

Effectiveness of Virtual Tier-1 SWPBIS Systems on Overall Student Attendance Compared to
In-Person Tier-1 SWPBIS Systems on Overall Student Attendance.

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Abstract

The purpose of this study was to test the effectiveness of virtual (school year 2021) Tier-1 School Wide Positive Behavioral Intervention Systems (SWPBIS) on overall student attendance compared to in-person (school year 2020) Tier-1 SWPBIS. Participants were 7th and 8th grade students in a suburban Maryland public school. This study was quasi-experimental, utilizing a pre-test, post-test design. The null hypothesis that the setting of the SWPBIS was not related to overall attendance was rejected at the customary $\alpha=.05$. This indicated that there was a statistically significant decline in mean overall attendance between SY2020 (in-school) and SY2021 (virtual). The independent variable of positive communications, a major SWPBIS strategy, had a positive impact on student attendance for SY2021. Research should continue, as the study was impacted adversely by threats to validity due to COVID-19.

CHAPTER I

INTRODUCTION

Overview

In an article written by the Baltimore Sun in 2019, it states that 18% of Maryland students were considered chronically absent in the 2016/2017 school year. The chronically absent percentage for African Americans in Maryland is 19.3% for that same school year (Bowie, L., 2019). This data comes as a shock for Maryland schools. With the help of Attendance Works, a nationally recognized equity campaign to close chronically absent gaps, Maryland schools have continued to fully implement School Wide Positive Behavioral Intervention Strategies (SWPBIS) to combat absenteeism and increase overall student achievement.

Due to the COVID-19 Global Pandemic, the 2020/2021 academic school year has left many students vulnerable to chronic absenteeism as their routine has changed from learning within a school building to learning from their homes. Accountability and overall behavioral management strategies have decreased in the “learning from home” environment, causing traditional SWPBIS strategies to become obsolete. In order to maintain student attendance and overall achievement, it has become vital to secure virtual SWPBIS strategies to encourage, and maintain, overall positive student behavior and attendance percentages. This problem is not secluded to a single school or county but can be seen nationwide as many physical school buildings have shut down due to COVID-19.

The virtual learning environment has encouraged many schools, including that of the researcher, to participate in a “positive student contact” campaign as a part of the School Improvement Plan. 100% of students will receive some form of positive communication home

(post card, referral, phone call, email, text message) each semester. These positive contacts are a part of the virtual tier-1 SWPBIS. The purpose of this study is to identify the effectiveness of virtual tier-1 SWPBIS on overall student attendance compared to in-person tier-1 SWPBIS.

Previous works include thousands of studies on SWPBIS implementation, fidelity, academic success, and impact on chronic absenteeism. There has not, yet, been a study conducted on virtual SWPBIS and its overall impact on attendance or academic achievement.

Statement of Problem

The purpose of this study is to determine the effectiveness of virtual tier-1 SWPBIS systems on overall student attendance in the virtual setting versus tier-1 SWPBIS systems on overall attendance in the in-person setting.

Hypothesis

The null hypothesis suggests that virtual SWPBIS is not effective/ does not have an impact on overall student attendance in the virtual learning environment compared to in-person SWPBIS and attendance from the previous school year.

Operational Definitions

For the purpose of this study, the following terms will be used and defined as they are used in this paper:

Independent Variables:

- **School Wide Positive Behavior Intervention Supports (SWPBIS):** systematic approach to behavior interventions and prevention strategies that seeks to improve the

overall school environment. Purpose is to target nonadaptive or destructive behavioral issues and promote positive development of social and academic skills.

- **Tier-1 Strategies:** Universal school wide support for all students throughout the building. Behaviors are taught and reinforced by staff through a “tangible reinforcer” such as Pride Pays, clubs and activities, community building circles, classroom incentives, positive behavior referrals, and student of the month.
- **Tier-1 Virtual Strategies:** Communicating student successes through positive contact home – positive post cards, positive referrals, positive emails, etc.

Dependent Variables:

- **Student Attendance:** any student who is listed as chronically absent, at risk of failing, or missing more than one day a week in the in-person or virtual setting.
- **Chronic Absenteeism:** missing 10% or more of the academic year for any reason, excused or unexcused.
- **Implementation Fidelity:** the overall degree to which the core principles of SWPBIS are implemented as designed and intended.
- **COVID-19:** In 2020 the world was devastated with a global pandemic that forced many states to close school buildings and start virtual learning.
- **Virtual Learning:** The 2020/2021 school year started and remains virtual because of the COVID-19 pandemic. Students were left to learn at home through their computer. Many SWPBIS systems were halted and re-envisioned to encourage online participation and attendance.

Chapter II

Review of the Literature

This literature review discusses the implementation of school wide positive behavioral intervention support (SWPBIS) systems and its implications on academic achievement and attendance. Section one outlines the necessity and implementation of SWPBIS through its tiered system of supports. This section also outlines the importance of SWPBIS on targeted groups and individualized students who are not successful with school-wide tier one implementation. Section two outlines the importance of fidelity when discussing successes with SWPBIS. Data collection and implementation with fidelity are studied closely to show a decrease in student discipline referrals and out-of-school suspensions due to high fidelity rates. The final section considers SWPBIS supports as a precursor to increased attendance and academic achievement and discusses the hinderance of chronic absenteeism and truancy on students.

School-Wide Positive Behavioral Interventions and Support Systems Necessity and Implementation

The Maryland Positive Behavioral Interventions and Supports (PBIS) is a systematic approach to behavioral interventions and prevention strategies that seeks to improve the overall school environment. The purpose of this system is to target students with nonadaptive, inappropriate, or destructive behavioral issues and promote the development of social skills appropriate for the learning environment. These systems focus on school-wide discipline strategies, reinforcement of those strategies, and data management. The data consists of office referrals, overall achievement, attendance/ truancy, and suspension rates (Barrett, et al., 2008).

The structure of school wide PBIS (SWPBIS), initiated in the state of Maryland, is intended to serve as an organizational process that implements and evaluates a multitude of

different initiatives within the school building. The process is formulated by research-validated practices that are used to stabilize the whole school on a social-behavioral level. The Maryland PBIS initiative follows a public-health approach where the need for a continuum of services is offered to the entire school system to reduce overall levels of behavioral issues. (Barrett, et al., 2008). Teachers and students work collaboratively to promote positive communication and work towards problem-solving skills that benefit the whole child. Teachers display clear expectations for learning behaviors within the classroom and students receive incentives for meeting those expectations (Bradshaw, et al., 2015). As of 2020, there are currently 1,178 Maryland public schools across twenty-six school systems that offer SWPBIS structures and initiatives (PBIS Maryland, 2020).

SWPBIS works on a three-tiered system. Tier one is universal, or school wide, supports that reach all students and staff throughout the building. This tier allows for three to five clear expectations to be made for all students and staff to follow. These defined behavioral expectations are taught to the students and reinforced/ rewarded by the staff through a “tangible reinforcer” (Bradshaw, et al., 2015, p. 482). If a student violates the given expectations, such as “Be Respectful,” then a consequence is given instead of a reward. The goal is to intervene with proactive measures before the unwanted behavior becomes persistent (OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2020). Office administration and educators work collaboratively to determine which discipline issues constitute a referral or another form of consequence (Bradshaw, et al., 2015). Data is then used to monitor student progress and make appropriate, research-based decisions (OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2020). When implemented with fidelity, “the degree to which the core principles of PBIS are implemented as designed and

intended” (Amity, et al., 2019, p. 82), tier one supports allow for “... fewer absences, unexcused tardies, ODRs [office discipline referrals], and suspensions” (Freeman, et al., 2019, p.1).

Tier two SWPBIS approaches are targeted, or supplemental, supports towards small groups of at-risk students. These students need additional supports to build social skills and meet the expectations of the classroom. When implemented with fidelity, tier two will meet the needs of approximately fifteen percent of the student population (Freeman, et al., 2019). Tier two students are often identified through the discipline referral process, teacher nominations, parent support service recommendation, or formative assessments. The purpose of tier two strategies is to increase overall interactions with the student in order to encourage positive social-behavioral responses to a given intervention. Students will learn how to monitor and manage their own behaviors in difficult situations. Sixty-seven percent of referred students are likely to benefit from specific tier two interventions (OSEP Technical Assistance Center on Positive Behavioral Interventions and Supports, 2020).

At the top of the SWPBIS hierarchy are tier three interventions which harness one to five percent of students that require more intensive, individualized attention. These students, presumably, have behavioral or academic issues that are greater than the classroom and should be handled on a multi-disciplinary level. A team of support staff, administrators, teachers, and behavioral specialists work together to provide their students with the appropriate supports to be successful within the classroom. A Functional Behavioral Assessment (FBA) is used to collect data on an individual student’s behaviors and allows for conversations on the best interventions to use on the individual student. The goal is to prevent unwanted behavior, ensure student safety, positively reinforce wanted behavior, and utilize wraparound supports to gage student success. Tier three systems are individualized for each student and their behavioral needs (OSEP

Technical Assistance Center on Positive Behavioral Interventions and Supports, 2020).

School-Wide Positive Behavioral Interventions and Support Systems Fidelity

Disparities in educational systems started with zero-tolerance policies that disproportionately disciplined Black students far greater than their white counterparts, causing an overall equity issue among school districts. School systems that adopted SWPBIS structures found a decreased rate of overall discipline issues when working under a high degree of implementation fidelity (Baule, 2020). One study consisted of 153 Ohio schools across areas (rural, suburban, and small town) and at all academic levels (alternative, elementary, middle, and high). During the 2015/2016 school year, this study was conducted to look at the fidelity level of Tier One SWPBIS structures of the 153 given schools (Amity, et al., 2019). The schools were selected based on their completion of the 2015/2016 Tiered Fidelity Inventory (TFI), the submission of their data using the PBISApps, a US Department of Education ran research unit securing federal and state funding to institutions utilizing PBIS services, structures, and interventions, (US Department of Education's Office of Special Education Programs, 2020), and if they had available data on the two dependent variables (the schools performance index score of 0-120 and the amount of out-of-school suspension (OSS) per 100 students in the 2015/2016 school year (Amity, et al., 2019).

The TFI indicates schools scoring below 70% to be of low fidelity and schools scoring about 70% to be of high fidelity. 77 of the Ohio schools in the sample scored below 70% where 76 school scored above 70%. Looking specifically at out-of-school suspension rates for the 2015/2016 school year, schools that scores below 70% on the TFI showed an average of 22.96 out-of-school suspensions per 100 students where schools that scored above 70% on the TFI

showed an average of 14.05 out-of-school suspensions per 100 students. This shows that schools who perform higher than 70% on the TFI (showing a high-fidelity rate) have significantly more positive student outcomes than those who perform less than 70% on the TFI (Amity, et al., 2019).

In addition to the TFI, the School-Wide Evaluation Tool (SET), and the Benchmark of Quality (BoQ) are self-reporting measuring tools that can be used by school communities to test the fidelity level of their SWPBIS implementation plans (Freeman, et al., 2019).

School-Wide Positive Behavioral Interventions and Support Systems Impact on Achievement and Attendance

Mallory et. al., (2018) made it apparent in their study that “students perform better academically and engage in fewer problem behaviors in school settings where there are clear expectations and where they feel connected and cared for.” The multi-tiered model of SWPBIS enhances a school’s ability to meet every student’s social-emotional well-being while creating a safe, predictable, and caring school environments for all students. The most vulnerable of students, those with emotional and behavioral disabilities and students from ethnically and racially diverse backgrounds, are the victims of the academic achievement gaps found in several schools across the nation. There is a critical link between a student’s overall well-being and their ability to achieve (Mallory, et al., 2018). “To address this gap, there has recently been a focus on personalizing the school environment and meeting the diverse social and emotional needs of all students by implementing policies, routines, and evidence-based instructional practices using a positive behavior supports framework” (Mallory, et al., 2018, p. 219).

The underlying assumption, as presented by Gage et al., (2015), is that SWPIS is designed to improve the overall amount of time a student is in the classroom, decreasing the overall out-of-school suspensions “... by improving social behavior, schools have more time and ability to deliver effective curriculum and instruction... for students exhibiting problem behaviors, reducing discipline problems should increase exposure to classroom instruction and, in turn, facilitate academic skill acquisition” (Gage, et al., 2015, p. 219). Truant students, those with “habitual, unexcused absences from school, exceeding the maximum set by state law” (Mallett, 2016, p. 338), are the most vulnerable for academic failure due to a multitude of environmental factors not controlled within the classroom.

“Academic factors include poor academic performance, grade retention, unidentified special education disabilities, lack of positive peer relations, mental health/ substance use problems, and school alienation” ... “Family factors include financial problems/ poverty, lack of transportation, homelessness, significant family convict, maltreatment, low or poor parental involvement, and parental attitudes concerning education” ...

“Neighborhood and community factors include violence in or near the home or school and cultural differences in attitudes towards schools” ... “School factors include a negative or unsafe school environment, bullying victimization, inappropriate academic placement, poor attendance policies, and harsh discipline policies that include suspensions and expulsions for truancy” (Mallett, 2016. p. 339).

All of these factors, and more, attribute to a student’s availability and willingness to attend school on a regular basis.

Chronically absent students have an increased rate of becoming a high school dropout. SWPBIS tier one structures are meant to combat poor attendance, class failure rates, and social

behaviors afflicted within the school building. There is a strong correlation between attendance and achievement. The goal of SWPBIS is to alter student behavior and has been found to “directly improve school attendance for students who have been habitually truant” (Mallett, 2016, p. 342). Kearney & Graczyk (2020), indicate school absenteeism as tardiness, missed classes, early departure, or a complete absence. The variables include “missing at least 25% of total school time for at least two weeks, experiencing severe difficulty attending classes for at least two weeks with significant interference in a child’s or family’s daily routine, and/or school absence for at least ten days of the school during any 15-week period while school is in session” (p. 317).

When implemented with fidelity, schools can bridge the gap between attendance and academic achievement using SWPBIS structures. Starting with the decrease in overall out-of-school suspensions in the Amity, et al., (2019) case study, many school systems have implemented additional supports to connect attendance rates to academic achievement within the SWPBIS structure. Freeman, et al., (2016), created a quasi-experimental study comparing fidelity implementation rates (70% on the BoQ and 80% on the SET) to school-level average daily attendance rates, the average academic performance levels in reading, language arts, and math, and office discipline referrals. Daily attendance was calculated by the total number of days in attendance for all students by the total number of school days. For schools that were implementing with fidelity, it was noted there was a significant positive correlation between SWPBIS and attendance rates and a decrease in overall out-of-school suspensions (Freeman, et. al., 2016).

Similar studies, as conducted by Freeman, et al., (2019), suggest schools that are implementing PBIS with high fidelity had fewer absences, unexcused tardies, office discipline

referrals, and suspensions. When looking at overall final-exam results in a college course, Kim, et al., (2019) suggests academic achievement increases with overall student attendance and participation. Although these students are adults and not children, the connection has been made between attendance, participation and academic achievement.

Summary

Student academic achievement cannot cohesively be correlated with SWPBIS structures and supports, but an increase in overall student attendance, a decrease in overall student office referrals, and a decrease in out-of-school suspensions can be reported with schools that show a high-fidelity rating. For SWPBIS to work collectively within a school building, various factors must collide. Teachers and students need “buy-in” in tiered SWPBIS to decrease overall student behavioral problems within the building. A team of educated and invested staff members must be involved at all tiered levels in order to help students receive the resources they need to be successful, Universal practices must be implemented to collect regular data on student behavioral outcomes.

Chapter III

Methods

The purpose of this study is to identify the effectiveness of virtual tier-1 SWPBIS on overall student attendance for the 2020/2021 school year compared to in-person tier-1 SWPBIS during the 2019/2020 school year.

Design

The research methodology used in this study was a quasi-experimental approached to determine the effectiveness of virtual tier-1 SWPBIS on overall student attendance. This study is utilizing data from the 2019/2020 academic school year with in-person tier-1 SWPBIS compared to data from the 2020/2021 virtual school year with virtual tier-1 SWPBIS in a pretest-posttest design – the participants being their own control without random assignment. Group one being current 7th grade students within the building. Group two being current 8th grade students within the building. Both groups utilized the same pretest-posttest structure to identify effectiveness of virtual tier-1 SWPBIS strategies on overall student attendance for the 2020/2021 school year.

Participants

Participants for this study include the entire continuous student body for the 2019/2020 school year (6th and 7th graders) into the 2020/2021 school year (7th and 8th graders). The population of the 7th grade student body is 310, ages range from 12 to 13 years old. There were 53% male students and 47% female students. The population of the 8th grade student body is 325, ages range from 12 to 14 years old. There are 56% male students and 44% female students.

The total study consisted of 634 total students: 317 white, 140 African American, 104 Hispanic, 51 biracial, 22 Asian, and one Pacific Islander. 226 students participate in the Free and Reduced Meals program (FARMS), 60 students have Individual Education Plans (IEPs) and are of special education status, 44 students have 504's, and 37 students are English Language Learners (ELLs). The sample group was selected based on the number of students who attended the particular middle school for the 7th and 8th grade academic years. Students who only attended one of the given years were omitted.

Instrument

The instruments used in this study were the attendance records for the 2019/2020 school year and the attendance records for the 2020/2021 school year. Instruments used also include the middle school "Student Contact Log" where all teachers monitored positive and negative student contact for all students in the 2020/2021 school year. This log helped monitor overall positive contact home for virtual tier-1 SWPBIS strategies.

Procedure

Once the participants were selected and the instruments solidified, the researcher started gathering attendance data from the previous school year. On March 19th, 2021, the researcher gathered attendance data thus far in the 2020/2021 school year. The data for both school years were then compared, looking at overall student attendance percentages for each participant. The data is broken down by specific demographics, such as race, FARMS, special education status, and 504 status. The overall attendance data is then compared to the number of student positives

(SWPBIS strategy) given during SY2021, as found in the student interaction log. A summary of the results will be shared in Chapter IV.

Analysis Plan

Changes in attendance were computed from SY2020 to SY2021 for students in 7th and 8th grades during SY2021 who were also enrolled during SY2020. Because the sample sizes were 310 for grade 7 and 324 for grade 8, minor differences in attendance could be statistically significant at $\alpha = .05$, applying the two-groups t-test, without being practically significant. Therefore, effect sizes were calculated for attendance comparisons (Cohen, 1992; Sawilowsky, 2009) to quantify the practical significance of the independent variables. The main metric was Cohen's effect size, which is independent of the sample size.

Chapter IV

Analysis of the Data

This quasi-experimental study examines the effectiveness of virtual tier-1 SWPBIS on overall student attendance compared to in-person tier-1 SWPBIS. For school year 2019/2020 (SY2020), in-person SWPBIS structures were used while virtual SWPBIS structures were used for school year 2020/2021 (SY2021). Table 1 shows the Mean Attendance Rates for SY2020 versus SY2021.

Table 1

Mean Attendance Rates for SY2020 vs SY2021

Compare	N	SY20	SY21	t-test	p-value	Effect Size
All students	634	96%	94%	4.94	.000	.24, small
Grade 7	310	97	96	2.10	.037	.14, very small
Grade8	324	96	94	4.98	.000	.34, small
Nonwhite	317	97	94	5.62	.000	.39, small
White	317	96	96	.73	.47	.05, very small
Female	287	97	96	3.11	.000	.22, small
Male	347	96	94	3.90	.000	.26, small
SpEd-No	574	97	95	3.90	.000	.20, small
SpEd-Yes	60	95	91	3.71	.001	.59, medium
FARMS-No	407	97	97	1.12	.260	.07, very small
FARMS-Yes	227	96	91	6.49	.000	.53, medium
ELL-No	596	96	95	3.75	.000	.18, very small
ELL-Yes	38	97	87	3.80	.001	.80, large
504-No	590	96	95	5.05	.000	.26, small
504-Yes	44	96	96	.34	.74	.06, very small

This table outlines the large sample size of 624 7th and 8th grade students who attended the same middle school for two continuous years. With large sample sizes, trivial mean differences may still reach statistical significance at $\alpha=.05$ (there is less than a 5% chance that the observed mean differences are due to random sampling fluctuations). Statistically significant tests the likelihood of occurrence in similar classrooms. Effect size quantifies the

practical significance of the differences in means (Cohen, 1992; Sawilowsky, 2009). See Table 2 for “Rules of Thumb” to interpret the effect size, or the amount of difference between groups. When looking at the “all students” row of data in Table A, the difference in means between SY2020 and SY2021 of two percentage points is statistically significant but is a small effect size. This tells us that the statistical significance is primarily due to the sample size of 624, rather than a robust treatment effect. All categories have a statistically significant drop in terms of attendances between SY2020 and SY2021 – there was an overall decline in attendance. The effect size, the relationship between two variables, is small or very small for the following rows: 7th grade, 8th grade, non-white, Female, Male, non-special ed., non-ELL, 504, and non-504. Effect size was medium for students who are a part of the special education program and FARMS students. Effect size for the ELL population was large with a significant drop in attendance between SY2020 and SY2021.

Table 2

Cohen (1988) and Sawilowsky (2009) “Rules of Thumb” for Effect Sizes

Effect Sizes	Rule of Thumb
.01-.19	Very Small
.20-.49	Small
.50-.79	Medium
.80-1.19	Large
1.20-1.99	Very Large
2.0 and above	Huge

Most of the differences in attendance between SY2020 and SY2021 were statistically significant at $\alpha=.05$. Only three of the statistically significant differences had effect sizes of at least medium. Generally, attendance declined from SY2020 to SY2021, by an average of two percentage points for all students, to four points for special education students (medium effect

size), five points for students eligible for FARMS (medium effect size), and 10 points for ELL students (large effect size).

Table 3 outlines the effect size for the difference in positive communications (tier-1 SWPBIS strategy implemented), for each given demographic. The difference in the mean number of positive communications were statistically significant ($\alpha=.05$) between grade, special education, FARMS, ELL, and 504. In addition, effect sizes were medium for grade, special ed, and 504, indicating practical significance for those independent variables (IVs), as well as statistical significance.

Table 3

Test of Differences in Mean Positive Communications (virtual tier-1 PBIS strategy) by Independent Variables

Compare	N	Mean	SD	t-test	p-value	Effect Size
Grade 7	310	3.54	1.75	7.51	.000	.59, medium
Grade 8	324	4.69	2.13			
Nonwhite	317	4.08	2.01	.60	.55	.05, very small
White	317	4.18	2.06			
Female	287	4.05	2.14	.84	.40	.07, very small
Male	347	4.19	1.94			
No SpEd	574	4.27	2.02	6.45	.000	.75, medium
Yes SpEd	60	2.78	1.66			
No FARMS	407	4.30	2.11	3.01	.003	.24, small
Yes FARMS	227	3.81	1.87			
No ELL	596	4.17	2.04	2.64	.012	.38, small
Yes ELL	38	3.39	1.75			
No 504	590	4.05	2.03	4.25	.000	.57, medium
Yes 504	44	5.20	1.72			

For the continuous variable the number of positive communications, the change in attendance between SY2020 and SY2021 improved, although still mostly in the negative range, as seen in Table 4.

Table 4*Attendance Rates by Number of Positive Communications by Grade*

7th grade
Summary Statistics: Mean
By categories of: Positive Communications

<i>Positive Communications</i>	<i>SY2020 Attendance</i>	<i>SY 2021 Attendance</i>	<i>Rate of Change</i>
0	96.0	96.6	0.6
1	94.8	96.4	1.6
2	95.8	93.0	-2.9
3	97.1	95.7	-1.4
4	96.8	96	-0.8
5	97.4	98.3	0.9
6	96.9	94.9	-2.8
7	95.6	97.2	1.7
8	96.9	98.2	1.3
9	97.7	99.0	1.3
10	98.3	100.0	1.7
<i>Total</i>	96.5	95.5	-1.0

8th grade
Summary Statistics: Mean
By categories of: Positive events

<i>Positive Communications</i>	<i>SY2020 Attendance</i>	<i>SY 2021 Attendance</i>	<i>Rate of Change</i>
1	95.3	85.6	-9.7
2	95.7	91.7	-4.1
3	96.8	92.7	-4.2
4	95.5	93.6	-1.8
5	97.1	95.5	-1.7
6	95.8	95.1	-0.7
7	96.6	96.7	0.1
8	97.1	95.6	-1.5
9	97.4	96.2	-1.2
10	94.6	93.6	-1.1
11	96.2	97.6	1.4
12	98.6	98.2	-0.3
13	98.6	100.0	1.4
<i>Total</i>	96.2	94.1	-2.3

Table 5 connects positive communications to attendance with an average of 4.69 positive comments with a range from one to thirteen. Students with above average number of positive comments had a 1.06 percentage drop in attendance from SY2020 to SY2021, as compared with

a drop of 3.41 points for students with below average number of positive comments. The difference in the mean drop in attendance was statistically significant at the $\alpha=.05$ level, and the effect size was small.

Table 5

T-test for Mean Attendance Change from SY2020 to SY2021 by Below/Above Average Positive Communications

Positives	N	Mean attend change	Std Dev	t-test	p-value	Effect Size	Category
< mean	401	-3.41	9.18	-2.62	.009	.29	Small
> mean	233	-1.06	6.76				

The p-value, in Table 3, is the chance of obtaining a mean difference at least as large as the observed difference. If $p\text{-value} < .05$, we can reject the null hypothesis because there is less than a 5% chance of the observed difference occurring under the null. If $p\text{-value} > .05$, we usually do not reject the null, because the chance for the observed difference is too great to risk a false positive.

For example, with special education students, there is less than a 5% chance of a $4.27 - 2.78 = 1.49$ difference in mean positive communication under the null. Therefore, we reject the null. In addition, the effect size is medium, indicating a practical significance for the effect of special education status on the number of positive communications. Special education pupils have fewer positive communications, on average, than non-special education pupils. On the other hand, FARMS pupils' number of positive communications are significantly lower than non-FARMS students, but FARMS status has a small effect on positive communications.

Figures 1 and Figure 2 indicate the mean change in attendance broken down by grade and given demographic information. These are visual representations of the information presented in Tables 1, 3, and 4.

Figure 1

SY2020 to SY2021 Mean Attendance Change for 7th Graders Broken Down by Presented Demographic Information

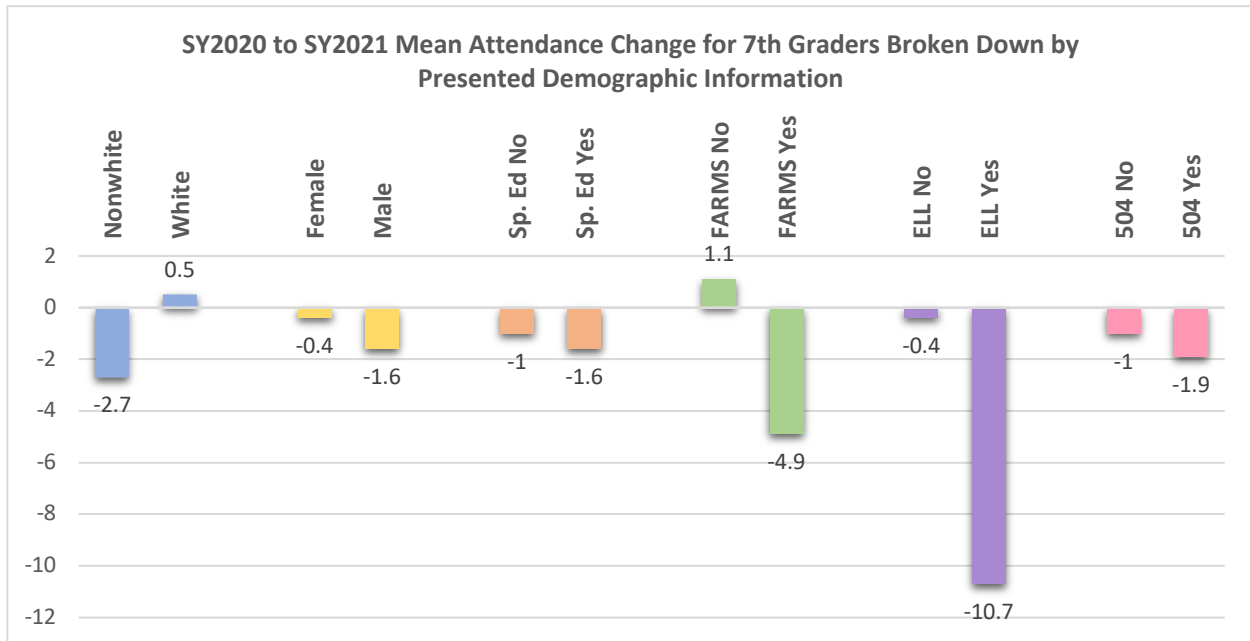


Figure 2

SY2020 to SY2021 Mean Attendance Change for 8th Graders Broken Down by Presented Demographic Information

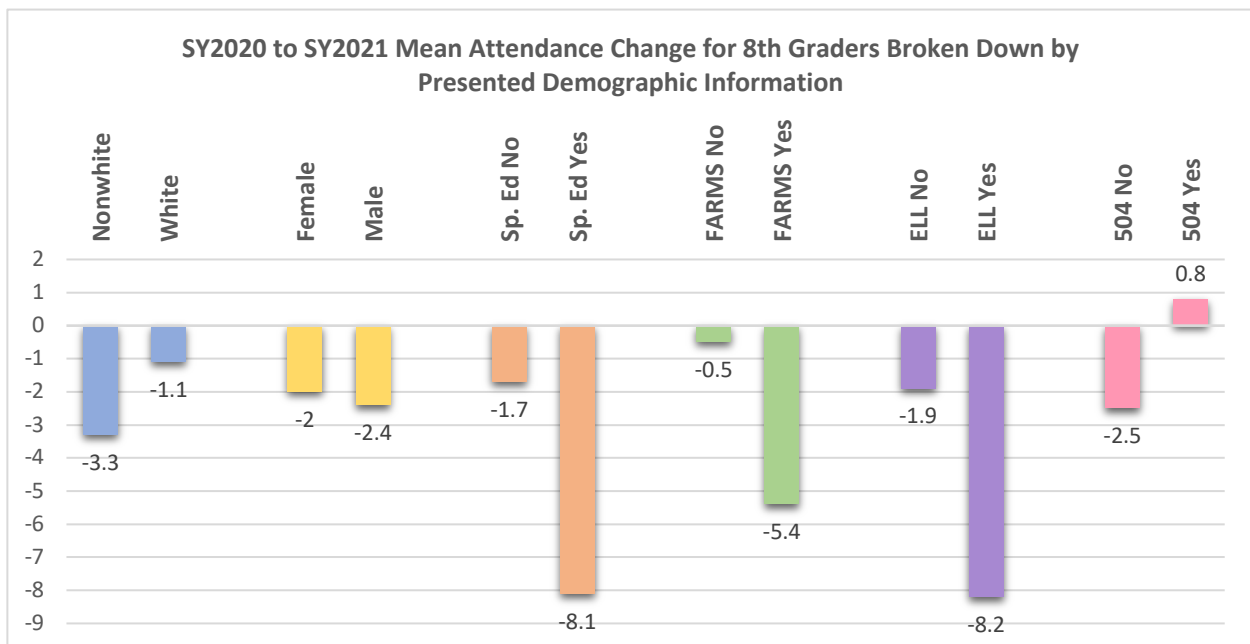
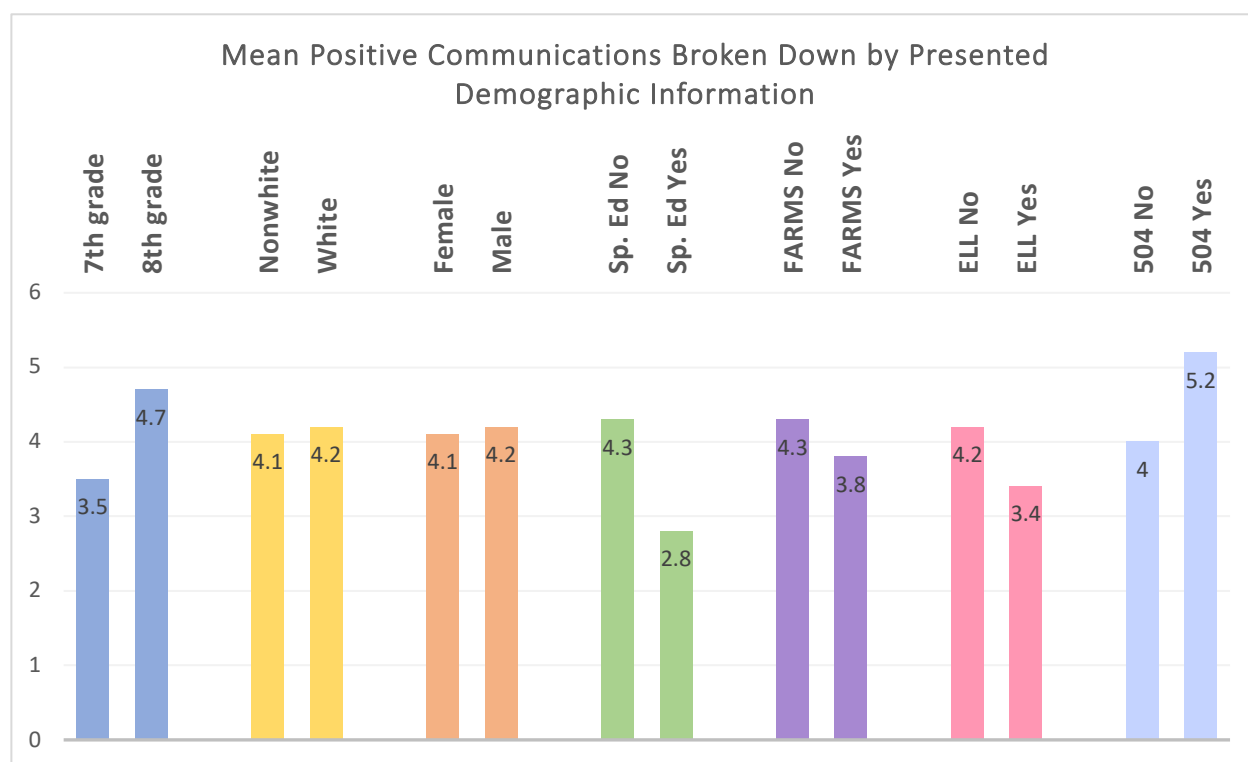


Figure 3 indicates the mean positive communications broken down by presented demographic information. On average, special education, FARMS, and ELL students are receiving fewer positive communications compared to their peers.

Figure 3

Mean Positive Communications Broken Down by Presented Demographic Information

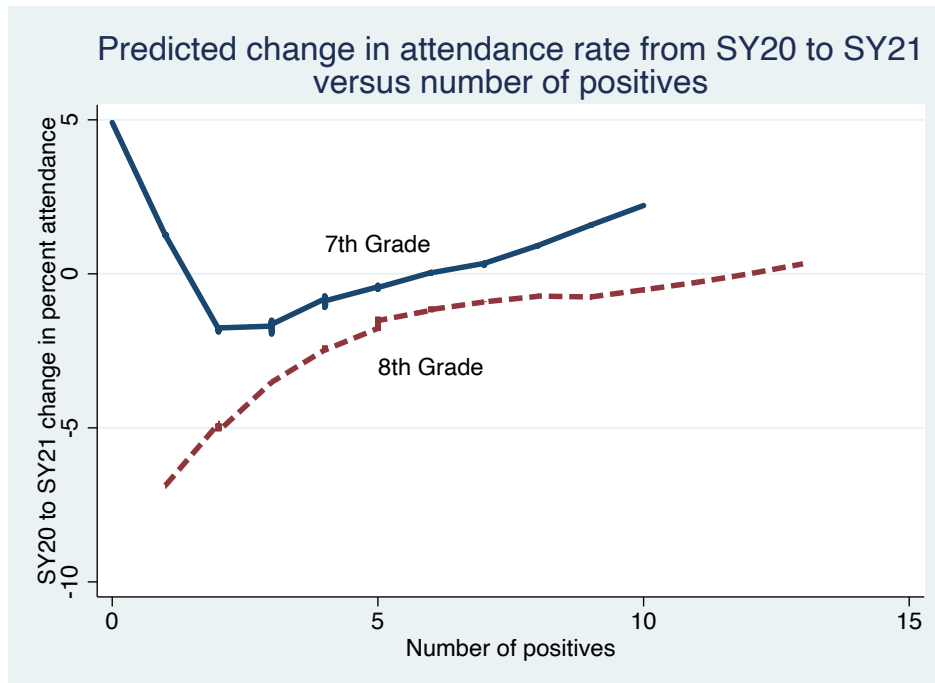


Results

Figure 4 shows the predicted change in attendance versus the number of positive communications for SY2020 to SY2021. This graph shows an overall steady rate of change between the two variables.

Figure 4

Predicted Change in Attendance Rate for SY20 to SY21 versus Number of Positives



There is a statistically significant decline ($\alpha = .05$) in overall student attendance between SY2020 and SY2021, indicating that attendance was better for in-person learning than it was for virtual learning for the entire sample and most subgroups. However, the amount of decline was generally of little practical importance. This study has statistical significance but with low effect sizes. Overall, attendance was better during the in-person 2020 school year than during the virtual 2021 school year.

Chapter V

Discussion

This study attempted to determine an overall impact of virtual SWPBIS strategies on overall student attendance for SY2021. Analysis of the data suggests the researcher reject the null hypothesis due to statistically significant data having a p-value lower than the given alpha of five percent. As positive communications increased, so did student attendance between SY2020 and SY2021, however, overall student attendance between the two years decreased. This study was conducted during the COVID-19 global pandemic which should be taken into consideration while reading the results. SWPBIS was in-school during SY2020 and virtual during SY2021. The same sample of students participated as 6th and 7th graders in SY2020 and as 7th and 8th graders, respectively, in SY2021.

Implication of Results

The implications of this study showed the results were statistically significant enough for the researcher to reject the null hypothesis that attendance would not change between SY2020 and SY2021. Even though the data show a decline in overall attendance between SY2020 and SY2021, the independent variable of positive communications did have an overall impact on student attendance for SY2021, as shown in Table 4. As the number of positive communications increased, the rate of change between attendance in SY2020 and SY2021 also increased. Students with more positive communications tended to have smaller declines in attendance on average. The results of this study should be shared with school buildings interested in initiating virtual SWPBIS strategies with their virtual student population.

Theoretical Consequences

School Wide Positive Behavior Intervention and Support Systems were created to bridge the gap between attendance and academic achievement during in-person learning with many studies (Freeman, et al., 2019; Amity, et al., 2019; and Kim, et al., 2019) suggesting an increase in overall student attendance and achievement with high implementation fidelity. Due to the COVID-19 global pandemic, this particular study implemented virtual SWPBIS strategies showing an overall decrease in student attendance between SY2020 and SY2021. On the other hand, increased numbers of positive communications were correlated with less attendance decline. This study is the first of its kind and will need additional research findings to support the impact of virtual SWPBIS on overall student attendance.

Threats to Validity

There are two types of validity, internal and external. The main threats to internal validity are history and instrumentation. The COVID-19 global pandemic struck the United States in March 2020 leaving millions of school age children and their teachers to learn virtually for the first time in history. Schools across the nation were forced to alter their learning environments and redevelop strategies to encourage students to participate online. Many students, especially the ELL, Special Education, and FARMS populations within this study, were difficult to “reach” over the past twelve months. Language barriers, lack of technology access, reduced meal programs, family circumstances, job loss, medical emergencies, mental health, and even death are just a few of the reason’s students are not attending virtual classes. Virtual SWPBIS strategies were created to help increase overall student attendance. Positive communications home was utilized to encourage active participation and attendance. However,

regardless of the number of positive communications sent home, there was little accountability found within the virtual learning environment, although the attendance declines were smaller. Overall attendance might have decreased between SY2020 and SY2021 because of COVID-19 and the overall historical threat to validity.

Instrumentation was also a threat to internal validity during this study. For SY2020 the school system utilized SMS, a system used to record attendance. For SY2021, the system changed to PowerSchool. With this change, attendance data for SY2020 could not be adjusted to stop in March 2020 (the start of virtual learning). SY2020 data is the entire 175-day school year. Some data will be altered because of COVID-19 and its impact on learning. For SY2021, PowerSchool did allow alterations and a stop to data gathering based on a specific date. SY2021 data was stopped in March 2021 with 119 school days right before the start of hybrid learning, teaching in-person and virtual concurrently. No threats to external validity were found within this study.

Connections to Existing Literature

This study focuses on comparing in-person SWPBIS strategies to virtual SWPBIS strategies and their overall impact on student attendance. In regard to previous studies, the researcher noted connections between SWPBIS strategies being implemented and an impact on student attendance, positive and negative. This study is the first of its kind with very little to no existing literature on virtual SWPBIS.

Implications for Future Research

Due to the COVID-19 global pandemic and the ever-changing in-person and virtual learning circumstances, there is very little to no research on virtual SWPBIS strategies and its effectiveness on student attendance. With increased implementation fidelity and a stronger definition of virtual SWPBIS, this study could be reimplemented in similar schools and classrooms. As the COVID-19 global pandemic ensued across the United States, many schools initiated flexible attendance options that does not meet regulatory in-person attendance guidelines. It is also recommended to have stronger attendance guidelines for virtual learning.

Conclusion

Overall, this study shows a statistically significant drop in attendance for SY2021 (online-learning with virtual SWPBIS strategies) as compared to the same students during SY2020 who were exposed to in-person SWPBIS strategies. Because of COVID-19 the implications and threats to validity to this study had minor impacts on student attendance. The research rejects the null hypothesis because the data is statistically significant at the $\alpha = .05$ level. Even though attendance did not increase during SY2021, the independent variable of positive communications did have a positive impact on student attendance for SY2021.

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