



School-Level Association Between SEL Competencies and Bullying Involvement: A Four-Year Longitudinal Study

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Introduction & Research Gaps

One out of every five students ages 12-18 reported being bullied in 2019, and about 60% of those who reported being bullied waited more than ten days at school to notify an adult (NCES, 2023). About 16% of high school students reported being electronically bullied in the past 12 months in 2019 (NCES, 2023). A study based on a representative middle and high school student population in the U.S. showed that approximately 29.3% of students have been victims of cyberbullying at some point in their life in US (Hinduja & Patchin, 2019). Previous studies have shown the detrimental impacts of traditional bullying and cyberbullying victimization on students' academic achievement and mental health outcomes. Students who are victims of bullying and cyberbullying reported greater risk for depression, anxiety, sleep difficulties, lower academic achievement, and higher dropout rates (Centers for Disease Control, 2019; Juvonen & Gross, 2008).

There has been a noticeable dearth of studies dedicated to understanding the schoolwide bullying and bullying victimization. Researchers have been interested in investigating school-wide bullying and systematic variables contributed to the perceived school-wide bullying (e.g., Yang et al., 2020; Yang et al., 2021). However, these studies were mainly cross-sectional designs, lacking the longitudinal perspective to capture the change at the school level. To our knowledge, no studies have shed light upon the longitudinal changes of different bullying phenomena at the school level, and the school-level longitudinal relationships between school-wide SEL competencies and these bullying phenomena. Further, researchers have been interested in understanding whether these types of bullying phenomena differ (e.g., Sabella et al., 2013; Tonkunga 2010) and overlap (e.g., Pichel et al., 2021; Wassdorp & Bradshaw, 2015) and whether to address these types using a whole-community approach or treat them individually. This study also aims to contribute to this debate to examine the differences among different types of bullying phenomenon through a longitudinal lens.

Research Questions:

The present study is guided by the social-ecological model (Bronfenbrenner & Morris, 2007). Using growth mixture models, we aimed to answer the following two research questions (RQs):

- What are the *trajectories* of schoolwide bullying, traditional bullying victimization, and cyberbullying victimization?
- What are the *longitudinal effects* of four domains of SEL as well as school characteristics (i.e., grade level, diversity index, and school size) on the trajectories of schoolwide bullying, bullying victimization, and cyberbullying victimization?

Methods

Participants were students enrolled in Grades 3-12 recruited from public schools in the state of Delaware in the US between 2016 and 2020. In total, 142 schools participated in the survey with 52.81% of them taking part for four times, 16.20% for three times, 17.61% for twice, and 13.38% for once. Of the participating schools, 87 were elementary schools, 31 were middle schools, and 24 were high schools. Specifically, 32,044 students in 104 schools were recruited in 2016-17 (51.64% female), 38,758 students (52.1% female) in 134 schools in 2017-18, 34,871 students (51.8% female) in 124 schools in 2018-19, and 39,942 students (51.9%) in 124 schools in the 2019-20 academic year.

School wide bullying was measured by 3-item subscale of the Delaware School Climate Survey-Student (DSCS-S; Bear et al., 2011). The traditional bullying (TBV) and cyberbully victimization (CBV) were measured using subscales of the Delaware Bullying Victimization Scale-Student (DBVS-S; Yang et al., 2018). The Delaware Social Emotional Competencies Scale-Student (DSECS-S; Mantz et al., 2018) was used to measure students' SEL competencies. Demographic factors including school levels, diversity index, and school size were included in a series of linear growth curve models.

Results

• The Trajectory of Schoolwide Bullying (SWB)

- The **four-class solution** has the best model fits with the lowest BIC and the highest entropy: *high-start-high-growth*, *moderate-start-high-growth*, *moderate-start-low-growth*, and *low-start-low-growth*.
- Comparing *high-start-high-growth* and *moderate-start-low-growth*, **high schools** had lower probability of falling into *high-start-high-growth* than elementary schools ($b=-17.68, p < 0.01$).
- In terms of *moderate-start-high-growth* vs. *moderate-start-low-growth*, **high schools** were more likely to demonstrate the *moderate-start-high-growth* trajectory ($b=-17.68, p < 0.01$) than elementary schools.
- A unit increase in **social awareness (SA)** made the school 92% less likely to demonstrate a *high-start-high-growth* trajectory ($p < .05$).
- Schools who scored one unit higher in **Ethnic Diversity Index** were .80 times more likely to show the moderate-start-high-growth trajectory.

• The Trajectory of Cyberbullying Victimization (CBV)

- The **two-class approach** was chosen as the best fit model: *high-start-low-growth* and *low-start-high-growth*.
- High schools** were only 0.26 times as likely as middle schools to fall into *low-start-high-growth* class ($p < .01$).
- Neither domains of SEL, school size, or diversity index were significantly associated with trajectory classes at a 5% level.

• The Trajectory of Traditional Bullying Victimization (TBV)

- One-class solution** is more ideal than other solutions.
- The yearly growth of TBV was .10 units ($p < .05$).
- Compared with elementary schools, both **middle and high schools** experienced a lower level of TBV ($b_{middle}=-0.79, p < 0.01$; $b_{high}=-1.28, p < 0.01$).
- Only **SA_mean** was significantly associated with TBV ($b_{high}=-0.32, p < 0.05$).

Table 2

Model Fit Indices, Entropy Values, and Classes Percentages for Growth Mixture Model for SWB

# of classes	Loglik	# of pars	BIC	Entropy	%class1	%class2	%class3	%class4	%class5
1	-611.4	3	1237.61	NA	100				
2	-523.6	6	1076.86	0.77	64.75	35.25			
3	-464.8	9	974.12	0.84	49.64	35.97	14.39		
4	-442.9	12	945.2	0.84	9.35	14.39	38.13	38.13	
5	-436.9	15	948	0.76	30.22	9.35	13.67	19.42	27.34

Table 3

Multi-nominal logistic regressions of BullySWMean trajectory types on school characteristics and SEL

Covariates	high-start-high-growth vs. moderate-start-low-growth		low-start-low-growth vs. moderate-start-low-growth		moderate-start-high-growth vs. moderate-start-low-growth	
	b	OR	b	OR	b	OR
Intercept	-1.67*	0.19	-4.53**	0.01	0.23	1.26
Size	0	1	0	1	0	1
Middle	-2.1	0.12	2.42	11.29	-1.16	0.31
High	-17.68**	0	0.82	2.26	-2.11*	0.12
Index	-0.04	0.96	0.63	1.88	-.59*	1.8
RS+RE_mean	0.18	1.2	1.09	2.98	-0.06	0.94
SA_mean	-2.51*	0.08	1.22	3.38	-1.29	0.28
SM_mean	-1.11	0.33	0.51	1.66	-0.48	0.62

Note. * $p < .05$; ** $p < .01$. s.e.=standard errors; OR=odd ratio; Middle= middle schools contrast vs. elementary school; High = high schools contrast vs. elementary school.

Table 4

Model Fits, Entropy, and Classes Percentages for Growth Mixture Model for CBV

# of classes	Loglik	# of pars	BIC	Entropy	%class1	%class2	%class3	%class4	%class5
1	-233.35	3	478.72	NA	100				
2	-225.79	6	475.63	0.59	23.64	76.36			
3	-220.45	9	476.97	0.79	3.64	72.73	23.64		
4	-214	12	476.08	0.86	16.36	3.64	76.36	3.64	
5	-211.78	15	483.67	0.72	50.9	3.64	3.64	30.91	10.91

Discussion

- Different trajectories among bullying phenomena.** Different from CBV's two trajectories, school-wide TBV has a linear growth over four years. The different trajectories among these types of bullying phenomena contradicts the previous findings that bullying and cyberbullying overlap at the student level (Waasdorp & Bradshaw, 2015; Pichel et al., 2021). This suggests that while at the individual level students' may have overlapping experiences of bullying, cyberbullying, and victimization, the aggregated perceptions of types of bullying phenomena at the school level differ from each other in the long term. Our findings support the findings to treat cyberbullying separately from bullying, highlighting the importance of measuring, assessing, preventing, and intervening cyberbullying and victimization that is different from traditional bullying and victimization.
- School-wide social awareness matters.** Only school-wide social awareness significantly and negatively predicted TBV and the high-start-high-growth trajectory of SWB. The findings underscore the importance of raising schoolwide social awareness in reducing the growth of SWB and TBV in the long term, particularly in those schools with higher rates of perceived school-wide bullying.
- Grade levels and ethnic diversity index matters.** High schools are more likely to demonstrate both moderate-start-high-growth and high-start-low-growth school-wide bullying trajectories compared with elementary schools. High schools are also more likely to fall into high-start-low-growth for schoolwide cyberbullying victimization than middle schools. Schools with higher ethnic diversity are more likely to start with a moderate rate of school-wide bullying and grow at a higher rate compared to those of less diverse schools.
- Future Directions**
 - Employing school-level data based on the multiple informants such as teachers and parents;
 - More nationwide representative samples are needed;
 - Our study combines bullying and cyberbullying together as one outcome variable, and future studies could examine trajectories individually