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**Author(s):** Campbell County Board of Education

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# End of Grant Report

This report summarizes the findings collected on students under NIJ grant 2016-CK-BX-0009, which was extended due to the COVID pandemic. Given the multiple school closures that were ordered by Kentucky during 2020-2021 school year, the final two years of the grant balanced the need to maintain fidelity to the study with the unanticipated realities of a global health crisis. Thus, and with the permission of NIJ, some of our initial methods/timeframes were modified to accommodate these multiple school closures. For example, the average duration for data collection in the first three years of the study (i.e., cohorts 1, 2, and 3) was 382.6 days; the time between cohort 3 and data collection/identifying the 4<sup>th</sup> cohort was 515 days. Although these durations are well-within longitudinal studies capturing social network data among school-aged youth (e.g., Domingue et al., 2018; McMillan et al., 2018), the time lag was a departure from our intended administration strategy. Nonetheless, we returned to our targeted goal of 365 days between the selection of cohort 4 (Spring, 2021) and end-of-grant outcomes (Spring, 2022).

Beyond administration lags, the participation rates were lower for students in the 3<sup>rd</sup> cohort, due to families pursuing other educational avenues and/or families electing to remain homebound (which was an option during the 2020-2021 year but would preclude students from rating their peers). Although the third cohort received training on the intervention across all modules and Campbell County continued to maintain social connections through virtual platform (during school closings) and during in-person education when possible, school violence data was collected but quite limited during the 2020-2021 academic year.

Further, for cohorts 1-3, network data was collected among the three targeted grades (grades 3, 6, and 9) as well as additional grades (to monitor network changes as students matriculated). This could not be accomplished in the late Spring semester, 2021 – network data was collected among 3<sup>rd</sup>, 6<sup>th</sup>, and 9<sup>th</sup> grade students only. However, data was collected from all grades except grade 3 at the end of the project (Spring semester, 2022).

Finally, the constraints due to COVID also modified our strategies to select and retain brokers for the 3<sup>rd</sup> cohort (who were preselected prior to school closings) and the 4<sup>th</sup> cohort. In spite of our best efforts to keep the 3<sup>rd</sup> cohort together in the face of extraordinary stresses, 20% chose not to continue while homebound. Further, brokers of the fourth cohort were invited to participate only if they attended school in person the previous year, which could have influenced the composition of elementary, middle, and high school broker groups.

## Overall Participation

Over the course of the project, a total of 4,732 students participated in at least one round of the administration. The collective group was comprised of 52% males. Eighty-four percent of the respondents were identified as white, with an additional 6% identified as Black students. The remainder of the group consisted of students who were of Hispanic, Latino, or Spanish descent (2%), of more than one ethnic heritage (2%), and of Asian or Pacific Island descent (1.5%). There remainder served as “other” groups.

Table 1 reports the number students who completed the comprehensive survey between 2017-2022.

**Table 1: Total and Targeted Grade Participation Rates across Years**

Data Collection	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12	Total
2017-2018 (Cohort 1)	275	259	286	338	285	310	320	70	193	50	<b>2,386</b>
2018-2019 (Cohort 2)	333	350	321	347	326	302	313	260	71	164	<b>2,787</b>
2019-2020 (Cohort 3)	315	365	363	355	355	337	301	294	251	57	<b>2,993</b>
Late Spring, 2021 (selection of Cohort 4) <sup>a</sup>	276			302			283				<b>861</b>
Late Spring, 2022 (end of study) <sup>b</sup>			277	294	287	261	281	245	273	232	<b>2,151</b>
Average Participation Rate	<b>300</b>	<b>325</b>	<b>312</b>	<b>327</b>	<b>313</b>	<b>303</b>	<b>300</b>	<b>217</b>	<b>197</b>	<b>126</b>	

<sup>a</sup>social network and self-report measures were given only to grades 3,6, and 9 to identify students eligible for entry to Cohort 4

<sup>b</sup>data revealed that very few violence incidences occurred in the early Fall semester, 2021 across any of the elementary schools. To maximize the remaining carry-over funds, intervention groups and data collection efforts focused on the older grades (i.e., grades 6 and 9) of the final cohort.

### Methods

All students completed the comprehensive survey during a regularly scheduled class period. Subsequent follow-up sessions to capture students who were absent on the scheduled data collection day secured parent consent from over 99% of all possible respondents across each grade. Students were allowed to take as much time as needed to complete the survey, leading to 99.7% of the surveys completed in full. For cohorts 1-3, we exceeded our targeted goal of 90% consent, participation, and completion rates; for cohort 4 (due to constraints placed by COVID), these rates ranged between 82% (participation) to 98% (completion) rates.

Accounting for graduation and school relocation, the participation rate across time frames has been remarkably stable: of the original cohort of 3<sup>rd</sup> and 6<sup>th</sup>-grade students, over 80% completed the survey on at least 4 of the 5 occasions that the assessment was offered.

The methods to collect network data were identical across years. All participants were asked to identify “at least three and up to seven” peers that they consider to be their close friends in their respective grade. “Close friends” were defined as those whom the participant spends time with doing different activities and whom the participant can count on when she or he needs help. If the participant did not have any close friends in their grade, they were asked to select the names of at least three peers they feel at least somewhat close to. All participants then rated each endorsed name on their degree of perceived closeness on a four-point scale (1 = “somewhat close” to 4 = “extremely close”). Responses from these questions constituted the grade-based friendship network. To determine negative affective networks, students were also asked to select up to three names of individuals with whom they had experienced “conflict, tension, or with whom they just didn’t get along.”

**Tables 2 and 3: Indicators Assessed**

Self-Report	Measures	Scoring Range	High Scores Indicate
Social Ostracism	Presence/Absence of Social Connections	1 to 5	Higher Levels of Positive Social Connections
Interpersonal Support	Presence and Degree of Support from Friends	1 to 5	Higher Levels of Social Support
Leadership	Ability to Influence Social Norms	1 to 6	Higher Levels of Perceived Social Influence
Peer Victimization	Perceptions of being victimized at school	1 to 5	More Frequent Victimization
Bystander Reduction	Five Sequential Steps to Reduce Bystander Effect: Notice, Interpretation, Accept Responsibility, Motivation to intervene, Actual Intervening	1 to 5	Higher Levels of Social Agency
<b>Peer-Report</b>			
Social Relationship Questionnaire	Aggression, Class Disruption, Perceived Victim, Likeability	Up to 25 Nominations	Higher Nomination = More Frequently Observed Behavior
Social Network Measure	See Table 3 below		
<b>Objective School Data</b>			
School Violence Indicators	in/out of school suspensions (past year), bullying incidences, weapons charges, fights, sexual/verbal harassment,		Higher incidences of each indicator
Demographic Data (as controls)	disability status, sex, race/cultural background, attendance over past year, cumulative GPA (same year)		

SNA Variable	Definition
<b>Indegree Closeness</b>	Avg. number of closeness endorsements received by each student
<b>Positive Affiliation</b>	Avg. number of “time spent” endorsements between students
<b>Negative Affiliation</b>	Avg. number of "not like" endorsements received by each student
<b>Closeness Centrality</b>	Degree of influence a student has within the network
<b>Average Degree</b>	Average number of connections that a student has with peers
<b>Network Size</b>	Total number of connections that students have with each other
<b>Ego Density</b>	Percentage of all possible network ties, excluding the individual

Please note that the SNA indicators were computed both as non-normed and normed indicators.

**Network Brokers**

Network brokers were selected based on a number of inclusion criteria, to ensure that they (a) bridged as many subgroupings as possible, (b) were embedded within the larger social network, and (c) were not overly disliked by peers. More specifically, network brokers were selected if their betweenness centrality was  $\geq 20\%$  of each grade’s distribution, were  $\geq 1$  SD on peer likeability nominations, and received dislike ratings that were in the bottom 10% of each grade’s distribution. Table 4 reports the number of brokers identified, per cohort.

**Table 4: Number of Brokers across Cohorts Who Completed the Year-Long Program**

Total Number of Brokers	2016-2017	2017-2018	2018-2019	2021-22	Total
3rd Grade	30	28	37	38	134
6th Grade	24	12	28	23	87
9th Grade	19	15	28	21	83
Total	73	55	93	82	303

Demographic Differences in Cohorts across Years

A total of 325 brokers have been identified across four cohorts, of which 303 completed the entire program. The percentage of males and females was even (152 female and 151 males). Analyses found no within-group differences with respect to gender on any of the variables across the four cohorts. In keeping with the demographics of students enrolled in Campbell County, significantly more brokers who completed the program were of white/Caucasian ethnic background than other ethnic/cultural backgrounds (89%); of the remaining completers 4% were black, 3% were Hispanic, and the remainder were classified as “other”.

## Results

*Hypothesis 1: We expect to find significantly lower violence rates in Campbell County schools over the course of the study.*

Results: We compared results of Campbell County against two districts closely matched in student demographics, enrollment, per-pupil expenditures, and school violations (see Table 5).

**Table 5: Overview of Campbell County and Matched School Districts**

2016 Data (end of year)	Campbell County School District	Comparison District 1	Comparison District 2
<b>Per Pupil Expenditure</b>	\$13,094	\$14,370	\$14,731
<b>Average Daily Student Enrollment</b>	4793	4723	4226
Enrollment of 3rd Grade Students	379	351	391
Enrollment of 6th Grade Students	332	407	371
Enrollment of 9th Grade Students	425	333	383
<b>Demographic Information</b>			
% White, Non-Hispanic	90.6	64.3	95.2
% Male	50.8	52.8	52.4
% Econ. Disadvantaged	51.5	76.3	81.1
<b>School Violations</b>			
Bully Incidences	113	84	72
Out of School Suspensions	390	365	442
In School Suspensions	584	620	615

Specific violence incidences were compared between Campbell County (the intervention district) and data obtained from the Kentucky Department of Education (KDE), Annual Statistical Report (2017-2018, 2019-2020, 2020-2021, 2021-2022: raw data for all Kentucky districts can be found at <https://www.kyschoolreportcard.com/datasets?year=2021>).

Specific violence reports were separated into two distinct categories: “violence” (i.e., any incident that involved physical altercations such as fighting, physical bullying, and assault) and harassment (i.e., any incident involving non-physical dimensions such as verbal bullying, making threats or intimidation, and taunting with a high potential to lead to physical retaliation).

Table 6 reports violence and harassment incidences. It should be noted that for the 2021-2022 year, KDE made slight changes in how data is collected and sorted. Further, although several procedures are used to collate data for the yearly dashboards, reporting the data is based on the honor code. Finally, the dashboards continue to be revised as data collected during the COVID pandemic comes in.

**Table 6. Total Violence and Harassment Incidences Between Districts Across Time Frames**

	Intervention District	Comparison District 1	Comparison District 2
Violence 2017-2018	<b>7</b>	21	128
Violence 2018-2019	<b>34</b>	28	270
Violence 2019-2020	<b>35</b>	9	285
Violence 2020-2021	<b>13</b>	8	14
Violence 2021-2022	<b>40</b>	81	273
<b>Average</b>	<b>29</b>	35	239

	Intervention District	Comparison District 1	Comparison District 2
Harassment 2017-2018	<b>207</b>	252	33
Harassment 2018-2019	<b>182</b>	236	155
Harassment 2019-2020	<b>140</b>	211	133
Harassment 2020-2021	<b>13</b>	38	19
Harassment 2021-2022	<b>178</b>	271	277
<b>Average</b>	<b>177</b>	242	150

Excluding data from the 2020-2021 year (when data was limited due to school closings), the rates of violence remained rather steady in Campbell County, averaging 29 incidents per year since 2019. In contrast, incidences of violence have either continued to stay at high levels (Comparison District 2) or have sharply increased since 2020 (Comparison District 1). Likewise, the rates of reported harassment continued to decrease from 2017-2020 (although it increased during the 2021-2022 school year), which is a pattern not found in the comparison districts. Although the average number of harassment incidences was higher than Comparison District 2, the data was influenced by unexpectedly low reporting of harassment incidences in 2017-2018.

Table 7 reports the percentages of students receiving in-school suspensions (ISS) and out-of-school suspensions (OSS) since beginning of the study. In comparison to the two non-intervention districts, the percentage of students receiving ISS or OSS is consistently lower in Campbell County over time (although there was an uptick in OSS during the 2021-2022 academic year). The largest drop was found in the ISS rates for Campbell County. It is noted that the ISS/OSS incidences were lower in Campbell County to begin with, rendering some caution when interpreting the efficacy of the intervention on disciplinary measures.

**Table 7. Percentage of Disciplinary Decisions across Districts and Time Frame**

<b>Intervention District</b>	<b>In-School Suspensions</b>	<b>Out-Of-School Suspensions</b>
2017-2018	639	389
2018-2019	282	295
2019-2020	227	256
2021-2022	114	448
<b>Average</b>	<b>316</b>	<b>347</b>
<b>Comparison District 1</b>	<b>In-School Suspensions</b>	<b>Out-Of-School Suspensions</b>
2017-2018	3281	1096
2018-2019	3349	662
2019-2020	1214	490
2021-2022	1080	650
<b>Average</b>	<b>1731</b>	<b>725</b>
<b>Comparison District 2</b>	<b>In-School Suspensions</b>	<b>Out-Of-School Suspensions</b>
2017-2018	2327	993
2018-2019	2313	1021
2019-2020	2216	726
2021-2022	1381	1297
<b>Average</b>	<b>2059</b>	<b>1009</b>

In summary, there is promising support for the intervention in reducing rates of school violence, harassment, and disciplinary matters per objective indicators obtained from the Kentucky registry.

School violence data (i.e., incidents coded as 4<sup>th</sup>-degree assault, physical bullying, harassment, or “fighting”) collected within Campbell County allowed us to investigate how the intervention may yield benefits that extend over time. As shown in Table 8, which reports incidents reported between 2017 through May, 2022, the reduction in incidences (reflected by the arrows) provides some promising evidence of the efficacy and stability of the intervention in reducing incidences of violence, particularly among younger grades. These trends run counter to what has been reported in other Kentucky schools, where violence incidences increase between grades 5 and grades 11, both prior to the COVID Pandemic and in the first full year after the pandemic (see Kentucky Department of Education, Annual Statistical Report, 2020-2021, Figure 17).\*

**Table 8: Frequency of Total Violence Incidences, by Grade**

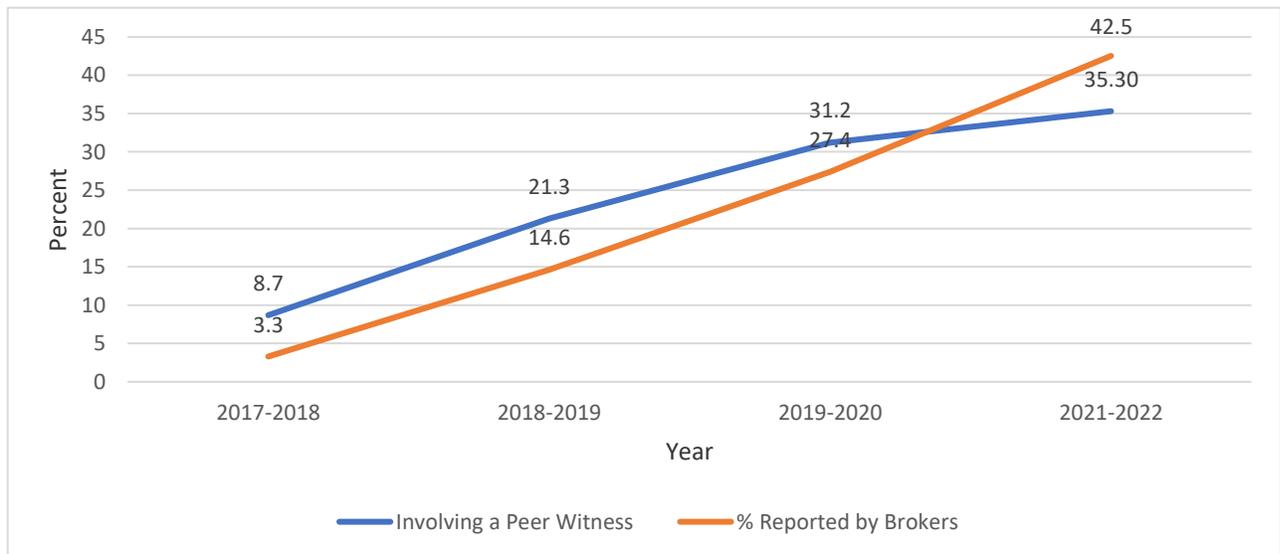
Grade	2017	2018	2019	2022
3	3	11	15	13
4	13	9	2	4
5	12	6	3	12
6	49	51	49	28
7	31	26	41	23
8	39	22	5	12
9	15	21	9	7
10	3	11	15	6
11	6	7	6	6
12	2	7	1	2
<b>Total</b>	<b>173</b>	<b>181</b>	<b>146</b>	<b>113</b>

Note: Violence data was limited in 2020 due to COVID and is omitted in this table.

*Hypothesis 2: Students that receive the anti-violence program will disclose information prior to violent activities to key adult figures (e.g., program officers, counselors). This relationship is explained, in part, by students' enhanced social resiliency variables.*

Results: Further support for the efficacy of this intervention comes from examining changes in the bystander effect over time. Of the total number of violence incidences recorded in 2017, only 9% involved a witness in the reporting. This percentage rose to 35% by the end of 2022. Moreover, the number of brokers who either witnessed or reported the incidence (after receiving word from a non-broker peer) rose from 3% in 2017 to over 40% in 2022 (see Figure 1).

**Figure 1. Percentage of Reported Violence Incidences Involving Brokers, Over Time**



**Hypothesis 3:** *The degree to which social resilience leads to higher disclosure is moderated by the involvement of brokers.*

Various studies examining the role of social resiliency in lessening the bystander effect are currently being conducted. These studies examine both direct and indirect relationships, both concurrently and over time, to explore the role of brokers on the reduction in violence episodes in schools. Some of our data has already been published. For example, in a special issue on social network analysis and schools, Gilman and colleagues provided a comprehensive tutorial on the use, role, and process of network analysis to identify how network position can promote or inhibit fights at school. Using the high school portion of the data base, the authors found that those (particularly males) who reported higher levels of social agency (i.e., more likely to speak out or intervene when a fight is about to occur) were less likely to be endorsed as starting fights themselves. This finding held true after controlling for social status (e.g., popularity) or clique affiliation (Gilman, Carboni, Perry, & Anderman, 2022).

Preliminary results also show that serving as a broker contributes to social agency, with these effects continuing in years beyond training. For example, we followed the original cohort against a random, grade-matched sample from the beginning of their first year to the end of the study. Results showed that while there was no between-group differences in the willingness to intervene at baseline, brokers reported a higher likelihood of intervening (including reporting an event) at the end of the first year  $t(1,276) = 2.27, p < .05$ . Further, the effects of broker training on the willingness to intervene appears longer than a year. For example, although no differences were found between cohort 2 brokers and a randomly selected, grade matched sample, cohort 2 brokers were more likely to do so at the end of their training and two years later  $t(1,276) = 2.02, p < .05$ . The benefits of serving as a broker extended beyond reducing the bystander effect. For example, cohort 1 brokers were no different than non-brokers on ostracism at baseline. However, their mean ostracism scores were significantly more favorable (i.e., higher perceived social connections) across subsequent time periods. A similar pattern was found with respect to self-reported leadership as well as a number of peer-reported indicators such as perceived closeness and trustworthiness. Papers on these findings have been submitted.

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