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Perceived school climate and adolescent behaviors among Chinese adolescents: Mediating effect of social-emotional learning competencies

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Abstract

Although school climate plays an important role in the development of adolescent prosocial behaviors and problem behaviors, little is known about the mechanisms underlying school climate's impact on such behaviors, particularly in Chinese adolescents. This study used a multi-informant approach to investigate the mediating role of social-emotional learning (SEL) competencies on the association of school climate with prosocial behaviors and problem behaviors (i.e., internalizing and externalizing behaviors) among Chinese adolescents. A total of 699 students (M_{age} = 12.89 years, SD = 0.70) in 7th and 8th grades from three middle schools in Chengdu, China completed measures of perceived school climate and SEL competencies. Their guardians also completed ratings on adolescent prosocial and problem behaviors. As predicted, while perceived school climate was positively associated with adolescent prosocial behaviors, it was negatively related to adolescent internalizing and externalizing behaviors. Analyses using PROCESS further showed that SEL competencies mediated the relationship between perceived school climate and adolescent behaviors.

The findings underscored the importance of promoting positive school climate as well as SEL competencies to foster positive adolescent development.

KEYWORDS
Chinese adolescents, problem behaviors, prosocial behaviors, school climate, social-emotional learning (SEL) competencies

1 | INTRODUCTION

Prosocial behaviors such as helping others and engagement in voluntary work are positively related to adolescent mental health, academic performance, and interpersonal relationships (Layous et al., 2012), while problem behaviors (e.g., internalizing and externalizing behaviors) impair adolescents' academic performance and mental health (Hishinuma et al., 2012). Besides, school climate has an important impact on adolescent behaviors, including prosocial behaviors (Luengo Kanacri et al., 2017), and problem behaviors (Reaves et al., 2018). However, although previous studies showed that school climate played an important role in Chinese adolescents' behaviors (e.g., Bear et al., 2018; Li et al., 2016; Nie et al., 2018), few studies have investigated the mechanisms underlying the relationship between perceived school climate and adolescent behavioral outcomes, particularly in Chinese culture context. While, social-emotional learning (SEL) is regarded as general psychosocial competence in positive youth development (PYD) that is applicable across contexts and developmental stages (Shek et al., 2019; Tolan et al., 2016), and it has attracted great interest in the education systems in Western societies (Chen et al., 2021; Wu et al., 2016). However, SEL competencies are generally not valued in schools in mainland China due to the morbid emphasis on academic excellence. As such, this study examined the mediating effect of SEL competencies in the relationship between school climate and prosocial behaviors as well as problem behaviors (indexed by internalizing and externalizing behaviors) among Chinese adolescents.

1.1 | Theoretical framework

According to the Context-Process-Outcomes model (Roeser et al., 1996), perceived school climate (i.e., context) is an important antecedent factor shaping adolescent prosocial behaviors and problem behaviors (i.e., behavioral outcomes) through individual characteristics (i.e., process). Concerning the "context," a positive school climate promotes adolescents' SEL competencies (i.e., individual characteristic, Holahan & Batey, 2019; Ross & Tolan, 2018), with high levels of SEL competencies in adolescents associated with less problem behaviors (Durlak et al., 2011) but more prosocial behaviors (Zins & Elias, 2007). Based on this reasoning, we proposed that students' perceived SEL competencies as a mediator underlying the association of perceived school climate with adolescent behaviors.

1.2 | School climate and adolescent behaviors

Prosocial behaviors and problem behaviors are two important domains of adolescent behavioral development. Prosocial behaviors are a vital element of adolescent socialization (Zhang et al., 2015), which refers to behaviors that are socially desirable and beneficial to others, groups, or society, including cooperation, sharing, helping, donating, humility, comfort, and compassion (Eisenberg et al., 2006). Moreover, problem behaviors include both internalizing and externalizing behaviors. While internalizing behaviors are characterized by depression and self-blame emotions, externalizing behaviors are behaviors that are harmful and destructive to others (Lindsey, 2021).

School climate was defined as "the quality and consistency of interpersonal interactions within the school community that influence children's cognitive, social, and psychological development" (Haynes et al., 1997, p. 322). Recently, Cohen et al. (2009) defined school climate as the "quality and character of school life," that includes "norms, values, and expectations that support people feeling socially, emotionally, and physically safe" (p. 182). Previous studies showed that school climate was associated with a wide range of adolescents' developmental outcomes including academic performance, behavioral problems, and socio-emotional competencies (Anderson, 1982; Haynes et al., 1997; Thapa et al., 2013). Specifically, previous studies have suggested that individual-level perceived school climate positively predicted adolescent prosocial behavior (Li, 2000; Luengo Kanacri et al., 2017), and was negatively associated with adolescent problem behavior such as internalizing behavior (e.g., depression) and externalizing behavior (e.g., school violence; Li et al., 2015; Reaves et al., 2018).

Although school climate was regarded as a school-level construct (Marsh et al., 2012; Stapleton et al., 2016), some researchers considered school climate as the psychological environment of the school and focus on using students' unique perception of the school life to measure school climate (Li et al., 2016; Morin et al., 2013). Although both school-level (i.e., aggregated perceived school climate) and individual-level school climate (i.e., perceived school climate) were used among Chinese adolescents in previous studies (Bear et al., 2018; Yang et al., 2020), individual-level school climate is more commonly used among Chinese adolescents in the field (Li et al., 2016; Liu et al., 2021; Zhai et al., 2020).

1.3 | School climate and SEL competencies

According to the Collaborative for Academic, Social, and Emotional Learning (CASEL), SEL includes skills surrounding self-awareness, self-management, social awareness, social relationships skills, and responsible decision-making (Axelrod, 2010). SEL competencies are regarded as generic psychosocial competence in PYD that is applicable across contexts and developmental stages (Shek et al., 2019; Tolan et al., 2016). Unfortunately, SEL competencies are generally not valued in schools in mainland China due to morbid emphasis on academic excellence, although SEL has attracted great interest in the education systems in Western societies (Chen et al., 2021; Wu et al., 2016).

Some studies showed that school-based programs could improve students' SEL competencies (Durlak & Weissberg, 2011; Shek & Zhu, 2020; Zhu & Shek, 2021). These programs either directly promote adolescents' SEL competencies or improve their learning environment (Taylor et al., 2017). It can be argued that a positive school climate is the foundation for students to study effectively because a safe and supportive learning environment enables students to fully develop their cognitive, social, and emotional skills. For example, previous studies indicated that peer relationships (i.e., student–student relationships in school climate), as well as teacher-student relationships, have an important impact on adolescents' developmental outcomes (La Greca & Harrison, 2005), and that positive peer interactions can promote adolescents' SEL competencies (Roeser et al., 2000). Therefore, we predicted that a more positive school climate would be associated with higher levels of SEL competencies in this study.

1.4 | SEL competencies and adolescent behavior

Furthermore, research showed that individual-level SEL competencies could reduce the occurrence of bullying and violence in schools (Nickerson et al., 2019). In particular, adolescents with lower SEL competencies were more likely to engage in problem behaviors such as delinquency, substance abuse, and depression (Durlak et al., 2011). High levels of SEL competencies also reduced problem behaviors and promoted students' mental health (Elias & Moceri, 2012; Fan, 2015), academic achievement (Wang et al., 2019), and prosocial behaviors (Xu & Xiao, 2015;

Zins & Elias, 2007). Moreover, interpersonal skills in SEL competencies promoted positive interpersonal interactions leading to more prosocial behaviors (Wang et al., 2019). Based on the available theories and research, we expected that SEL competencies would have a positive relationship with adolescents' prosocial behaviors but a negative relationship with their problem behaviors.

1.5 | Gender difference

According to the social cognitive theory and gender schema theory (Bussey & Bandura, 1999; Martin & Halverson, 1981), previous studies showed that girls displayed more prosocial behaviors than did boys (Fabes & Eisenberg, 1998; Xiao et al., 2019). Besides, adolescent girls displayed more internalizing behavior than did their male counterpart (Chaplin & Aldao, 2013; Storvoll & Wichstrøm, 2002), whereas boys displayed more externalizing behaviors compared with girls (Leadbeater et al., 1999). Moreover, there is evidence showing that girls perceived more positive school climate than did boys in United States (Way et al., 2007) and China (Xie & Xiao, 2017), because girls often perceived more positive relationship with teachers than did boys (Suarez-Orozco & Qin-Hilliard, 2004). Additionally, previous studies showed that females have higher level of positive social-emotional competencies in United States (Romer et al., 2011) and ability emotional intelligence in Spain (Cabello et al., 2016) compared with males.

1.6 | The present study

Although previous studies showed that school climate was related to adolescent behavioral outcomes, there are several limitations of the related studies. First, little is known about the mechanisms underlying the relationship between school climate and adolescent prosocial as well as problem behaviors. Second, few studies investigated the role of school climate and SEL in adolescent behaviors in non-Western societies, particularly China which has different cultural values (e.g., collectivism) and different school system. Third, previous studies mainly employed self-reported questionnaires completed by adolescents to measure adolescent prosocial and problem behaviors, which may influence the results due to response bias. Besides, few researchers gathered data from the significant others of adolescents, such as their parents. Therefore, the present study used a multi-informant approach to examine the association of school climate reported by adolescents with adolescent prosocial and problem behaviors (reported by the parents or guardians of adolescents), and the mediating effect of SEL competencies in that relationship. Specifically, we asked the following research questions in this study (Figure 1).

1. Research Question 1: Are there any gender differences on perceived school climate, SEL, prosocial behavior, internalizing behavior, and externalizing behavior? Based on literature (Van der Graaff et al., 2018; Romer

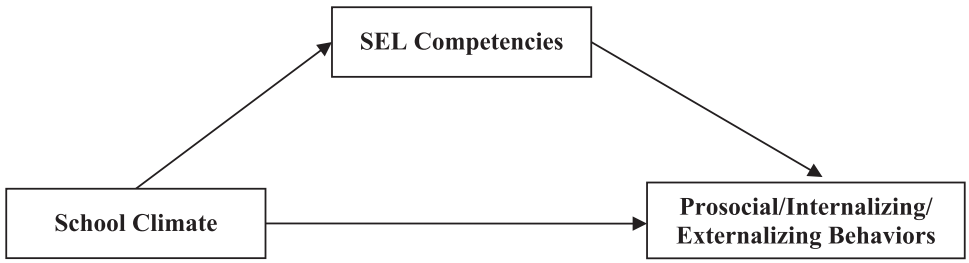

FIGURE 1 Hypothetical mediation model. SEL, social-emotional learning.

et al., 2011; Storvoll & Wichstrøm, 2002; Xie & Xiao, 2017), we hypothesized that girls would have a higher level of prosocial behavior (Hypothesis 1a) and internalizing behavior (Hypothesis 1b), but a lower level of externalizing behavior (Hypothesis 1c) than do boys. Based on literatures (Romer et al., 2011; Way et al., 2007), we also hypothesized that girls would have a higher level of perceived school climate (Hypothesis 1d) and SEL (Hypothesis 1e) compared with boys.

2. Research Question 2: Is perceived school climate related to prosocial and problem behaviors among Chinese adolescents? According to the literature (Li, 2000; Li et al., 2015; Luengo Kanacri et al., 2017; Reaves et al., 2018), we hypothesized that a higher level of school climate would be associated with a higher level of prosocial behavior (Hypothesis 2a) but lower levels of internalizing behavior (Hypothesis 2b) and externalizing behavior (Hypothesis 2c).
3. Research Question 3: Is perceived school climate related to SEL competencies among Chinese adolescents? Based on the existing theories (Bronfenbrenner & Evans, 2000) and research (Cheng et al., 2021; Roeser et al., 2000), we expected that school climate would be positively related to SEL competencies (Hypothesis 3).
4. Research Question 4: Are SEL competencies related to adolescent prosocial and problem behaviors? Based on previous studies (Elias & Moceri, 2012; Nickerson et al., 2019; Zins & Elias, 2007), we expected that SEL competencies would be positively related to prosocial behavior (Hypothesis 4a) but negatively related to internalizing behavior (Hypothesis 4b) and externalizing behavior (Hypothesis 4c).
5. Research Question 5: Do SEL competencies serve as a mediator between perceived school climate and adolescent behaviors in China? Based on the literature (Durlak & Weissberg, 2011; Taylor et al., 2017), we hypothesized that SEL competencies would mediate the association between school climate and prosocial behavior (Hypothesis 5a), internalizing behavior (Hypothesis 5b) and externalizing behavior (Hypothesis 5c).

2 | METHODS

2.1 | Participants and procedures

Participants were early adolescents and their parents (or guardians) recruited from three secondary schools in Chengdu, China between December 2019 and January 2020. All participants were at the 7th and 8th grades (N = 1005). In total, 64 students were excluded due to missing data and 242 students were excluded because their parents or guardians did not report their prosocial, internalizing, and externalizing behaviors. For these 242 students, there are data on self-reported variables, such as perceived school climate and SEL. The final sample of the present study included 699 students (M_{age} = 12.89 years, SD = 0.70, 11–15 years). There were no significant differences between the "included" and "excluded" participants on perceived school climate, SEL competencies, and gender (see Table 1). Among participants in the final sample, there were 333 boys and 366 girls; 294 in 7th grade and 405 in 8th grade.

TABLE 1 Differences between the included and excluded participants.

Variables	Participants	*M*	SD	*t*	*p*
School climate	Included (N = 724)	3.20	0.44	−1.509	.132
	Excluded (N = 252)	3.24	0.43		
SEL competencies	Included (N = 731)	3.49	0.46	0.791	.429
	Excluded (N = 248)	3.46	0.47		
Gender	Included (N = 739)	0.48	0.50	−0.323	.747
	Excluded (N = 254)	0.49	0.50		

Abbreviation: SEL, social-emotional learning.

This study was approved by the Ethics Committee at the University of the First Author. Informed consent was first obtained from the heads of school and parents, and students participating in the study also gave their verbal consent. Students completed self-reported questionnaire in class guided by trained graduated students. The parental questionnaires were taken home by students for their parents to complete in an anonymous manner, and brought back to school the following day for collection by teacher.

2.2 | Measures

2.2.1 | Perceived school climate

The 18-item Delaware School Climate Survey-Student (DSCS-S; Bear et al., 2011) was used to measure students' perceptions of school climate. The DSCS-S includes four subscales assessing core components of perceived school climate among students: teacher–student relationships (five items; e.g., "Teachers care about their students"), student–student relationships (five items; e.g., "Students get along with each other"), fairness of rules (four items; e.g., "The consequences of breaking rules are fair"), and clarity of expectations (four items; e.g., "It is clear how students are expected to act"). Previous studies showed that the Chinese version of this scale possessed acceptable validity and reliability evidence ($\alpha = .91$ in 2190 Chinese secondary students, Nie et al., 2018; Yang et al., 2013). Responses are rated on a 4-point scale ranging from 1 (strongly disagree) to 4 (strongly agree). The four subscales were averaged to form a composite score, with higher scores indicating positive perceived school climate. Cronbach's α in the present study are as follows: .946 for perceived school climate scale, .880 for the teacher–student relationships subscale, .855 for the student–student relationships subscale, .838 for the clarity of expectations subscale, and .871 for the fairness of rules subscale. Consistent with other studies, we used the total score as an indicator of perceived school climate (Nie et al., 2020; Yang et al., 2020).

2.2.2 | SEL competencies

The Modified Chinese version of the Delaware Social and Emotional Competencies Scale-student version (DSECS-S) consists of 21 items on a 4-point Likert scale (Bear et al., 2014). This Chinese version was modified based on the original English version of the DSECS-S and has evidence of reliability and validity in a previous study (Chen et al., 2021). The modified scale covers the five major domains of SEL: responsible decision-making (four items; e.g., "I feel responsible for how I act"), social awareness (four items; e.g., "I think about how others feel"), self-management (four items; e.g., "I can control how I behave"), social relationship skills (four items; e.g., "I get along well with others"), and self-awareness (five items; e.g., "I am aware of my strengths and weaknesses"). Responses are rated on a 4-point scale ranging from 1 (not like me at all) to 4 (very much like me). The five subscales were averaged to form a composite score, with higher scores indicating higher SEL competencies. Cronbach's α in the present study are as follows: .908 for overall SEL scale, .724 for the responsible decision-making subscale, .833 for the social awareness subscale, .797 for the self-management subscale, .697 for the social relationship skills subscale, and .729 for the self-awareness subscale.

2.2.3 | Prosocial, internalizing, and externalizing behavior

The parent-reported version of the Chinese Strength and Difficulties Questionnaire (SDQ) was used to measure adolescents' prosocial, internalizing, and externalizing behaviors (Liu et al., 2013). According to Liu et al. (2013), the parent-reported Chinese version of SDQ is divided into three dimensions, including prosocial behavior (eight items, e.g., "Child is

often willing to help others"), internalizing behavior (seven items, e.g., "Child is usually unhappy, depressed, or tearful"), externalizing behavior (nine items, including conduct and hyperactivity, e.g., "Child is easily distracted and finds it hard to concentrate") respectively. In the present study, we deleted two items concerning whether the child was "obedient" and a "good friend" in prosocial subscale because of their low item-total correlations (Goodman et al., 2010; Liu et al., 2013). Each item is rated on a 3-point Likert scale (0 = not true, 1 = somewhat true, and 2 = certainly true). There is evidence to support the reliability and validity of the related measures of the parent-reported Chinese SDQ (Du et al., 2008; Liu et al., 2013; Pan et al., 2017). Cronbach's α in the present study are as follows: .774 for the prosocial subscale, .697 for the internalizing subscale, and .721 for the externalizing subscale.

2.3 | Data analytic strategy

Data analysis was conducted using SPSS 26.0. First, descriptive statistics and correlation analyses of variables were conducted. Second, *t*-tests were performed to examine gender differences on perceived school climate, SEL competencies, prosocial behavior, internalizing and externalizing behavior. Third, scores of variables were converted to *Z*-scores, and multiple regression analysis was used to examine the association of school climate with adolescents' prosocial, internalizing, externalizing behaviors, respectively. This approach was widely adopted in the previous studies (Li et al., 2016; Liu et al., 2021; Zhai et al., 2020). Finally, PROCESS (Model 4; Hayes, 2017) was used to test the mediating effect of SEL competencies on the association of school climate with adolescents' prosocial, internalizing, and externalizing behaviors respectively, with *Z*-scores used in the analysis. The Mediating effect was tested using the bootstrapping method which allows for hypothesis testing and calculation of effect sizes (Preacher & Hayes, 2008). We obtained 5000 bootstrap resamples in the present study and used them to determine the 95% confidence intervals (CIs) of the mediating effects (Preacher & Hayes, 2008). In addition, we controlled for gender, age, school-level school climate in multiple regression analysis and mediating effect test.

Although several schools were employed in this study, we did not use multilevel analyses because intragroup correlation coefficients (ICCs) were on the low side and under the commonly adopted threshold. Regarding school-level effects, results based on the intercept model showed that the related intragroup correlation coefficients (ICC) were very low: 0.003 [0.0005/(0.0005 + 0.1519)] for prosocial behaviors, 0.000 for internalizing behaviors, 0.000 for externalizing behaviors. For classroom effect, ICCs were as follows: 0.015 [0.0023/(0.0023 + 0.1499)] for prosocial behaviors, 0.044 [0.0048/(0.0048 + 0.1054)] for internalizing behaviors, 0.048 [0.0048/(0.0048 + 0.0960)] for externalizing behaviors. As proposed by Cohen (1988), when the ICC does not reach 0.059, there is no group effect, and therefore multilevel model analysis is unnecessary (Cohen, 1988).

3 | RESULTS

3.1 | Preliminary analysis

Table 2 presents the findings of the descriptive statistical analyses and Pearson correlation analyses. Results on the skewness and kurtosis for perceived school climate, SEL competencies, and adolescent behaviors are as follows: perceived school climate (skewness = −0.825, kurtosis = 1.066), SEL (skewness = −0.125, kurtosis = −0.528), prosocial behavior (skewness = −0.575, kurtosis = −0.375), internalized behavior (skewness = 1.237, kurtosis = 1.652), and externalized behavior (skewness = 0.614, kurtosis = 0.303). This result indicated that scores on these variables are normally distributed.

As predicted, adolescents' perceived school climate was positively correlated with SEL competencies and prosocial behaviors, and negatively correlated with internalizing and externalizing behaviors. Moreover, SEL competencies were positively related to prosocial behaviors and negatively related to internalizing and externalizing behaviors.

TABLE 2 Means, standard deviations, and bivariate correlations of school climate, SEL competencies, and prosocial, internalizing, externalizing behaviors.

Variables	*M*	SD	1	2	3	4	5	6
1. School climate	3.49	0.46	—					
2. SEL competencies	3.20	0.44	0.468***	—				
3. Prosocial behavior	1.52	0.39	0.209***	0.252***	—			
4. Internalizing behavior	0.34	0.33	−0.096*	−0.205***	−0.190***	—		
5. Externalizing behavior	0.51	0.32	−0.131***	−0.243***	−0.307***	0.425***	—	
6. Gender	0.48	0.5	−0.085*	−0.078*	−0.142***	−0.000	0.258***	—
7. Age	12.89	0.69	0.021	0.064†	−0.056	0.015	−0.039	0.026

Note: Gender is a dummy variable, female = 0, male = 1.

Abbreviation: SEL, social-emotional learning.

*$p < .05$; **$p < .01$; ***$p < .001$.

†$p < .1$.

TABLE 3 Gender differences on perceived school climate and prosocial, internalizing, externalizing behaviors.

Variables	Participants	*M*	SD	*t*	*p*	Cohen's *d*
School climate	Boys (*N* = 333)	3.45	0.46	−2.252	.025	0.17
	Girls (*N* = 366)	3.53	0.46			
SEL competencies	Boys (*N* = 333)	3.17	0.45	−2.074	.038	0.16
	Girls (*N* = 366)	3.24	0.43			
Prosocial behaviors	Boys (*N* = 333)	1.47	0.40	−3.793	<.001	0.29
	Girls (*N* = 366)	1.58	0.37			
Internalizing behaviors	Boys (*N* = 333)	0.34	0.33	−0.005	.996	<0.001
	Girls (*N* = 366)	0.34	0.34			
Externalizing behaviors	Boys (*N* = 333)	0.59	0.32	7.054	<.001	0.52
	Girls (*N* = 366)	0.43	0.30			

Abbreviation: SEL, social-emotional learning.

3.2 | Gender differences

Results in Table 3 show gender differences on perceived school climate, SEL competencies, prosocial behaviors, internalizing and externalizing behaviors. As predicted, results indicated that girls had higher mean scores on prosocial behaviors ($t = -3.793$, $p < .001$, Cohen's $d = 0.29$) than did boys, while girls had a lower mean score on externalizing behaviors than did boys, $t = 7.054$, $p < .001$, Cohen's $d = 0.52$. These results supported Hypotheses 1a and 1c. Moreover, results indicated that girls had higher mean scores on perceived school climate ($t = -2.252$, $p = .025$, Cohen's $d = 0.17$) and SEL competencies ($t = -2.074$, $p = .038$, Cohen's $d = 0.16$) than did boys. This result supported Hypotheses 1d and 1e. However, the gender difference on internalizing behaviors was not significant, $t = -0.005$, $p = .996$. This result did not supported Hypothesis 1b. As there were gender differences in the outcome measures, we treated gender as a control variable in this study.

3.3 | The association between perceived school climate and adolescent behaviors

After controlling for gender, age, and school-level school climate, the association of perceived school climate with adolescents' prosocial behaviors was significant, $\beta_{prosocial} = 0.210$, SE = 0.038, $p < .001$, 95% confidence interval [CI] = [0.136, 0.284]. This finding supported Hypothesis 2a. Similarly, after controlling for gender, age, and school-level school climate, the associations of perceived school climate on adolescents' internalizing and externalizing behaviors were significant, $\beta_{internalizing} = -0.095$, SE = 0.039, $p = .015$, 95% CI = [−0.171, −0.019], and $\beta_{externalizing} = -0.112$, SE = 0.037, $p < .005$, 95% CI = [−0.185, −0.039], respectively. This finding supported Hypotheses 2b and 2c.

3.4 | Mediating effects of SEL competencies on the association between perceived school climate and adolescent behaviors

The mediating effects of SEL competencies on the association between perceived school climate and adolescents' prosocial, internalizing, and externalizing behaviors are shown in three separate models for prosocial behavior (see Figure 2 and Table 4), internalizing behavior (see Figure 3 and Table 4), and externalizing behavior (see Figure 4 and Table 4).

Results in Figure 2 indicated that perceived school climate was positively associated with SEL competencies after controlling for gender, age, and school-level school climate, $a = 0.445$, SE = 0.034, $p < .001$, 95% CI = [0.378, 0.512]. This result supported Hypothesis 3. Besides, after controlling for perceived school climate, gender, age, and school-level school climate, SEL competencies was positively associated with prosocial behavior, $b = 0.198$, SE = 0.041, $p < .001$, 95% CI = [0.117, 0.279]. Results supported Hypothesis 4a. Finally, after controlling for SEL competencies, gender, age, and school-level school climate, perceived school climate still was positively associated with prosocial behavior, $c' = 0.122$, SE = 0.041, $p < .01$, 95% CI = [0.041, 0.203]. A bias-corrected percentile Bootstrap method test indicated a significant mediating effect of SEL competencies on the relation between perceived school climate and prosocial behavior, with mediating effect values $ab = 0.088$, Bootstrap SE = 0.021, Bootstrap 95% CI = [0.050, 0.133]. The ratio of mediating effect to total effect was 42.0%. The findings suggest that SEL competencies partially mediate the relation between perceived school climate and prosocial behavior. This observation supports Hypothesis 5a.

Regarding the mediating effect of SEL competencies on the relationship between perceived school climate and adolescents' internalizing behaviors, results in Figure 3 showed that perceived school climate was positively associated with SEL competencies after controlling for gender, age, and school-level school climate, $a = 0.445$, SE = 0.034, $p < .001$, 95% CI = [0.378, 0.512]. This result supported Hypothesis 3. After controlling for perceived school climate, gender, age, and school-level school climate, SEL competencies was negatively associated with

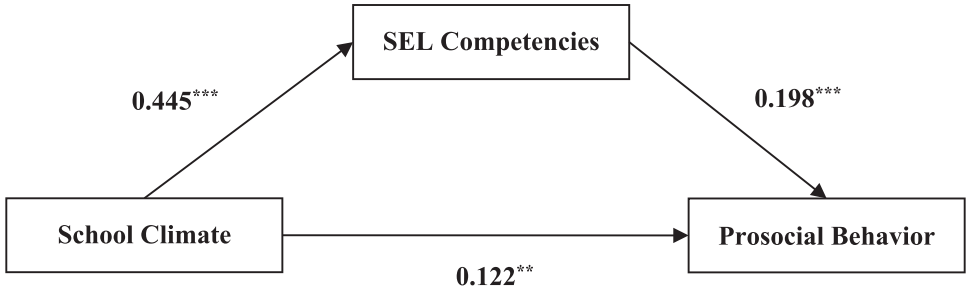

FIGURE 2 Indirect association of perceived school climate with prosocial behavior via SEL competencies. SEL, social-emotional learning.

TABLE 4 Mediating effect of SEL competencies (the mediator) for the effect of school climate on adolescent behavior.

Regression Models Summary	β	SE	t
Total effect of school climate (IV) on prosocial behavior (DV)	.210	0.038	5.594***
School climate (IV) to SEL competencies (Mediator)	.445	0.034	13.025***
SEL competencies (Mediator) to prosocial behavior (DV)	.198	0.041	4.809***
Direct effect of school climate (IV) on prosocial behavior (DV)	.122	0.041	2.951**
Total effect of school climate (IV) on internalizing behavior (DV)	−.095	0.039	−2.441*
School climate (IV) to SEL competencies (Mediator)	.445	0.034	13.025***
SEL competencies (Mediator) to internalizing behavior (DV)	−.210	0.043	−4.940***
Direct effect of school climate (IV) on internalizing behavior (DV)	−.001	0.043	−0.026
Total effect of school climate (IV) on externalizing behavior (DV)	−.112	0.037	−3.015**
School climate (IV) to SEL competencies (Mediator)	.445	0.034	13.025***
SEL competencies (Mediator) to externalizing behavior (DV)	−.226	0.041	−5.561***
Direct effect of school climate (IV) on externalizing behavior (DV)	−.012	0.041	−0.286
Mediating effect of SEL competencies (Mediator)	Point estimate	Bootstrapping (BC 95% CI)	
		Lower	Upper
For the effect of school climate on prosocial behavior	.088	0.050	0.133
For the effect of school climate on internalizing behavior	−.094	−0.137	−0.057
For the effect of school climate on externalizing behavior	−.101	−0.141	−0.063

Abbreviations: BC, bias-corrected; CI, confidence interval; DV, dependent variable; IV, independent variable; SEL, social emotional learning.
*$p < .05$; **$p < .01$; ***$p < .001$.

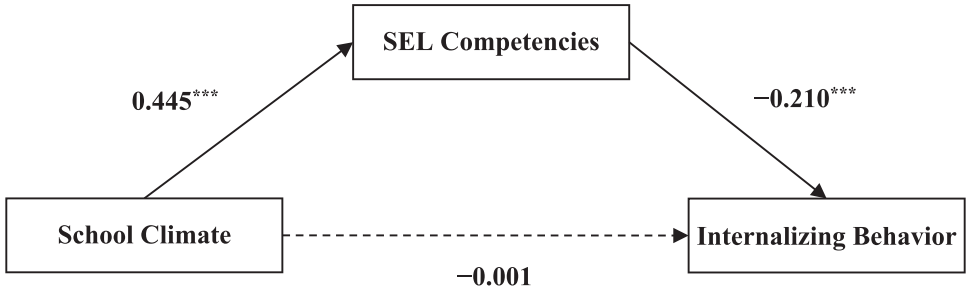

FIGURE 3 Indirect association of perceived school climate with internalizing behavior via SEL competencies. SEL, social-emotional learning.

internalizing behaviors, $b = -0.210$, SE = 0.043, $p < .001$, 95% CI = [−0.294, −0.127]. This result supported Hypothesis 4b. However, the direct association of perceived school climate with internalizing behaviors was no longer significant after controlling for SEL competencies, gender, age, and school-level school climate, $c' = -0.001$, SE = 0.043, $p = .979$, 95% CI = [−0.085, 0.083]. The results of bias correction percentile Bootstrap test showed a significant mediating effect of SEL competencies on the relation between perceived school climate and internalizing

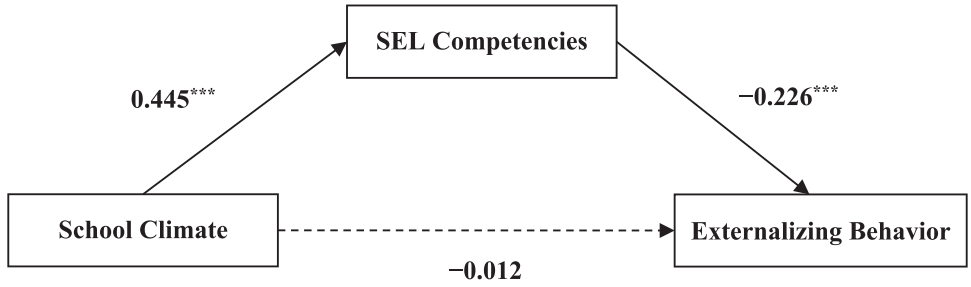

FIGURE 4 Indirect association of perceived school climate with externalizing behavior via SEL competencies. SEL, social-emotional learning.

behavior, *ab* = −0.094, Bootstrap SE = 0.020, Bootstrap 95% CI = [−0.137, −0.057]. The ratio of the mediating effect to the total effect was 98.8%. The finding suggests that SEL competencies completely mediate the relationship between perceived school climate and adolescent internalizing behavior. This finding supported Hypothesis 5b.

Regarding the mediating effect of SEL competencies on the relationship between perceived school climate and adolescents' externalizing behaviors, the results in Figure 4 showed that perceived school climate was positively associated with SEL competencies after controlling for gender, age, and school-level school climate, *a* = 0.445, SE = 0.034, *p* < .001, 95% CI = [0.378, 0.512]. This result supported Hypothesis 3 again. Also, after controlling for perceived school climate, gender, age, and school-level school climate, SEL competencies was negatively associated with adolescents' externalizing behaviors, *b* = −0.226, SE = 0.041, *p* < .001, 95% CI = [−0.306, −0.146]. This result supported Hypothesis 4c. However, the direct association of perceived school climate with externalizing behaviors was no longer significant after controlling for SEL competencies, gender, age, and school-level school climate, *c′* = −0.012, SE = 0.041, *p* = .775, 95% CI = [−0.092, 0.068]. Bias-corrected percentile Bootstrap method test indicated a significant mediating effect of SEL competencies on the relation between perceived school climate and externalizing behavior, *ab* = −0.101, Bootstrap SE = 0.020, Bootstrap 95% CI = [−0.141, −0.063]. The ratio of the mediating effect to the total effect was 89.7%. The finding suggests that SEL competencies fully mediate the relationship between perceived school climate and externalizing behavior. This finding supported Hypothesis 5c.

4 | DISCUSSION

We found that there were gender differences on perceived school climate, SEL competencies, and prosocial, externalizing behaviors. Moreover, we found that perceived school climate was positively associated with adolescent prosocial behaviors and negatively associated with internalizing and externalizing behaviors. Importantly, we found that SEL competencies mediated the association of perceived school climate with adolescents' prosocial, internalizing, and externalizing behaviors.

4.1 | Gender differences

Consistent with the findings of Xiao et al. (2019), girls displayed a higher level of prosocial behaviors compared with boys, possibly be due to the fact that girls are more responsive to social and emotional stimuli (McManis et al., 2001) and more likely to engage in prosocial interactions emphasizing helping, self-disclosure, and empathy than are boys (Rose & Asher, 2004; Rose & Rudolph, 2006). According to the social cognitive theory and gender schema theory, gender differences on prosocial behaviors might also be due to socialization efforts and adolescents' associated cognitive

constructions of gender-typed norms (Bussey & Bandura, 1999; Martin & Halverson, 1981). Moreover, result indicated that girls displayed a higher level of perceived school climate compared to boys. This result is consistent with previous studies (Way et al., 2007; Xie & Xiao, 2017). The reason may be that secondary school teachers often believe that girls work harder in school than boys, and have better relationships with girls than with boys (Suarez-Orozco & Qin-Hilliard, 2004). Similarly, result indicated that girls had higher level of SEL competencies compared with boys. This result is consistent with previous findings (e.g., Romer et al., 2011). The reason may be that girls have higher level of emotional intelligence (Cabello et al., 2016) and self-regulation ability (Matthews et al., 2009) compared to boys. However, the effect size of gender difference on perceived school climate and SEL competencies was small. Moreover, result indicated that boys showed a higher level of externalizing behaviors compared with girls. This finding is consistent with previous studies (Leadbeater et al., 1999). The reason may be that socialization practices that emphasize self-assertion and underemphasize empathy and self-regulation, may put boys at higher risk for externalizing problems (Leadbeater et al., 1999). Besides, it is also more socially acceptable that boys have more misbehavior than do girls in the Chinese culture. Interestingly, the present findings indicated that there was no gender difference on internalizing behaviors. This finding is not consistent with previous studies (Leadbeater et al., 1999; Storvoll & Wichstrøm, 2002). One possibility is due to employment of parent-report measure in this study where Chinese people tend to deemphasize emotions in children (Wang & Fivush, 2005).

4.2 | School climate and adolescent prosocial, internalizing, and externalizing behaviors

As predicted, this study revealed that perceived school climate was positively associated with adolescent prosocial behaviors but negatively associated with internalizing and externalizing behaviors. These findings supported previous evidence that a good school climate could promote adolescents' prosocial behaviors and reduce problem behaviors (Hoy & Hannum, 1997; Jia et al., 2009; Li et al., 2015; Yang et al., 2019). Adolescence is a period with intense physical and mental changes with a growing desire for positive perceptions and support from others in adolescents. A positive school climate can help to meet these developmental needs and lead to positive emotions and attitudes related to the school, resulting in more prosocial behaviors (Roeser et al., 2000). Besides, studies have indicated that school climate is negatively related to externalizing behaviors such as school bullying and drug use (Wilson, 2004; Yang et al., 2013), and internalizing behaviors such as feelings of loneliness, suicidal ideation, and depression (Thapa et al., 2013). One important contribution of the present findings is that they are pioneer in the Chinese scientific literature particularly using a multi-informant approach.

4.3 | The mediating role of SEL competencies on the association between perceived school climate and adolescents' behaviors

We found that SEL competencies mediated the relationships between perceived school climate and adolescents' prosocial, internalizing, and externalizing behaviors. This finding provides support for the model of "context–process–outcomes." As a contextual variable, perceived school climate is positively associated with adolescents' SEL competencies, in turn, is positively associated with prosocial behaviors and negatively associated with internalizing and externalizing behaviors. This is a theoretical advance in this field.

There are several possible reasons explaining the positive relationship between perceived school climate and adolescent SEL competencies. First, positive school climate could provide more emotional and tangible support to adolescents. Due to positive teacher–student relationships and student–student relationships under positive school climate, students could get more sustained and emotional support from teachers and other students (Cheng et al., 2021; Jia et al., 2009). Second, under positive school climate, teachers can model SEL skills, such as interpersonal skills, emotional management skills that help to foster their students' SEL competencies (Yang et al., 2013). Third, a positive school climate

usually has clear prosocial norms and highlights the importance of adolescent responsibility, so that adolescents could engage in more prosocial behaviors and make responsible decisions, which leads to a higher level of SEL competencies. Obviously, these possibilities constituted exciting possibilities for future research.

Regarding the finding that SEL competencies were positively associated with prosocial behaviors and negatively related to problem behaviors among Chinese adolescents, it is consistent with the previous findings (Durlak et al., 2011; Fan, 2015; Norris, 2003; Yang et al., 2020). From the perspective of positive adolescent development, SEL competencies can help to promote positive interactions between adolescents and environment and more engagement in prosocial behaviors (Shek et al., 2019). Moreover, SEL competencies could act as a protective factor to prevent adolescent problem behaviors. Primarily, SEL competencies can help adolescents learning to regulate their emotions, improve their mental health, and reduce internalizing behaviors such as depression and anxiety (Nie et al., 2020; Xu & Xiao, 2015). Moreover, SEL competencies can promote adolescent learning skills, which can further promote their holistic development (Nickerson et al., 2019).

4.4 | Contributions and limitations

There are several contributions of this study. First, this study suggests that SEL competencies play a mediating role in the relationship between school climate and adolescent behaviors. This can help social scientists to construct models in this problem area. Second, this study examined the relationships among school climate, SEL competencies, and adolescent behaviors in the Chinese cultural context, which contributes to the scientific literature. Third, as this study used the parent-reported version of SDQ to reduce the possibility of common method bias, there was an enhancement of the internal validity of the study.

Despite the pioneer nature of the study, it has several limitations. First, as this study is a cross-sectional study, we should be mindful of the existence of alternative explanation, such as the possibility that higher SEL competencies of adolescents may lead to better-perceived school climate. Therefore, longitudinal studies should be considered to examine the related issues in future. Second, the effect of school climate and SEL on adolescents' behaviors should be further researched with reference to demographic differences of young people in the Chinese context, such as rural versus urban distinction and different ethnicities. Third, we regarded perceived school climate reported by each adolescent as an individual level measure which is a commonly practice in the field (Li et al., 2016; Morin et al., 2013; Yang et al., 2020). Besides, results showed that there was no need for multi-level models in the present study. However, it would be interesting to further examine whether there are school effects (e.g., rural schools vs. urban schools) in the issues under study. Fourth, although the use of total score of school climate is commonly conducted (Nie et al., 2020; Yang et al., 2020), it would be theoretically enlightening to look at the relationship between different dimensions of school climate and child developmental outcomes in future. Finally, with more data, we should examine how gender might moderate the impact of school climate, SEL on adolescent behaviors via SEL competencies.

4.5 | Implications for practice

The present findings have several service implications. As school climate is closely related to adolescent prosocial and problem behavior, this present finding reinforces the importance of creating positive school climate. Specifically, school administrators and educators should promote communication and emotional support between teachers and students, and create more opportunities for students to learn cooperatively and help each other such as group work. In this process, the focus is on developing adolescents' communication competencies and enhancing their emotional management skills. Moreover, the present finding emphasizes the importance of developing strategies and programs to promote adolescents' SEL competencies in school-based prevention and intervention programs. In other Chinese contexts such as Hong Kong, there are also views suggesting the importance of

promoting the psychosocial competencies of high school students (Shek et al., 2021). As the Tin Ka Ping P.A.T.H.S. Project showed program effectiveness in mainland China (Shek & Zhu, 2020; Zhu & Shek, 2020, 2021), it can possibly be utilized in high schools in mainland China.

5 | CONCLUSION

Overall, we found gender differences in perceived school climate, SEL competencies, prosocial behaviors, and externalizing behaviors. Besides, our findings support the hypotheses that perceived school climate was positively associated with adolescents' prosocial behaviors, and negatively associated with adolescents' internalizing and externalizing behaviors. Moreover, SEL competencies mediated the association of perceived school climate with adolescents' prosocial, internalizing, and externalizing behaviors. Specifically, positive school climate was associated with high level of SEL competencies, in turn, was associated with more prosocial behaviors and less internalizing and externalizing behaviors.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data sets generated during and/or analyzed during the current study are available from the first author on reasonable request.

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