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ORIGINAL ARTICLE

School Climate Counts: A Longitudinal Analysis of School Climate and Middle School Bullying Behaviors

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Abstract

The purpose of the current study was to investigate whether student perceptions of school climate were associated with traditional and cyber bullying participant behaviors over the course of a school year. Additionally, gender was explored as a moderator in the associations between school climate perceptions and bullying participant behaviors. Data were collected from 870 6th through 8th grade middle school students using the Bullying Participant Behaviors Questionnaire (BPBQ; Demaray et al. 2014), the Cyber Victimization Survey (CVS; Brown et al. *Computers in Human Behavior, 35*, 12–21, 2014), and the Safe and Responsive Schools Safe Schools Survey–Secondary Form (SRS; Skiba et al. *School Violence Research, 3*, 149–171, 2004). Results indicated students' perceptions of school climate were significantly related to maladaptive bullying role behaviors (traditional and cyber bullying, traditional and cyber victimization, assisting in bullying, and outsider behaviors) but not adaptive role behaviors (defending). There were significant gender interactions with school climate, particularly with perceptions of delinquency/major safety at school. Implications concerning these findings are discussed.

Keywords School climate · Bullying · Victimization · Defending · Assisting · Outsider · Cyber victimization · Cyber bullying

Bullying is prevalent in schools, and bullying behaviors can take place face-to-face or online (National Center for Education Statistics 2019). In 2017, about 20% of American students ages 12–18 reported experiencing victimization at school and 15% of American students in 9th–12th grades experienced cyberbullying (National Center for Educational Statistics 2019). Regardless of their behavior or experience (e.g., bully, victimization, bystander), individuals involved in traditional or cyber bullying often have negative long-term outcomes associated with their involvement. For example, youth who bully and victims of bullying also reported low academic achievement, loneliness, and psychosocial maladjustment (Nansel et al. 2001). A positive school climate may reduce bullying perpetration leading to less victimization, or it may increase defending behaviors leading to victims feeling supported and resulting in less negative outcomes. There is some evidence that a healthy school climate is associated with less frequent traditional victimization and bully perpetration, but little is known about the association between school climate and other bullying role behaviors (i.e., assistant, defender, outsider). There is also some initial evidence of an association between school climate and online bullying and victimization, but more work is needed. The current longitudinal study investigated how perceived school climate was associated with traditional and cyber bullying behaviors across one school year (i.e., time 1 in fall, time 2 in spring), controlling for time 1 bullying behaviors. Additionally, the potential moderating role of gender was investigated in these associations.

The current study was influenced by Bronfenbrenner's (1979) social-ecological theory, which is often applied to bullying (Swearer et al. 2009). Via the social-ecological model, the youth brings to his/her interconnected environments his/her own characteristics (e.g., temperament, personality, behavior), and the child is influenced by all the environments that he/she engages with directly and indirectly (i.e., microsystems). Not only do those microsystems influence

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the youth but also characteristics of the youth influence the microsystems, which may also be in constant interaction (e.g., mesosystem). For example, a youth who is reinforced for traditional bullying of other students at school may go online and do the same thing in the virtual environment of social media (i.e., bullying others online). The current study hypothesizes that the climate of the school will be associated with behavior in more than one environment. Thus, students who view their school environment as negative may be more likely to engage in bullying participant behaviors in both school and online environments.

Bullying in Adolescence

Bullying Roles and Behaviors Bullying behaviors are specific and complex. Bullying is comprised of aggressive behavior(s) aimed at a target by another youth or group of youths and involves (a) an imbalance of power that is real or perceived, (b) repeated aggressive behavior or a likelihood of repeated aggressive behavior, and (c) physical and/or psychological harm, characterized by feelings of embarrassment, intimidation, and powerlessness as a result (Gladden et al. 2014). Data on the prevalence of youth who bully varies significantly across samples and studies, ranging between 13 and 75% (Swearer et al. 2010), but the general conclusion is that bullying is a common phenomenon among school-aged children. About 20% of American students ages 12–18 report experiencing victimization at school (National Center for Education Statistics 2019). Additionally, it is common among other countries. In Turkey, 30% of 9th through 11th grade students reported experiencing bullying during one school term (Falikasifoglu et al. 2004). In a sample of Korean middle school students, 16.2% of boys and 12.0% of girls were nominated by more than one classmate as victims of bullying (Kim et al. 2004). In a cross-national study of bullying 13.9% of students from the Netherlands, 12.2% of students from England, 10.0% of students from Norway, and 9.6% of students from Japan reported being bullied more than two times in the last month (Morita 2001).

Bullying is a social process and is based in relationships among youth within their microsystems. In traditional bullying role research, the association between students who bully and students who are bullied is the central focus. However, Salmivalli et al. (1996) discussed the importance of the "others" in the bullying process (p. 2). They referred to those other roles as participants and identified four participant roles that each have a different impact during bullying incidences: the *reinforcers* and *assistants* encourage bullying by joining in or laughing, the *defenders* directly intervene or comfort the student(s) being bullied, and the *outsiders* witness the bullying but do not get involved (Pouwels et al. 2016; Salmivalli et al. 1996). Often in the existing literature, reinforcers and assistants are measured together and considered one role (Demaray et al. 2014). To the authors' knowledge, there is limited research on the prevalence statistics of bystander roles in bullying experiences, as the literature has traditionally focused on youth who bully and victims. Recently, bullying literature has begun to expand its focus to bystanders, with an emphasis on increasing the frequency of students' defending behaviors.

Bullying mechanisms are also translated through technology and use of the Internet, via cyber bullying. Although cyber bullying does not have a universal research definition, it can be generalized to aggression with "intentional and repeated harm inflicted through the use of technology" (Barlett and Gentile 2012; Brown et al. 2014, p. 12). There are two roles traditionally identified in online bullying, the cyber bully and students who are bullied through technology (cyber victimization; Brighi et al. 2012). Prior research shows that cyber bullying and traditional bullying are more frequently experienced simultaneously by youth, rather than experiencing only one type of bullying (Brown et al. 2017; Espelage et al. 2012; Gan et al. 2014). For example, Brown et al. (2017) found that most youth experienced both face-to-face and cyber victimization (14%) and only a small portion (3%) experienced only one type of victimization. This does not mean that all youth who bully in-person are also cyber bullying; online bullying behaviors are less common than traditional bullying, with 13% of students reporting cyber bullying and 7% reporting being victimized online, in comparison with the 22% who report experiencing more traditional forms of victimization (Shin et al. 2016; Zhang et al. 2016). However, the association implies that research on bullying needs to include instruments that assess both online and traditional behaviors to account for multiple ecologies students interact within (Espelage et al. 2012).

Gender Differences Boys and girls tend to perpetrate the same amount of bullying; however, the bully behaviors they engage in are different (Espelage et al. 2015; Lindstrom Jonshon et al. 2013; Zimmer-Gembeck et al. 2005). A nationally representative sample of 6th to 10th graders identified that boys are more likely to be involved in physical or verbal bullying, and girls are more likely to be involved in relational bullying (e.g., excluding, spreading rumors; Wang et al. 2009). Salmivalli and others (Salmivalli et al. 1996) identified that in Finnish 6th grade students, boys were more likely to be categorized into the bully, assistant, and reinforcer roles, while girls were more often categorized as defenders and outsiders. Further research suggests boys perpetrate cyber bullying more often, although there is no clear consensus on gender differences in cyber victimization, as some studies identify females as being victimized more frequently and other studies do not report significant gender differences (Brighi et al. 2012; Gan et al. 2014; Li 2006; Wang et al. 2009).

School Climate

One important factor associated with bullying behavior is school climate. Since No Child Left Behind passed in 2001, school safety and climate has been an emphasis for school-based interventions (Goldweber et al. 2013). There is lacking consensus on what the term "school climate" means in research operationalization (Wang and Degol 2016). However, school climate can be considered a multifaceted construct including observable characteristics of schools, organizational behavior of school staff, and shared values among students and staff (Kuperminc et al. 1997). Previous school climate studies have focused on safety (Plank et al. 2009; Skiba et al. 2004), student support (Cornell et al. 2015; Goldweber et al. 2013; Syvertsen et al. 2009; U.S. Department of Education 2016), and aggression (Lee and Song 2012). Even with the variable definitions of school climate, the consensus is that a positive school climate is "an essential element of successful schools to promote student achievement" and life beyond education (Center for Social and Emotional Education and National Center for Learning and Citizenship at Education Commission of the States 2007, p. 9). An assumption of much of the work on school environments is that ratings of school climate would be fairly stable over time, except when a school has undergone comprehensive school reform (Brand et al. 2008). School climate has been found to be stable over time in terms of both students' ratings (Brand et al. 2003) and teachers' ratings (Brand et al. 2008). The current study measured school climate based on a sense of connection and trust with school personnel (climate/connection), feelings of safety (personal safety, delinquency/major safety), and interpersonal conflict among students (incivility/disruption).

Gender Differences The literature is mixed regarding gender differences in perceptions of school climate. The majority of the literature has indicated girls have more positive perceptions of school climate than boys (Brighi et al. 2012; Koth et al. 2008; Kuperminc et al. 1997; Wang et al. 2014). In a study operationalizing school climate as a supportive school, high school girls were more likely than boys to seek help from adults at school (Eliot et al. 2010). However, some research has found no gender differences in 6th and 7th graders' perceptions of school climate (Kuperminc et al. 2001). Although research has investigated gender differences in overall levels of school climate, there is a lack of research investigating gender differences in the associations among school climate and bullying role behaviors. Thus, the current study included gender as a moderator in the associations between school climate and bullying role behaviors.

School Climate and Bullying

Bullying behavior is a widespread problem common among middle school students. Districts could implement universal interventions to improve school climate, which in turn may prevent bullying behaviors and encourage defending behavior. Traditional bullying in schools may influence the possibility of experiencing cyber bullying; therefore, school climate interventions could also reduce cyber bully behaviors as well. Because bullying is a group phenomenon that involves more than just the students who bully and students who are bullied (Salmivalli et al. 1996), school climate in aggregate could be a more malleable point of intervention than trying to reduce the bullying behaviors of specific groups or individual students.

School Climate and Traditional Bullying Although there is limited research regarding school climate and bystander role behaviors, there is support for a negative association between school climate and traditional victimization. Most of the research conducted on school climate has focused on a broad construct of school climate and has not broken down climate into its components. When research has focused on components of school climate, teacher-student relationships have been found to be the most predictive factor of bullying and victimization, such that higher relationship quality with teachers is linked with lower frequencies of both bullying and victimization (Wang et al. 2010). School connectedness has also been associated with less bullying victimization (Gage et al. 2014). Gage et al. (2014) investigated the associations among three components of school climate—safety, social relationships, and school connectedness—and bullying victimization in over 4000 students in grades three through twelve. The authors found that for elementary students, two climate factors (i.e., perceived support from school staff, shared respect among students) were associated with less victimization; for secondary students, peer support and academic support at home were associated with less victimization. Yang et al. (2018) found that overall school climate was a protective factor against a decline in cognitive, behavioral, and emotional school engagement for youth that experience significant victimization. The authors defined school climate as a sum of school relationships (teacher-student, student-student), fairness of rules, clarify of expectations, school safety, and respect for diversity. Brighi et al. (2012) assessed school climate via a broad measure of students' relationships with teachers and peers in Italian secondary school students and found school climate was negatively associated with traditional victimization.

Nickerson and colleagues examined differences in five factors of perceived school climate (i.e., instructional and emotional environment, safety and belonging, respectful and responsive staff, academic self-regulation, and welcoming and diverse environment) among students categorized as bullies, victims, bully-victims, and bystanders (2014). Bystander roles included individuals who saw bullying but did not try to help (witness), who tried to help (defenders), and who were not involved (no role). Defenders reported more positive perceptions on all the school climate factors than bullies, bully-

victims, victims, and witnesses. Uninvolved students reported the next highest on all school climate subscales, and witnesses reported the next highest, except for scoring similarly to victims on perceived academic self-regulation. Victims and bully-victims reported significantly lower scores for safety and belonging compared with other groups; furthermore, bullies reported significantly higher safety and belonging scores than did bully-victims (Nickerson et al. 2014). Therefore, individuals indirectly involved in bully experiences (defenders and witnesses) reported more positive perception of school climate than those directly involved (bullies, victims, and bully-victims).

Using latent class analysis, Goldweber et al. (2013) grouped individuals involved in different levels of bullying perpetration behaviors. They found that middle and high school students who self-reported not engaging in bullying behaviors scored the highest on the Safety and Belonging subscales compared with the other classes of students (Goldweber et al. 2013). Additionally, middle and high school students who self-reported high involvement in numerous types of bullying behaviors scored lowest on the Belonging subscale (Goldweber et al. 2013).

School Climate and Online Bullying Research on cyber bullying and perceptions of school climate is limited and has only been directly explored over the last few years. Cyber bullying experts suggest that school climate may be uniquely influential in understanding and addressing cyber bullying (Cyberbullying Research Center 2012). The Cyberbullying Research Center analyzed preliminary data from over 4000 middle and high school students in the USA and found a clear association between school climate quality and cyber victimization. The few studies that have studied this association suggest a negative correlation between cyber victimization and perceived school climate (Bayar and Uçanok 2012; Davis and Koepke 2016; Veiga Simão et al. 2017). For example, Veiga Simão et al. (2017) found that as experiences of cyber victimization for youth in Portugal increased, perceptions of school climate decreased. Davis and Koepke (2016) found that a positive school climate protected adolescent youth from experiencing cyber bullying in a Bermudian school. A study of over 1000 youth in Turkey demonstrated that cyber bullies and bully-victims perceived teachers and peers less positively than youth not involved in cyber bullying behaviors (Bayar and Uçanok 2012).

The current study presents an opportunity to increase knowledge about the connection between perceived school climate and cyber bullying. Traditional bullying may act as a "precursor" to cyber bullying, which is considered an "extension of other bullying behaviors" (Espelage et al. 2012, p. 55). Additionally, Brighi et al. (2012) found experiencing traditional victimization predicted the experience of cyber victimization in both boys and girls. Therefore, it is important to address both traditional and cyber bullying roles, because school climate may impact bullying behaviors both in and outside of school. Many students are using technology (i.e., computers, cellphones) constantly throughout the day both in and out of school. Additionally, cyber bullying behavior was included in the current study because schools are increasingly required to investigate any incident related to bullying, including cyber bullying.

Current Study

The goals of the current study were to (1) investigate how perceived school climate in the fall may be associated with traditional bully participant behaviors (i.e., bully, victimization, assistant, defender, outsider) in the spring, controlling for the corresponding fall bullying participant behavior and investigating gender as a moderator, and (2) investigate how perceived school climate in the fall is associated with cyber bullying and victimization in the spring, controlling for the corresponding fall cyber bullying or victimization and investigating gender as a moderator. Gender was included in the model because the literature is mixed regarding gender differences among these associations. Much of the literature regarding school climate has investigated school climate as an overall construct instead of breaking it down into individual facets. Additionally, depending on the measure used or how researchers chose to operationally define school climate, the individual facets may differ. The current study seeks to expand on the school climate literature and investigate multiple individual aspects of school climate and not just school climate as a whole. Additionally, the current study seeks to add to the literature on traditional bullying participant behaviors and school climate. Much literature has focused on bullies and students who are bullied, with some literature looking at bystander behaviors and school climate. Given that bullying is a group process, it is important to understand how school climate may be associated with all bullying participant roles. Lastly, this study attempts to analyze the association between cyber bullying behaviors and school climate. Understanding if and how school climate and cyber bullying are associated may help inform school-based professionals of how to address cyber bullying in their schools.

It was expected that perceived school climate in the fall would predict traditional and cyber bullying participant behaviors (bully, victimization, assistant, defender, outsider, cyber bully, and cyber victimization) in the spring while controlling for the corresponding fall bullying participant behavior. We expected that negative school climate factors (delinquency/major safety and incivility/disruption) would be positively associated with traditional and cyber bullying, traditional and cyber victimization, assisting and outsider behaviors, but negatively associated with defending behaviors. Also, we

expected that positive climate factors (connection/climate and personal safety) would be negatively associated with traditional and cyber bullying, traditional and cyber victimization, and assisting and outsider behaviors, but positively associated with defending behaviors. The inclusion of gender as potential moderator was exploratory, given that there are gender differences in the frequency of engagement in bullying behaviors, and there are differences in perceived school climate by gender.

Method

Participants

The current study was conducted at a public middle school in a Midwestern state as part of all-school evaluation during the fall and spring of an academic year. The sample included students in 6th (35.2%), 7th (32.8%), and 8th (31.8%) grade ($N = 870$; 49.7% female). Participants' self-reported their racial/ethnic makeup as follows: White (56.3%), Hispanic/Latino (22%), Multiracial (9.9%), African American (8.5%), Asian American (2.6%), Native American (0.1%), Pacific Islander (0.1%), and missing (10.5%).

Measures

Following a brief demographic survey, students completed several self-report scales. The observed internal consistency coefficients of self-report measures are reported in Table 1.

Bullying Participant Behaviors Questionnaire The 50-item Bullying Participant Behaviors Questionnaire (BPBQ; Demaray et al. 2014) was used to assess participants' involvement in bullying role behaviors. Five bullying role behaviors (bully (engaging in aggressive behaviors toward a target), assistant to the bully (encouraging the bullying), victimization (experiencing the bullying as the target), defender (intervening to stop or prevent bullying), and outsider (avoiding involvement in bullying situations)) comprise the five 10-item scales. Example items include "I have tried to make people dislike another student" (bully); "When someone else tripped another student on purpose, I laughed" (assistant); "I have been called mean names" (victimization); "I defended someone who was being pushed, punched, or slapped" (defender); and "I ignored it when I saw someone making fun of another student" (outsider). Participants respond to a 5-point scale ranging from 0 = never to 4 = 7 or more times to rate their engagement in each behavior during the past 30 days. Scores in each scale are averaged, with scores ranging from 0 to 4 and higher scores indicating more frequent involvement in the bullying role behavior. In its scale validation study, Demaray et al. (2014) demonstrated strong evidence of internal consistency, with Cronbach's alpha coefficients ranging from 0.88 to 0.94 across scales. Additionally, principal component and confirmatory factor analyses supported the BPBQ's 5-factor structure. Concurrent, convergent, and divergent validity was also evidenced through associations between BPBQ scales and indices of maladaptive and adaptive behaviors (Demaray et al. 2014).

Cyber Victimization Survey The Cyber Victimization Survey (CVS; Brown et al. 2014) is a 38-item self-report scale that measures cyber bullying and victimization among youth. Participants respond to items based on their experiences within the last two to 3 months. The scale comprises two scales, cyber bullying (11 items; engaging in bullying through technology) and cyber victimization (17 items; experiencing bullying through technology). An example cyber bullying item is "In the last 2 to 3 months how often have you written something electronically or posted something online in order to make someone feel upset?" An example cyber victimization item is "In the last 2 to 3 months how often have you been teased online/electronically?" Participants respond to items on a 5-point Likert-style scale from 1 = it has not happened at all in the past couple of months to 5 = several times a week. An average score is obtained for each scale ranging from 1 to 5, with higher scores indicating greater frequency of cyber bullying or victimization. The internal consistency of the cyber victimization subscale was excellent in the validation study ($\alpha = 0.93$), and an exploratory factor analysis indicated that the items loaded onto a single factor (Brown et al. 2014). The cyber victimization subscale was also significantly associated with an existing measure of cyber victimization, providing evidence of construct validity (Brown et al. 2014). Brown et al. (2014) also developed the cyber bullying subscale; however, the psychometric properties of the cyber bullying subscale have not been formally published.

Safe and Responsive Schools Safe Schools Survey The Safe and Responsive Schools Safe Schools Survey–Secondary Form (SRS; Skiba et al. 2004) is a 45-item self-report measure of perceptions of school violence, safety, and overall climate. Skiba and others (Skiba et al. 2004) posited that an adequate measure of perceived school climate must assess both school climate and school safety concurrently. Participants respond to a 5-point Likert-style scale ranging from 1 = strongly disagree to 5 = strongly agree. The SRS is comprised of five subscales: incivility/disruption (i.e., interpersonal conflict among students), delinquency/major safety (i.e., awareness of illegal activity on school grounds), personal safety (i.e., perception of safety in school settings), connection/climate (i.e., perceiving trust and concern from school personnel), and a lie Scale (i.e., two validity items; not included in the analyses of the current study). The incivility/disruption and delinquency/major safety subscales reflect negative aspects of school climate and

Table 1 Means and standard deviations for study variables

	Total ($N = 870$)		Min	Max	Boys ($n = 437$)		Girls ($n = 432$)		6th grade ($n = 306$)		7th grade ($n = 285$)		8th grade ($n = 277$)		Internal consist
Variable	*M*	SD			*M*	SD	*M*	SD	*M*	SD	*M*	SD	*M*	SD	α
Bully T1	0.27	0.47	0	4	0.33	0.59	0.20	0.30	0.22	0.46	0.25	0.41	0.33	0.53	0.90
Victimization T1	0.65	0.87	0	4	0.66	0.92	0.63	0.83	0.60	0.80	0.66	0.88	0.68	0.94	0.94
Assistant T1	0.13	0.32	0	4	0.18	0.39	0.08	0.21	0.14	0.42	0.11	0.25	0.13	0.23	0.86
Defender T1	1.15	1.02	0	4	1.08	1.01	1.22	1.03	1.34	1.13	1.09	1.01	1.04	0.88	0.95
Outsider T1	0.38	0.68	0	4	0.44	0.81	0.33	0.53	0.33	0.61	0.36	0.65	0.47	0.78	0.95
Cyber bully T1	1.07	0.28	1	5	1.08	0.36	1.05	0.17	1.08	0.40	1.05	0.22	1.05	0.16	0.94
Cyber victimization T1	1.23	0.49	1	5	1.20	0.52	1.25	0.45	1.22	0.51	1.26	0.54	1.20	0.39	0.94
Bully T2	0.48	0.69	0	4	0.56	0.78	0.40	0.56	0.41	0.62	0.41	0.58	0.65	0.82	0.90
Victimization T2	0.87	1.03	0	4	0.90	1.10	0.84	0.94	0.85	1.02	0.89	1.03	0.88	1.03	0.94
Assistant T2	0.24	0.50	0	4	0.32	0.60	0.16	0.34	0.21	0.47	0.29	0.35	0.33	0.64	0.90
Defender T2	1.06	0.91	0	4	1.01	0.94	1.11	0.89	1.05	0.89	1.15	0.97	0.97	0.87	0.93
Outsider T2	0.54	0.82	0	4	0.58	0.91	0.49	0.72	0.51	0.79	0.50	0.76	0.62	0.91	0.95
Cyber bully T2	1.13	0.47	1	5	1.18	0.57	1.09	0.35	1.12	0.47	1.11	0.42	1.17	0.53	0.96
Cyber victimization T2	1.26	0.57	1	5	1.26	0.64	1.26	0.49	1.24	0.48	1.25	0.50	1.32	0.73	0.96
Connection/climate T1	3.85	0.81	1.53	5	3.82	0.81	3.89	0.80	3.14	0.70	3.92	0.74	3.51	0.85	0.95
Personal safety T1	4.12	0.83	1	5	4.08	0.89	4.16	0.77	4.22	0.82	4.13	0.82	4.01	0.84	0.94
Incivility/disruption T1	2.75	1.00	1	5	2.79	0.99	2.71	1.01	2.47	0.94	2.9	1.03	2.95	0.99	0.90
Delinquency/major safety T1	1.71	0.80	1	5	1.74	0.88	1.67	0.72	1.44	0.65	1.66	0.71	2.02	0.91	0.89

For the BPBQ a score of 0 = never, 1 = one or two times, 2 = three or four times, 3 = five or six times, and 4 = seven or more times. For the Cyber Victimization Survey a score of 1 = it has not happened at all in the past couple of months, 2 = only 1 or 2 times in the past couple of months, 3 = two or three times a month, 4 = about once a week, and 5 = several times a week. For the Safe and Responsive Schools Safe Schools Survey a score of 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree

T1 time 1, *T2* time 2

personal safety and connection/climate reflect positive aspects of school climate. Therefore, higher scores on the incivility/disruption and delinquency/major safety subscales reflect *greater* concerns of incivility or delinquency. Higher scores on the personal safety and connection/climate subscales indicate greater perceptions of personal safety and positive school climate.

For the current study, the item, "Teachers and administrators supervise the halls during passing times," was not utilized in analyses because it does not load onto any factor in Skiba and colleagues' study (Skiba et al. 2004). Also, the two Lie Scale items were not included in analyses. The item, "I have seen a gun at school this year," was modified to "I have seen *a student* with a gun at school this year" to prevent misinterpretations about school police officers carrying guns. In its validation study, the SRS evidenced adequate levels of internal consistency on all subscales, as indicated by the following Cronbach's alpha coefficients: incivility and disruption ($\alpha = 0.827$), delinquency and major safety ($\alpha = 0.853$), personal safety ($\alpha = 0.893$), and connection and climate ($\alpha = 0.939$). A principal component analysis supported the 4-factor structure of the SRS (Skiba et al. 2004).

Procedure

These data were evaluated as a secondary data analysis and were collected as part of an all-school evaluation, which was conducted in October of 2015 (time 1) and May of 2016 (time 2) and initiated at the request of school administrators. The fall semester began in mid-August of 2015; therefore, more than 30 days had passed before data was collected at time 1. At time 1 and time 2, the demographic survey, BPBQ, and CVS were administered. The SRS was administered solely at time 1 primarily for logistical reasons, including reduced length of time required for students to participate in the data collection. A passive parent/guardian consent procedure was employed. A letter was sent home to parents regarding the purpose of the study and parents were asked to return an opt-out form if they did not want their children to participate. Students were also asked to provide assent at the time of data collection. Students completed self-report surveys via Qualtrics online survey software in a single session during both all-school evaluations. Following the second all-school evaluation, data were merged and deidentified. The current study received Institutional Review Board approval to utilize the extant data for research purposes.

Analyses

To account for missing data, analyses were completed using Mplus statistical software, 5th version (Muthén and Muthén 1998-2007). Mplus uses maximum likelihood estimation with robust standard errors (MLR) to replace missing data prior to running the analyses. Preliminary analyses were conducted in SPSS (IBM Corporation 2013) to investigate gender and grade level differences in perceptions of school climate, traditional bullying behaviors, and cyber bullying behaviors (i.e., three MANOVAs using Bonferroni corrections). For the first MANOVA, gender and grade were entered as fixed factors, and time 1 connection/climate, incivility/disruption, personal safety, and delinquency/major safety were entered as dependent variables. For the second MANOVA, gender and grade were entered as fixed factors, and time 2 bully, victimization, assistant, defender, and outsider scores were entered as dependent variables. For the third MANOVA, gender and grade were entered as fixed factors, and time 2 cyber bullying and cyber victimization scores were entered as dependent variables. The main effects of gender, grade, and the interaction of gender and grade were examined for each variable. Additionally, two repeated measures MANOVAs were ran to investigate differences in the levels of traditional and cyber bullying behaviors between the fall and spring.

The primary goals of the study were accomplished by running seven moderated multiple regression analyses in Mplus. The four SRS subscales were entered as predictors (connection/climate, incivility/disruption, delinquency/major safety, personal safety) for a series of seven regressions where one of the BPBQ (bully, victimization, defender, outsider, assistant) or CVS (cyber bully, cyber victimization) subscales was entered as the dependent variable. Also, the corresponding time 1 variable (bully, victimization, defender, outsider, assistant, cyber bully, or cyber victimization) was entered to control for time 1 bully participant behaviors (traditional and cyber). To control for grade, it was also entered as an independent variable. Gender was dummy coded (0 = boys; 1 = girls) and entered as a moderator. All independent variables were mean-centered.

Results

Preliminary Analyses

Means and standard deviations by total sample, by gender, and by grade were run (Table 1) as well as correlations of study variables by gender (Table 2). Across all variables, missing data ranged from 11.3 to 17.2%. To analyze missing data, missing data was dummy coded (1 = missing, 0 = not missing), and the 18 main study variables were correlated with gender, grade, and ethnicity. None of variables correlated with

Table 2 Correlations between school climate and traditional bully participant behaviors

	1	2	3	4	5	6	7	8	9	10	11
1 Connection/climate	–	−0.492***	0.573***	−0.512***	−0.324***	−0.289***	−0.235***	−0.64**	−0.079	−0.169**	−0.237***
2 Incivility/disruption	−0.269***	–	−0.441***	0.645***	0.194***	0.347***	0.076	0.135*	0.090	0.168**	0.268***
3 Personal safety	0.548***	−0.291***	–	−0.383***	−0.187***	−0.284***	−0.144**	−0.095	−0.016	−0.056	−0.167**
4 Delinquency/major safety	−0.285***	0.568***	−0.271***	–	0.279***	0.255***	0.134*	0.123*	0.052	0.118*	0.288***
5 Bully T2	−0.208***	0.300***	−0.223***	0.348***	–	0.368***	0.692***	0.430***	0.068	0.207***	0.250***
6 Victimization T2	−0.152**	0.312***	−0.298***	0.188**	0.404***	–	0.176**	0.278***	0.402***	0.242***	0.526***
7 Assistant T2	−0.168**	0.222***	−0.168**	0.305***	0.750***	0.402***	–	0.442***	0.043	0.180**	0.164**
8 Outsider T2	−0.156**	0.294***	−0.206***	0.275***	0.573***	0.383***	0.625***	–	0.079	0.339***	0.276***
9 Defender T2	0.012	0.097	−0.098	0.051	0.073	0.448***	0.136**	0.165**	–	0.102	0.246***
10 Cyber bully T2	−0.087	0.196**	−0.184**	0.355***	0.345***	0.262***	0.443***	0.375***	0.104	–	0.496***
11 Cyber victimization T2	−0.132*	0.194**	−0.214***	0.206***	0.305***	0.391***	0.385***	0.370***	0.260***	0.671***	–

Correlations for girls are presented above the diagonal

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

gender. For grade, 11 variables were significant; however, the correlations were small ranging from 0.068 to 0.127. For ethnicity, 14 variables were significantly correlated; however, the correlations were small ranging from 0.087 to 0.133. The large sample size may have contributed to the significance of the correlations. Our data were not missing completely at random. Thus, Mplus MLR was used to account for missing data. One reason why there was missing data was because 96 (11%) of students had data at time 1, but not time 2 and 71 (8%) of students had time 2 data, but not time 1.

Gender and Grade Level Differences MANOVAs were conducted to analyze grade level differences in perceptions of school climate and traditional and cyber bullying behaviors. Significant gender differences were found in the five traditional bullying role behaviors (Wilk's lambda = 0.963, $F(5, 742) = 5.65$, $p < 0.001$). Specifically, there were significant gender differences in bullying behavior ($F(1) = 9.93$, $p = 0.002$) and assisting behavior ($F(1) = 23.04$, $p < 0.001$). Boys reported more bullying behaviors ($M = 0.56$, SD = 0.77) and assisting behaviors ($M = 0.32$, SD = 0.61) than girls ($M = 0.41$, SD = 0.56; $M = 0.15$, SD = 0.33). These effects were small (Cohen's $d = 0.22$; Cohen's $d = 0.35$). Additionally, there were significant gender differences found in the two cyber role behaviors as well, Wilk's lambda = 0.983, $F(2, 709) = 6.05$, $p = 0.002$. Specifically, there were significant gender differences in cyber bullying ($F(1) = 7.045$, $p = 0.008$). Boys reported significantly more frequent cyber bullying ($M = 1.18$, SD = 0.57) than girls ($M = 1.09$, SD = 0.35). This effect size was small (Cohen's $d = 0.19$).

Significant grade level differences were found among perceived school climate factors (Wilk's lambda = 0.832, $F(8, 1462) = 17.6$, $p < 0.001$). Specifically, there were significant grade level differences in connection/climate ($F(2) = 45.31$, $p < 0.001$), incivility/disruption ($F(2) = 17.45$, $p < 0.001$), personal safety ($F(2) = 4.12$, $p = 0.017$, and delinquency/major safety ($F(2) = 34.86$, $p < 0.001$). Post hoc analyses indicate 6th graders ($M = 4.15$, SD = 0.70) reported significantly higher connection/climate scores than 7th graders ($M = 3.91$, SD = 0.74) and 8th graders ($M = 3.51$, SD = 0.85). These effects were small for 7th graders (Cohen's $d = 0.33$) and large for 8th graders (Cohen's $d = 0.82$). In addition, 7th graders reported significantly higher connection/climate scores than 8th graders. This effect size was medium (Cohen's $d = 0.50$). Regarding incivility/disruption, 7th graders ($M = 2.84$, SD = 1.02) and 8th graders ($M = 2.96$, SD = 0.99) reported significantly higher scores than 6th graders ($M = 2.46$, SD = 0.94). These effects were small to medium (Cohen's $d = 0.39$; Cohen's $d = 0.52$). Regarding personal safety, 6th graders ($M = 4.23$, SD = 0.81) reported significantly more personal safety than 8th graders ($M = 4.00$, SD = 0.84). This effect was small (Cohen's $d = 0.28$). Regarding delinquency/major safety, 7th graders ($M = 1.66$, SD = 0.72) reported significantly higher scores than 6th graders ($M = 1.44$, SD = 0.66), but significantly lower scores than 8th graders ($M = 2.00$, SD = 0.90). These effect sizes were small (Cohen's $d = 0.32$; Cohen's $d = 0.42$). Additionally, 8th graders reported significantly higher scores than 6th graders. This was a medium to large effect size (Cohen's $d = 0.71$).

Significant grade level differences were found among traditional bullying role behaviors (Wilk's lambda = 0.960, $F(10, 1484) = 3.05$, $p = 0.001$). Specifically, there were grade level differences in bullying behaviors ($F(2) = 10.66$, $p < 0.001$) and assisting behaviors ($F(2) = 4.98$, $p = 0.007$). Post hoc analyses indicate 8th graders ($M = 0.65$, SD = 0.81) reported more bullying behaviors than 6th graders ($M = 0.41$, SD = 0.62) and 7th graders ($M = 0.41$, SD = 0.59). These effect sizes were small (Cohen's $d = 0.33$; Cohen's $d = 0.34$). Also, 8th graders ($M = 0.31$, SD = 0.62) reported significantly more assisting behaviors than 7th graders ($M = 0.19$, SD = 0.36). This was a small effect size (Cohen's $d = 0.24$).

There was a significant gender by grade interaction found among perceived school climate factors (Wilk's lambda = 0.972, $F(8, 1462) = 2.59$, $p = 0.008$). Particularly, there were significant grade by gender differences in connection/climate ($F(2) = 3.674$, $p = 0.026$) and incivility/disruption ($F(2) = 6.981$, $p = 0.001$). Students in 7th and 8th grade reported similar amounts of connection/climate across gender. Girls in 7th grade reported an overall mean of 3.90 (SD = 0.70) for connection/climate and 7th grade boys reported an overall mean of 3.95 (SD = 0.77). Additionally, for connection/climate, 8th grade girls reported an overall mean of 3.50 (SD = 0.84) and boys reported an overall mean of 3.50 (SD = 0.86). Both 6th grade boys and girls reported more connection/climate than 8th grade students, with 6th grade girls ($M = 4.27$, SD = 0.64) reporting slightly more than boys ($M = 4.00$, SD = 0.73). In regard to incivility/disruption, 8th grade girls reported the highest levels ($M = 3.07$, SD = 0.95), followed by 7th grade boys ($M = 2.88$, SD = 1.06), 8th grade boys ($M = 2.83$, SD = 1.02), and 7th grade girls ($M = 2.82$, SD = 0.99). The lowest levels of incivility/disruption were reported by 6th grade girls ($M = 2.26$, SD = 0.93) and boys ($M = 2.67$, SD = 0.90).

Time 1 and Time 2 Differences Two repeated measures MANOVAs were used to test differences in the levels of traditional and cyber bullying behaviors between the fall and spring. There were significant differences between the two time points for the traditional bullying role behaviors (Wilk's ;ambda = 0.864, $F(5, 650) = 20.53$, $p < 0.001$). Specifically, there were significant differences among bullying behaviors ($F(1) = 82.15$, $p < 0.001$), assisting behaviors ($F(1) = 37.10$, $p < 0.001$), victimization experiences ($F(1) = 28.73$, $p < 0.001$), defending behaviors ($F(1) = 5.40$, $p = 0.02$), and outsider behaviors ($F(1) = 17.97$, $p < 0.001$). At time 2, students reported significantly more bullying ($M = 0.47$, SD =

0.67), assisting ($M = 0.22$, SD = 0.48), victimization ($M = 0.82$, SD = 0.99), and outsider behaviors ($M = 0.51$, SD = 0.78) than at time 1 ($M = 0.25$, SD = 0.43; $M = 0.11$, SD = 0.24; $M = 0.64$, SD = 0.88; $M = 0.37$, SD = 0.64, respectively). Students reported significantly more defending behavior at time 1 ($M = 1.13$, SD = 0.99) than at time 2 ($M = 1.03$, SD = 0.89).

There were also significant differences among the cyber bullying role behaviors (Wilk's lambda = 0.975, $F(2,622) = 7.83$, $p < 0.001$). Specifically, there were differences in cyber bullying behaviors ($F(1) = 15.62$, $p < 0.001$). At time 2, students reported significantly more cyber bullying behaviors ($M = 1.13$, SD = 0.47) than at time 1 ($M = 1.10$, SD = 0.21).

Primary Analyses

The associations among gender, students' perceptions of school climate, and traditional and cyber bullying participant behaviors were explored through seven moderated multiple regression analyses in Mplus. See Table 3 for results of the regression analyses.

For time 2 bully behaviors, the overall regression was significant ($R^2 = 0.30$, $p < 0.001$). As expected, time 1 bullying behaviors were significantly associated with time 2 bullying, ($\beta = 0.37$, $p < 0.001$). In addition, gender ($\beta = -0.06$, $p = 0.05$) and delinquency/major safety ($\beta = 0.23$, $p < 0.001$) were significant predictors of time 2 bully behaviors.

For time 2 victimization, the overall regression was significant ($R^2 = 0.37$, $p < 0.001$). As expected, the time 1 victimization score was significant ($\beta = 0.53$, $p < 0.001$). In addition, personal safety ($\beta = -0.12$, $p = 0.019$) was a significant predictor of time 2 victimization.

For time 2 assistant behaviors, the overall regression was significant, ($R^2 = 0.24$, $p < 0.001$). As expected, the time 1 assistant behaviors score was positively and significantly ($\beta = 0.31$, $p < 0.001$) related to assistant behaviors. In addition, gender ($\beta = -0.12$, $p < 0.001$) was significantly and negatively related to time 2 assistant behaviors. Therefore, boys were more likely to report assistant behaviors. Also, delinquency/major safety ($\beta = 0.26$, $p < 0.001$) was positively and significantly related to time 2 assistant behaviors. However, there was a significant gender interaction with delinquency/major safety ($\beta = -0.16$, $p = 0.005$) in the association with time 2 assistant behaviors. Since the initial analyses were run with boys as the reference, gender was reverse scored, and the regression analysis was rerun to determine simple slopes for girls (this done for all significant interactions). The effect for girls was $\beta = 0.01$, $p = 0.992$, indicating a significant effect for boys only. Specifically, for boys, as delinquency/major safety scores increased, assisting behaviors increased.

For time 2 defender behaviors, the overall regression was significant ($R^2 = .20$, $p < 0.001$). Interestingly, time 1 defending was the only variable positively and significantly related to time 2 defender behaviors ($\beta = 0.44$, $p < 0.001$).

For time 2 outsider behaviors, the overall regression was significant ($R^2 = 0.18$, $p < 0.001$). As expected, the time 1 outsider behavior score was positively and significantly ($\beta = 0.32$, $p < 0.001$) related to time 2 outsider behaviors. In addition, personal safety ($\beta = -0.14$, $p = 0.015$) was negatively and significantly related to time 2 outsider behavior, and delinquency/major safety ($\beta = 0.15$, $p = 0.013$) was positively and significantly related to time 2 outsider behavior.

For time 2 cyber bully behaviors, the overall regression was significant ($R^2 = 0.16$, $p < 0.001$). As expected, the time 1 cyber bullying behaviors were positively and significantly ($\beta = 0.11$, $p = 0.032$) related to time 2 cyber bully behaviors. In addition, gender ($\beta = -0.10$, $p = 0.006$) was negatively and significantly related to time 2 cyber bully behaviors. Boys were more likely to report cyber bullying behaviors. Lastly, personal safety ($\beta = -0.17$, $p = 0.003$) was negatively and significantly related to time 2 cyber bully behaviors, and delinquency/major safety ($\beta = 0.40$, $p < 0.001$) was positively and significantly related to time 2 cyber bully behaviors. However, there were significant gender interactions for delinquency/major safety, climate/connection, and personal safety.

There was a significant gender interaction with delinquency/major safety ($\beta = -0.25$, $p < 0.001$) in the association with time 2 cyber bullying behaviors. The effect for girls was $\beta = -0.01$, $p = 0.913$, indicating a significant effect for boys only. As delinquency/major safety scores increased, cyber bullying behaviors increased. There also was a significant gender interaction with climate/connection ($\beta = -0.16$, $p = 0.011$) in the association with time 2 cyber bullying behaviors. The effect for girls was $\beta = -0.11$, $p = 0.108$, indicating a significant effect for boys only. For boys, as connection/climate scores increased, cyber bully behaviors increased. Lastly, there was a significant gender interaction with personal safety ($\beta = 0.15$, $p = 0.007$) in the association with time 2 cyber bullying behaviors. The effect for girls was $\beta = 0.06$, $p = 0.351$, indicating a significant effect only for boys. As personal safety scores increased, cyber bully behaviors decreased among boys in the sample.

For time 2 cyber victimization, the overall regression was significant ($R^2 = 0.13$, $p < 0.001$). As expected, the time 1 cyber victimization score was positively and significantly ($\beta = 0.21$, $p < 0.001$) associated with time 2 cyber victimization. In addition, personal safety ($\beta = -0.17$, $p = 0.003$) was negatively and significantly associated with time 2 cyber victimization, and delinquency/major safety ($\beta = 0.14$, $p = 0.017$) was positively and significantly associated with time 2 cyber victimization. However, there was a significant gender interaction with personal safety ($\beta = 0.13$, $p = 0.024$) in the association with time 2 cyber victimization. The effect among girls was $\beta = 0.02$, $p = 0.714$, indicating a significant effect for boys

Table 3 Summary of regression analyses with school climate and bully participant behaviors

T2 bully participant behavior	School climate subscale	β	SE β	R^2	Sig.
Bully T2				0.30	< 0.001
	Bully T1***	0.37	0.04		< 0.001
	Gender*	− 0.06	0.03		0.047
	Grade	0.02	0.04		0.533
	Climate/connection	− 0.02	0.06		0.786
	Personal safety	− 0.09	0.05		0.109
	Incivility/disruption	0.06	0.06		0.345
	Delinquency/major safety***	0.23	0.05		< 0.001
	Climate/connect × gender	− 0.09	0.06		0.137
	Personal safety × gender	0.05	0.05		0.348
	Incivility/disruption × gender	− 0.07	0.06		0.259
	Delinquency/major safety × gender	− 0.10	0.06		0.060
Victimization T2				0.37	< 0.001
	Victimization T1***	0.53	0.03		< 0.001
	Gender	− 0.02	0.03		0.465
	Grade	− 0.03	0.03		0.329
	Climate/connection	0.06	0.06		0.278
	Personal safety*	− 0.12	0.05		0.019
	Incivility/disruption	0.10	0.06		0.088
	Delinquency/major safety	0.08	0.05		0.117
	Climate/connect × gender	− 0.08	0.06		0.137
	Personal safety × gender	0.07	0.05		0.151
	Incivility/disruption × gender	0.01	0.06		0.896
	Delinquency/major safety × gender	− 0.10	0.05		0.080
Assistant T2				0.24	< 0.001
	Assistant T1***	0.31	0.04		< 0.001
	Gender***	− 0.12	0.03		< 0.001
	Grade	0.03	0.04		0.365
	Climate/connection	− 0.03	0.06		0.617
	Personal safety	− 0.07	0.06		0.210
	Incivility/disruption	0.02	0.06		0.792
	Delinquency/major safety***	0.26	0.06		< 0.001
	Climate/connect × gender	− 0.05	0.06		0.411
	Personal safety × gender	0.03	0.05		0.644
	Incivility/disruption × gender	− 0.05	0.06		0.432
	Delinquency/major safety × gender***	− 0.16	0.06		0.005
Defender T2				0.20	< 0.001
	Defender T1***	0.44	0.03		< 0.001
	Gender	0.02	0.03		0.511
	Grade	− 0.01	0.04		0.853
	Climate/connection	0.00	0.06		0.945
	Personal safety	− 0.06	0.06		0.293
	Incivility/disruption	0.04	0.06		0.528
	Delinquency/major safety	0.02	0.06		0.745
	Climate/connect × gender	− 0.07	0.06		0.267
	Personal safety × gender	0.09	0.06		0.093
	Incivility/disruption × gender	0.06	0.06		0.321
	Delinquency/major safety × gender	− 0.06	0.06		0.285

Table 3 (continued)

T2 bully participant behavior	School climate subscale	β	SE β	R^2	Sig.
Outsider T2				0.18	< 0.001
	Outsider T1***	0.32	0.04		< 0.001
	Gender	− 0.02	0.03		0.597
	Grade	− 0.00	0.04		0.930
	Climate/connection	0.03	0.06		0.622
	Personal safety*	− 0.14	0.06		0.015
	Incivility/disruption	0.12	0.07		0.067
	Delinquency/major safety*	0.15	0.06		0.013
	Climate/connect × gender	− 0.07	0.06		0.268
	Personal safety × gender	0.10	0.06		0.087
	Incivility/disruption × gender	− 0.09	0.07		0.173
	Delinquency/major safety × gender	− 0.06	0.06		0.326
Cyber Bully T2				0.16	< 0.001
	Cyber bully T1*	0.11	0.05		0.032
	Gender**	− 0.10	0.04		0.006
	Grade	− 0.02	0.04		0.532
	Climate/connection	0.12	0.07		0.074
	Personal safety**	− 0.17	0.06		0.003
	Incivility/disruption	− 0.03	0.07		0.712
	Delinquency/major safety***	0.40	0.06		< 0.001
	Climate/connect × gender**	− 0.16	0.06		0.011
	Personal safety × gender**	0.15	0.06		0.007
	Incivility/disruption × gender	0.06	0.07		0.336
	Delinquency/major safety × gender***	− 0.25	0.06		< 0.001
Cyber Victimization T2				0.13	< 0.001
	Cyber victimization T1***	0.21	0.04		< 0.001
	Gender	− 0.00	0.04		0.995
	Grade	− 0.01	0.04		0.818
	Climate/connection	0.03	0.07		0.662
	Personal safety**	− 0.17	0.06		0.003
	Incivility/disruption	0.04	0.07		0.532
	Delinquency/major safety*	0.14	0.06		0.017
	Climate/connect × gender	− 0.07	0.06		0.264
	Personal safety × gender*	0.13	0.06		0.024
	Incivility/disruption × gender	0.01	0.07		0.883
	Delinquency/major safety × gender	0.00	0.06		0.983

T1 time 1, *T2* time 2

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

only. In boys, as personal safety scores increased, cyber victimization decreased.

Discussion

The goal of the current longitudinal study was to examine how middle school students' perceptions of school climate factors are associated with bullying participant behaviors in the traditional and cyber contexts. A series of regression analyses tested whether students' perceptions of school climate in the fall significantly predicted traditional and cyber bullying participant behaviors in the spring, while controlling for the respective fall bullying participant behaviors. Additionally, gender was included to investigate its potential role as a moderator.

The first aim of the current study was to investigate how school climate factors in the fall were associated with traditional bullying participant behaviors in the spring, controlling for fall participant behaviors and examining gender as a moderator. As expected, all bullying participant behaviors (bullying, assisting the bully, victimization, defending, and outsider behavior) in the fall predicted the respective bullying participant behavior in the spring. Regarding the negative elements of school climate (i.e., incivility and disruptive behaviors, delinquency, and major safety concerns), students' observations of incivility and disruptive behaviors among peers were not significantly associated with traditional bullying participant behaviors, and this finding was unanticipated. However, students' observations of delinquency and illegal behaviors on school grounds were positively associated with engagement in bullying and outsider behaviors. For boys only, observations of delinquency were positively associated with assisting behaviors. These findings are in line with previous research (e.g., Brighi et al. 2012), which demonstrated bullying behaviors tend to increase as the valence of the school climate becomes more negative. We posit that observing other students' engagement in illegal activities, which are likely undetected by school personnel, may be positively associated with bullying and assisting behaviors due to a lowered threshold for students' perceived normativeness of the behavior. In other words, if illegal activities are observed on school grounds, students may be more likely to engage in related aggressive acts especially if they believe their bullying and assisting acts will go undetected by school personnel. Further, if school personnel are aware of delinquent and major safety issues on school grounds, they may prioritize addressing this behavior as a school problem over bullying and victimization concerns.

The more positive aspects of school climate (i.e., connection and overall climate, personal safety) were not as strongly associated with traditional bullying participant behaviors as expected. Students' perceptions of connectivity to the school and its overall climate were not significantly associated with any of the traditional bullying participant behaviors. However, students' perceptions of personal safety were significantly and negatively associated with experiences of victimization; thus, students who felt less safe in the school setting reported more frequent victimization. This finding is in line with prior research, which suggests victimization increases as school climate decreases (Brighi et al. 2012). Additionally, perceived personal safety was negatively associated with outsider behavior, indicating students who felt safer reported less engagement in outsider behavior. It is also worth noting that the only significant predictor of defending behavior in the spring was defending behavior in the fall. This finding does not align with the extant literature (e.g., Nickerson et al. 2014), and we expected perceived positive school climate factors (i.e., connection/climate and personal safety) to positively predict engagement in defending behaviors.

The second aim of the current study was to examine the relation between perceptions of school climate in the fall and cyber bullying and victimization in the spring, controlling for cyber bullying and victimization in the fall and investigating gender as a moderator of the relation. As expected, cyber bullying and victimization experiences in the fall predicted the respective experiences in the spring.

Regarding the two negative indices of school climate (i.e., incivility, delinquency) and cyber bullying and victimization, findings were similar to those demonstrated for associations with traditional bullying participant behaviors. Perceptions of incivility and disruption were not significantly associated with cyber bullying or victimization experiences. However, perceptions of delinquency were significantly related to both cyber bullying and victimization. Boys' perceptions of delinquency and major safety concerns were positively associated with cyber bullying behaviors; thus, as delinquency increased in the school setting, boys' engagement in cyber bullying increased correspondingly in the virtual setting. Additional research is necessary to advance understanding of these gender differences, as the reasoning for this gender interaction is unclear. For both boys and girls, perceived delinquency in the fall was significantly positively associated with cyber victimization experiences in the spring, indicating that as perceptions of delinquency in the school setting increased, so too did experiences of cyber victimization.

The more positive school climate indicators (i.e., connection/climate, personal safety) were also related to cyber bullying and victimization. Boys' perceptions of personal safety were negatively associated with both cyber bullying and cyber victimization, indicating that feelings of safety in the school environment were linked to less frequent engagement in bullying and experiences of victimization in the virtual environment. These findings were in line with the current study's hypotheses and the social-ecological model; however, they are incongruent with past findings that school climate is not significantly associated with cyber victimization (e.g., Brighi et al. 2012). Perceptions of school climate and connectedness were not associated with cyber victimization; however, for boys only, perceptions of school connection and climate were positively associated with cyber bullying. This finding was contrary to expectations; however, the current study may be the first to investigate the relation between school climate and cyber bullying behaviors, so additional research may be needed to better understand this finding. It is possible that students perceiving a positive climate and connectedness at school may shift some potential traditional bullying behaviors out of the positive school climate and into the virtual context. That is, when school climate is positive, traditional bullying may be less likely to be socially reinforced, but cyber bullying may be an alternative environment for students to engage in bullying behaviors. This may be more likely for boys, as evidenced by a significant gender interaction, although more research is

necessary to elucidate understanding of gender differences. Additionally, it is possible that students with high social status in the school context (i.e., those with high connectedness) may intentionally engage in cyber bullying as opposed to traditional bullying to victimize peers; because high status students may maintain approval from school personnel by avoiding aggression in the school environment, their aggression toward peers may be displaced when the virtual environment is available. Our sample may have included a high number of popular male bullies, which may be another reason why for boys only, school connection and climate was positively associated with cyber bullying. In a sample of first grade students, Acquah et al. (2014) found that there were more bullying behaviors among males and that more of the bullies were considered popular than unpopular. Specifically, about 16% of males were popular bullies and 8% of males were unpopular bullies compared with 3% of females who were popular bullies and 0% were unpopular bullies. Given that social status was not measured in the current study, we cannot conclude whether social status was associated with cyber bullying behaviors; however, future studies may investigate this possibility. These results imply that students' perceptions of school climate translate to peer interactions beyond the confines of the school building and into the virtual arena.

It is interesting that several of the school climate variables were significantly associated with bullying behaviors (i.e., assisting, cyber bullying, and cyber victimization) for boys but not for girls. It may be that boys are more influenced by some aspects of their school climate. Very little research has investigated gender differences in the association between school climate and bullying behaviors. In a study investigating the association of school climate and externalizing problems, researchers found school climate was more consistently associated with externalizing problems for boys than for girls. Specifically, in this study, perceptions of school climate accounted for 16% of the variance in an externalizing outcome score for boys and only 2% of the variance in that same externalizing score for girls (Kuperminc et al. 1997). More research is needed to investigate these gender differences to better understand what aspects of the school environment and what outcomes may be more associated for boys than for girls. Furthermore, research is needed to explore the mechanisms behind these gender differences for boys.

Preliminary analyses revealed significant gender differences in several bullying role behaviors. The current literature has produced varied findings with regard to gender differences in bullying behaviors. In the current study, boys reported more frequent bullying, assisting, and cyber bullying behaviors than did girls; these findings replicated those of past research (e.g., Wang et al. 2009). There were not significant gender differences in defending behaviors or traditional/cyber victimization experiences, which has been found previously (Wang et al. 2014). Additionally, there were not significant gender differences in students' perceptions of school climate as measured through four indices. However, much of the extant research, although limited, has indicated that girls report more positive perceptions of school climate than boys (Brighi et al. 2012; Koth et al. 2008; Wang et al. 2014). Therefore, this finding was unexpected, although at least one previous study has demonstrated similar perceptions of school climate among male and female middle school students (Kuperminc et al. 2001).

There was also significant grade level difference found among all the perceived school climate factors, bullying behaviors, and assisting behaviors. A significant grade by gender interactions was also found for perceptions of connection and climate as well as incivility and disruption. Additionally, preliminary analyses indicated that in the spring, students reported more bullying, victimization, assisting, outsider behavior, and cyber bullying and less defending behavior compared with the fall. This finding is not surprising given that the literature on this area is mixed. Although, one study of middle school students and bully behaviors found for 6th grade students, there was an increase in bullying behaviors after 4 months (Espelage et al. 2001). It is possible that in the spring, students have been with each other longer and behaviors may be exacerbated compared with the fall when students may have more tolerance for one another and less familiarity with each other.

Limitations and Future Research

There are possible limitations to these findings. The potential of response bias and other sources of error must be considered, as self-report instruments were utilized in the methodology. Although self-reports are valuable sources, particularly for variables not easily measured through alternative methods (e.g., perceptions of school climate), future research may employ different measures to capture students' experiences and perceptions (e.g., peer nomination). Additionally, the two lie scale items were not utilized in the current study. Extant literature supports screening for invalid responders is especially important when using adolescent samples (Cornell et al. 2014; Jia et al. 2016). Future research should utilize the lie scale and screen the sample for individuals who are inaccurately or not carefully responding to the survey's items. The generalizability of this study is limited given that data was collected at one Midwestern middle school, with a predominantly Caucasian sample.

For cyber victimization and bullying, the perpetrator may not be known by the students who are bullied and, therefore, may not be an individual from his or her school. Some cyber bullying that occurs online may not be related to students' perceptions of school climate. Therefore, future literature should investigate anonymity of perpetrators and characteristics of perpetrators (e.g., adults versus youth). Additional peer and home variables may account for students' engagement in

bullying behaviors as well as the association between perceived school climate factors and bullying participant behaviors. It is possible that unmeasured contextual variables in the current study (e.g., exposure to peers outside of school, peer norms for using social media and other technology, settings in which cyber bullying or victimization took place, access to Internet outside of school setting) may help to explain the observed findings in the current study. Future studies should consider these home and school variables in additional research. Additionally, although the current study controlled for grade in all analyses, future research may want to investigate grade level differences in the associations among school climate, bullying behaviors, and gender.

Future research may also want to explore different types of bullying (e.g., relational, physical) and associations with school climate and gender as well as how the other roles at time 1 may be associated with bully role at time 2 (i.e., to what extent does victimization, bullying, outsider, and defender behavior at time 1 play a role in time 2 assistant behavior). The current study ran separate analyses for each type of bullying behavior; future research should consider using other statistical methods (e.g., structural equation modeling) to investigate multiple outcomes. Additionally, future research should consider cyber bystander roles that may be present. It would be important to identify and evaluate assistant, defender, and outsider roles in the context of cyber bullying.

Given the lack of cut scores for the measure of perceived school climate available in extant literature, it is challenging to determine whether the levels of perceived school climate in the current study are typical of adolescents' perceptions at large. As noted above, the current study compared scores with the valence of the response scale. Future empirical studies may develop cut scores to provide reliable and valid comparisons of perceived school climate to a normative representative sample to improve the generalizability of study findings to schools with similar perceptions of school climate among attending students.

Although the longitudinal nature of this study may be considered one of its strengths, school climate factors were measured at time 1, but not at time 2. This limitation prevented us from examining changes in students' perceptions of school climate factors at each wave of data collection and, thus, controlling for changes in perceived school climate that may have be associated with changes in bullying participant behaviors. We believe the finding that school climate is related to bullying-related behaviors over time adds to the current literature and emphasizes the potential importance of school climate in the fall. However, future investigations should strive to collect these data at multiple time points, as school climate variables may be perceived differently by youth at varying points of each school year. Additionally, future empirical work may use a cross-sequential design to follow multiple waves of students across school years. Because of the longitudinal design, there were significant missing data in this large sample (approximately 11 to 17% missing), particularly at time 2 because there were fewer students participating in the second all-school evaluation than in the first. A few reasons why students may be missing at either time point include students may have moved in or out of the school, the student may have been absent the day of the data collection, or the student may have chosen not to participate. Analyses were conducted in Mplus to statistically account for missing data.

Implications of Findings

The results of this study contribute to the theoretical understanding of youths' perceptions of their school environments (i.e., school safety, connection, and climate) and engagement in bullying participant behaviors in the traditional and cyber contexts. To our knowledge, this study is the first to examine the relation between perceived school climate factors and bullying participant behaviors in a longitudinal design. The relation between perceived school climate and cyber bullying and victimization has been limitedly explored; thus, the current study contributes to this growing area of research. The current study also assessed the multiple participant behaviors students can engage in during bullying situations (i.e., bullying, assisting, victimization, defending, and outsider). This approach is more informative than considering bullying and victimization experiences alone. Given the longitudinal nature of this study, we were also able to assess relations between perceived school climate and bullying participant behaviors across one school year, controlling for bullying participant behaviors at baseline. It is possible that victimized students who also perceive a positive school climate may report fewer adverse social, emotional, and academic problems; thus, future research should explore school climate as a potential protective factor for students involved in bullying participant behaviors.

The current findings also have practical implications for school psychologists, educators, and other professionals working with youth. These results indicate that perceived school climate factors predict students' engagement in multiple traditional and cyber bullying participant behaviors across one school year, even after controlling for the respective baseline bullying participant behavior studied. Practitioners can apply this literature when conducting universal screenings for students' perceptions of school climate and bullying (both cyber and traditional). School climate may also serve as a point of intervention in schools, such that changes to students' perceptions of safety and connection may alter their interactions with peers. School climate may be a more malleable target for intervention, and a positive school climate can have widespread influence throughout a school's population of students. Therefore, school climate interventions may be more feasible than intervening with individuals or small groups of

students involved in bullying, if a school had the resources and staff buy-in to implement this type of intervention. Although promoting healthy school environments is one intervention strategy, it is important to note that it is possible that healthy school environments may have a paradoxical impact on youth who engage in bullying behaviors. For example, Sentse et al. (2007) found that youth who bully were more likely to be rejected by their peers in classrooms with low levels of bullying and less likely to be rejected (or maybe even liked by their peers) in classrooms with high levels of bullying. Additionally, Garandeau and Salmivalli (2019) found similar outcomes for youth who were victimized. In their study, victims of bullying had worse outcomes in school settings where little victimization was happening. This finding has been called the healthy context paradox.

Although school-wide interventions are helpful, targeting individual or small groups involved in bullying would also be important for students who are experiencing or participating in these behaviors at extreme levels. There are many evidence-based antibullying programs, that both aim to prevent bullying in middle and elementary school and provide intervention for students who are involved in bullying experiences as they arise (e.g., KiVa School; Salmivalli et al. 2013). Additionally, there was a moderating effect of gender in the association between school climate factors and assistant, cyber bullying, and cyber victimization behaviors. Therefore, school climate interventions should strongly target boys because school climate factors were more strongly associated with bullying participant role experiences compared with girls.

Conclusion

The current study yielded evidence that several perceived school climate factors significantly predict middle school students' engagement in traditional and cyber bullying participant behaviors over one school year. Students' observations of delinquency in the school environment were positively associated with engagement in bullying, assisting, outsider behavior, cyber bullying, and cyber victimization experiences. Furthermore, students' perceptions of school climate and connection were positively linked to engagement in cyber bullying behaviors. Students' perceptions of personal safety were negatively linked to engagement in cyber bullying behaviors and experiences of traditional and cyber victimization. Importantly, several of these associations may be interpreted in light of significant gender interactions, as previously illustrated. Future research is needed to better understand the connection between school climate and bullying participant behaviors among youth and potential gender differences, given the theoretical and practical importance of this understanding. Despite the limited research in this area, it is clear that when considering students' engagement in both traditional and cyber bullying participant behaviors, school climate most certainly counts.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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