perspectives on participants' subjective experiences, they are also subject to perception and reporting biases. To address this limitation, it would be beneficial to incorporate complementary data collection methods, such as direct observations or in-depth interviews. Incorporating these suggestions into future research would strengthen the validity and reliability of the findings (Dzakadzie and Quansah, 2023).

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by the Tunisian Research Laboratory "Optimization of Sports Performance," National Center for Medicine and Sports Science (CNMSS) (approval number LR09SEP01). The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin. Written informed consent was obtained from the minor(s)' legal guardian/next of kin for the publication of any potentially identifiable images or data included in this article.

Author contributions

IC: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. MJ: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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