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FEASIBILITY STUDY OF A VIRTUAL PILOT PROGRAM TO ADDRESS THE SOCIO-EMOTIONAL LEARNING NEEDS OF RURAL YOUTH DURING THE COVID-19 PANDEMIC.

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ABSTRACT

A substance prevention curriculum was piloted virtually with 766 middle and high school students in Western Maryland during the COVID-19 pandemic. We assessed the program's results using self-reported questionnaires (n= 181 students) and implementation outcomes with instructors (n= 14). Middle school students' knowledge and drug refusal skills increased significantly from pre- to post-test. Knowledge increased significantly for high school students. Overall fidelity, acceptability, appropriateness, and feasibility were rated high. Feasibility, acceptability, and appropriateness themes were identified. The study results suggest essential considerations for practitioners who consider virtual delivery of similar programs in the future.

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Studies have found that adolescents living in rural areas might be at greater risk for poor mental health outcomes in comparison to urban youth (Curtis, Waters & Brindis, 2011). During the pandemic, and specifically during lockdown, youth ages 11-17 were more likely to show moderate to severe anxiety and depression symptoms in comparison to other age groups (Mental Health America, 2021). Exposure to different stressors, such as isolation, restricted social networks, and limited community resources and healthcare services, can contribute to poor mental health outcomes (Loades et al., 2020; Mack, Jones & Ballesteros, 2017).

Socio-emotional learning (SEL) interventions have been found to be successful in promoting mental wellbeing and preventing substance use disorders among adolescents (Durlak et al., 2011). SEL strengthens self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011). These SEL interventions can help prevent or reduce problem behaviors such as school disengagement, substance use, risky sexual behavior, violence, depression, and attempted suicide (Zins & Elias, 2007), regardless of race, SES, or residency (Taylor, Oberle, Durlak & Weissberg, 2017). Despite the multiple studies on in-person SEL interventions that have shown positive results on mental health (O'Conner, De Feyter, Carr, Luo & Romm, 2017; Haggerty, Elgin & Woolley, 2011), there is limited research regarding virtual prevention programming.

The Maryland Rural Opioid Technical Assistance (ROTA) team implemented an adapted online version of the Botvin LifeSkills (BLS) program (Botvin Lifeskills Training, 2021a) with 536 middle school and 230 high school students in Western Maryland. Western Maryland is a rural area consisting of Washington, Allegany, and Garrett counties. Allegany county was specifically selected for program delivery due to accessibility and sociodemographic factors. Allegany county has received one of the poorest health rankings in Maryland, with low educational attainment and high rates of substance misuse (County Health Rankings & Roadmaps, 2022). In 2020, Allegany County showed the largest percent increase in opioid-related deaths within Maryland (Maryland Opioid Operational Command Center, 2021).

The middle school BLS curriculum included 14 one-hour lessons and the high school BLS curriculum included 10 one-hour lessons that were delivered twice a week. The sessions explored topics such as self-image, decision making, coping with anxiety, communication skills, social skills, resolving conflicts, managing stress, positive and negative coping mechanisms, the impact of the media, and expressing emotions. The original curriculum was created to be taught in-person, but due to COVID-19 restrictions, the program was adapted to be taught online upon receiving permission from the developers (National Health Promotion Associates Inc.) of the BLS curriculums. The BLS materials were adapted for virtual delivery, including the development of PowerPoint presentations and handouts.

Trained program staff and college student volunteers delivered the curriculum. School physical education or related (PE) teachers served as both Board of Education representatives responsible for all activities occurring within their assigned classrooms and class moderators, shadowing our work to deliver the curriculum on their own in the future.

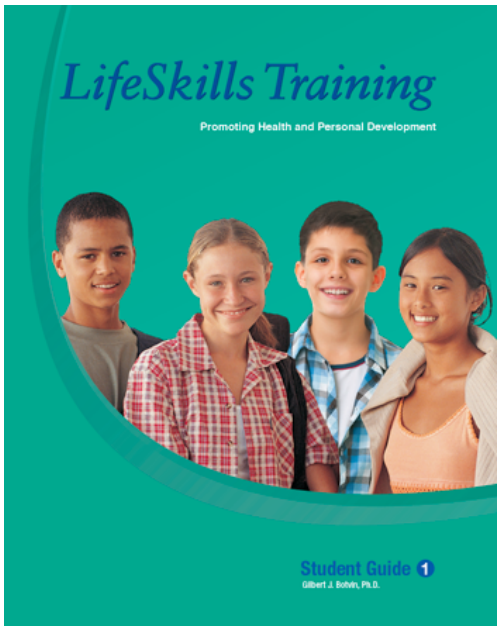
OBJECTIVE

The primary aim was to assess student's change in knowledge and skills after participating in the online version of the BLS. The secondary aim was to assess implementation measures (fidelity, appropriateness, acceptability, feasibility) of the virtual delivery of the BLS program as reported by BLS instructors and PE teachers.

METHODS

SETTING AND SAMPLE

We recruited students from one middle school and one high school to implement the BLS program as a replacement for the physical education classes during the COVID-19 pandemic (February to April 2021). Recruitment was conducted through an ongoing partnership between a lead local Extension educator and high school health education faculty.



Botvin Lifeskills Training Student Guide

DATA COLLECTION

An online questionnaire was administered to students at baseline and at the end of the six-week course (post-test) for our first aim. We used the BLS student survey (Botvin Lifeskills Training, 2021b) for middle school and high schools. For our second aim, we asked the instructors to complete Botvin's fidelity checklists and open-ended questions concerning weaknesses and strengths when delivering the program. PE teachers reported acceptability, appropriateness, and feasibility data via a Qualtrics survey. The University of Maryland human subjects' protection committee (institutional review board) reviewed and approved all research procedures.

ANALYTIC STRATEGY

We ran descriptive statistics to assess the demographic characteristics of the group. We conducted paired t-tests to assess differences in means from baseline to post-test for aim one variables. For fidelity, a summative score was created for each lesson and then converted into a percentage. For lectures where educators marked all the activities as complete, the fidelity percentage was 100.

ANALYTIC STRATEGY (CONTINUED)

For additional implementation constructs of acceptability, appropriateness, feasibility, and inner and outer setting (Weiner et al., 2017), average scores per teacher were added and then divided by the number of teachers to get a total average score for each construct. For the qualitative responses, first and second author conducted a template analysis to identify themes, which were later reviewed and confirmed by the entire research team. Additional information was added based on experiences shared by the teachers and instructors during the weekly and monthly check-ups.

RESULTS

Study results are organized by student outcomes (aim 1) and instructors' implementation perceptions and outcomes (aim 2). Students' demographic information can be found in Table 1. Results report the Student's t-test (*t*), degrees of freedom (*df*), mean (*m*), probability value (*p*) and standard deviation (*sd*).

Table 1

Participant characteristics of middle and high school students

	Middle School (n=416)	High School (n=117)
Age Range (Mean)	11-15 (12.6)	14-18 (15.8)
Female n (%)	216 (52%)	57 (49%)
Race/Ethnicity n (%)		
Black or African American	22 (5%)	3 (3%)
White	317 (76%)	105 (91%)
More than one race	51 (13%)	5 (4%)
Family Structure n (%)		
Two parents in household	257 (61%)	80 (69%)
Single Parent	121 (29%)	29 (24%)
Other family type, no parent reported	39 (10%)	6 (5%)

INITIAL KNOWLEDGE, ATTITUDES, AND SKILLS OUTCOMES

Pre- to post-test scores for anti-drugs attitude, anti-drinking attitude, relaxation skills, assertiveness skills, self-control skills, and subjective well-being did not show statistically significant changes in either group. Among middle school students, scores for anti-smoking attitudes decreased significantly (t -1.91, df 154, p = .029). Drug refusal skills (t 3.38, df 151, p < .001), anti-drug attitude (t 4.71, df 155, p < .001), and life skills knowledge (t 6.23, df 155, p < .001) increased significantly from pre- to post-test. Overall knowledge skills for both middle school students (t 6.61, df 155, p < .001) and high school students (t 2.57, df 26, p=.008) increased significantly. Results are found in Table 2.

Table 2

Socio-emotional learning outcomes by middle and high schoolers

	Middle School (n=155)					High School (n=26)				
	Pre		Post			Pre		Post		
	M	SD	M	SD	t	M	SD	M	SD	t
Overall Knowledge	0.72	0.12	0.78	0.13	6.61**	0.87	0.1	0.91	0.12	2.57*
Life Skills Knowledge	0.78	0.16	0.83	0.15	6.23**					
Anti-drugs Knowledge	0.63	0.13	0.7	0.15	4.71**					
Anti-drugs Attitude	4.58	0.53	4.49	0.82	-1.37	4.36	0.58	4.4	0.5	0.62
Anti-smoking Attitude	4.64	0.48	4.52	0.83	-1.91*	4.4	0.61	4.47	0.48	0.77
Anti-drinking Attitude	4.52	0.61	4.47	0.84	-0.81	4.19	0.77	4.25	0.65	0.53
Drug Refusal Skills	3.74	1.73	4.21	1.34	3.38**	4.24	1.29	4.16	1.28	-0.67
Assertiveness Skills	3.28	0.8	3.33	0.86	0.65	3.08	0.86	3.24	0.81	1.2
Relaxation Skills	3.94	9.95	4.03	1.02	1.01	3.83	0.98	3.96	1.01	1.07
Self-Control Skills	3.33	0.92	3.44	0.88	1.37	3.81	0.69	3.87	0.77	0.44
Subjective well-being	5.24	1.44	5.42	1.3	1.42					
Perceived Stress	2.67	0.83	2.61	0.77	1.09					

**p<.05 **p<.001*

FIDELITY

At the end of each class, all instructors were asked to complete the fidelity checklist using an online survey. For high school cohorts, one instructor completed the fidelity checklists, with all lessons having a 100 percent fidelity rate. For middle school cohorts, six middle school instructors completed between 6 to 19 fidelity checklists, with an average of 11 fidelity checklists per lesson. The average fidelity completion rate for middle school was 95 percent. The lessons focusing on developing skills, such as communication skills (86%) and making decisions (88%) had the lowest fidelity completion.

ACCEPTABILITY, APPROPRIATENESS, FEASIBILITY, AND INNER AND OUTER SETTING

Seven PE teachers partnered with the instructors to deliver the lessons between middle and high school. All teachers who completed the questionnaire (n=6) had been teaching for more than five years. Three teachers were already familiar with similar curricula, and three had never received training for similar programs. Both curricula rated high in acceptability, appropriateness, and feasibility (m =4.5 sd =.54), and inner and outer setting rated lower (m =3.83 sd =.40). Implementation scores are presented in Table 3.

Table 3

Teacher and school staff implementation questionnaire (n=6)

	Mean ± SD	Range
Acceptability	**4.5 (.54)**	**(4-5)**
The LifeSkills program meets my approval		
The LifeSkills program is appealing to me		
I like the LifeSkills program.		
I welcome the LifeSkills program.		
Appropriateness	**4.5 (.54)**	**(4-5)**
The LifeSkills program seems fitting		
The LifeSkills program seems suitable		
The LifeSkills program seems applicable.		
The LifeSkills program seems like a good match		
Feasibility	**4.5 (.54)**	**(4-5)**
The LifeSkills program seems implementable		
The LifeSkills program seems possible		
The LifeSkills program seems doable.		
The LifeSkills program seems easy to use.		
Inner and Outer Setting	**3.83 (.40)**	**(3-4)**
What is the general level of receptivity in your organization to implementing the intervention?		
How does the program relate to the school's mission and vision?		
How essential is this program to meet the needs of the youth served by your school?		

FEASIBILITY THEMES

Instructors and the PE teachers reported three main themes concerning the feasibility of the program: technology use and access, class engagement, and partnership formation. One of the main weaknesses the project encountered for online delivery was poor internet connection. Due to unreliable internet connection, some students could not participate synchronously in the classes and instead watched the recording of the lectures. Technical difficulties reduced the allotted time for some lectures. However, specific online tools made lessons more engaging. Our shift from Zoom to Schoology, the education platform provided by the schools, increased attendance and student engagement, providing a safer online delivery channel. Instructors used NearPod to play games with students, set quizzes, create activities, and interact through writing boards where students could share their thoughts.

FEASIBILITY THEMES (CONTINUED)

The class engagement was challenging in an online setting. Some of the more complex topics, such as anxiety, were hard for students to share aloud, but they used the chatbox to share their feelings and emotions. In addition, most of the students kept their cameras off, which made it difficult for the instructor to gauge the students' engagement level. During debriefing meetings, instructors highlighted online tools such as the chatbox and the class management system, as well as the use of videos and interactive activities, as essential tools to facilitate student engagement. Instructors also mentioned the vital role of teachers who were already familiar with the students to help with class discussions (e.g., encourage participation from all students) and increase the completion rates of the baseline and post-class questionnaires.

Partnership formation was crucial for the feasibility of the program both in terms of recruitment and its delivery. By incorporating the curriculum as part of the student's PE lessons, we increased students' attendance. Teachers' support was crucial for a successful delivery. The pre-existing relationship between the university's instructors and the schools allowed our team to overcome outreach barriers and provided additional networking opportunities for targeting middle and high school students.

APPROPRIATENESS AND ACCEPTABILITY THEMES

Teachers found the topics appealing, appropriate and acceptable for the students. Teachers reported that some of the worksheets were not very appealing to the students, as some of the suggested activities required in-person interactions. Although all adaptations were completed as a team effort to provide consistency across classes, instructors still found it difficult to adapt certain in-person activities to the online format. The online format did not allow the instructors to carry out all of these activities in the originally intended (i.e., in-person interaction) way. Instructors (n=2) mentioned that some of the lectures were too basic for middle and high school students and that the content could be reviewed to make it more relevant to their own lived experiences.

DISCUSSION

Middle school students who participated in the online BLS program reported increases in knowledge outcomes and drug refusal skills. However, results did not show significant increases in students' self-reported skills related to substance abuse prevention and subjective well-being. Fidelity, feasibility, acceptability, and appropriateness measures had positive outcomes as reported by instructors and PE teachers. Nevertheless, qualitative data suggest considerations to increase the fidelity, feasibility, acceptability, and appropriateness of the program for our focus population. The results suggest important considerations and implications for practitioners who consider virtual delivery of similar programs in the future.

One of the implementation weaknesses reported by instructors was how certain activities, particularly ones involving a great deal of student-to-student interaction, were not amenable to online delivery on the platforms used. Experiential Learning Theory (Kolb, 2014) suggests that learning is likely to remain in the abstract if done without experiential components, such as live skills practice. This may explain why there were increases in self-reported general anti-drugs and life skills knowledge (abstract), but not self-reported skills (concrete). It is also important to note that anti-drinking and anti-drug attitudes were already high at the baseline assessment in both middle and high school students. The same could be noted about drug-refusal, relaxation, assertiveness, and self-control skills in middle school students, which could explain why no significant changes were found. Low literacy levels, demonstrated by participating schools' average reading proficiency scores and teachers' accounts, could have led to a lack of understanding of the questions to grasp what was being asked.

Technology access presented both an opportunity and a barrier in terms of reaching rural adolescents. It was an opportunity in that the reach of programming was amplified beyond the physical location of program staff. However, rural internet access is still lagging well behind that of suburban and urban areas (Perrin, 2019). Even for rural locations with broadband access, the connection speed varies greatly (Lai & Widmar, 2021). This presents a challenge to the implementation of virtual prevention programs. During our program implementation, we experienced technical challenges due to inconsistent internet access and the unfamiliarity of school staff with distance education software.

IMPLICATIONS FOR PRACTICE

PROGRAMMING CONSIDERATIONS FOR YOUTH

Recent reviews have shown that the effectiveness of traditional, knowledge- and skills-based interventions tends to decline as adolescence progresses (Yeager, Dahl & Dweck, 2018), hence the program might be better suited for middle school students than high school students. For middle- and later-adolescent audiences, an intervention more focused on changing norms rather than providing knowledge may be more effective (Miller & Prentice, 2016).

To increase fidelity for the in-person activities, researchers should consider utilizing a platform that allows for small-group interaction via breakout rooms when delivering programs virtually. However, this may also present a supervision challenge for the program staff. Therefore, online delivery of experiential programming may also require the presence of enough trained staff to supervise participation in each of these small-group interactions. Larger group interactions may be facilitated by using educational software that allows for competitive pop quizzes (e.g., NearPod), "writing" on virtual whiteboards, and matching exercises. Programs such as NearPod have a wider array of interactive tools to keep students engaged. To increase students' participation, it is helpful if the class is offered within the standard curriculum of health instruction, including graded assignments.

SCHOOL PARTNERSHIPS DURING ONLINE DELIVERY

A best practice for youth development programs is to partner with schools for program delivery (Anderson-Butcher, Paluta, Sterling & Anderson, 2018). Community-based program staff should leverage their relationships with school faculty to reach new program participants and facilitate their participation when the format is online. Our implementation data showed that the instructors appreciated it when teachers could serve as active participants in the program delivery. In addition, program staff should orient teachers to the online delivery methods, and specifically make the request that teachers take an active role in classroom management. The less time program staff spend on classroom management, the more time they can spend facilitating each lesson's activities.

Although this study has considerable strengths, such as data triangulation, some limitations need to be addressed. One of the main challenges of the study was the quick curriculum adaptation to a virtual environment due to the changing circumstances and pressing needs created by the pandemic. In ideal circumstances, the online program would have been adapted with the developers' help and piloted with a small group of the focus population. Attendance was also hard to capture due to having the asynchronous option of the program, which was a necessity for children with low bandwidth. Low response rates in High School students at post-test could have also contributed to skewed results.

The context of COVID-19 allowed us to expand to deliver programs online. In addition, the rapid program adaptation, implementation, and evaluation provided us with lessons, and additional tools to bridge research and practice in a timely manner.

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REFERENCES

Anderson-Butcher, D., Paluta, L., Sterling, K., & Anderson, C. (2018). Ensuring healthy youth development through community schools: A case study. Children & Schools, 40, 7-16. doi: https://doi.org/10.1093/cs/cdx032

Botvin Lifeskills Training. (2021a). LST Overview.

Botvin Lifeskills Training. (2021b). LST Evaluation Tools.

County Health Rankings & Roadmaps. (2022). 2022 Maryland State Report. Retrieved from: https://www.countyhealthrankings.org/reports/state-reports/2022-maryland-state-report

Curtis, A. C., Waters, C. M., & Brindis, C. (2011). Rural adolescent health: The importance of prevention services in the rural community. The Journal of Rural Health, 27, 60–71. doi: https://doi.org/10.1111/j.1748-0361.2010.00319.x

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: a meta-analysis of school-based universal interventions. Child Development, 82, 405–432. doi: https://doi.org/10.1111/j.1467-8624.2010.01564.x

Haggerty, K., Elgin, J., & Woolley, A. (2011). Social-emotional learning assessment measures for middle school youth. Social Development Research Group. University of Washington: Raikes Foundation.

Kolb, D. A. (2014). Experiential learning: Experience as the source of learning and development (2nd ed.). Pearson Education, Inc.

Lai, J., & Widmar, N. O. (2021). Revisiting the digital divide in the COVID-19 era. Applied Economic Perspectives and Policy, 43, 458–464. doi: https://doi.org/10.1002/aepp.13104

Loades, M. E., Chatburn, E., Higson-Sweeney, N., Reynolds, S., Shafran, R., Brigden, A., Linney, C., McManus, M. N., Borwick, C., & Crawley, E. (2020). Rapid systematic review: The impact of social isolation and loneliness on the mental health of children and adolescents in the context of COVID-19. Journal of the American Academy of Child & Adolescent Psychiatry, 59(11), 1218-1239. https://doi.org/10.1016/j.jaac.2020.05.009

Mack, K., Jones, C., & Ballesteros, M. (2017). Illicit drug use, illicit drug use disorders, and drug overdose deaths in metropolitan and nonmetropolitan areas — United States. MMWR. Surveillance Summaries, 66, 1–12. https://doi.org/10.15585/mmwr.ss6619a1

Maryland Opioid Operational Command Center. (2021). 2020 Annual Report. Retrieved from: https://beforeitstoolate.maryland.gov/wp-content/uploads/sites/34/2021/04/2020-Annual-Report-Final.pdf

Mental Health America. (2021). 2021 The State Of Mental Health In America. Alexandria, VA. Retrieved from https://mhanational.org/issues/state-mental-health-america

Miller, D. T., & Prentice, D. A. (2016). Changing norms to change behavior. Annual Review of Psychology, 67, 339–361. https://doi.org/10.1146/annurev-psych-010814-015013

O'Conner, R., De Feyter, J., Carr, A., Luo, J. L., & Romm, H. (2017). A review of the literature on social and emotional learning for students ages 3–8: Teacher and classroom strategies that contribute to social and emotional learning (part 3 of 4). Regional Educational Laboratory Mid-Atlantic. Retrieved from: https://ies.ed.gov/ncee/rel/Products/Publication/3822

Perrin, A. (2019). Digital Gap between Rural and Nonrural America Persists. Retrieved June 10, 2021, from: https://www.benton.org/headlines/digital-gap-between-rural-and-nonrural-america-persists-0

Taylor, R. D., Oberle, E., Durlak, J. A., & Weissberg, R. P. (2017). Promoting positive youth development through school-based social and emotional learning interventions: A meta-analysis of follow-up effects. Child Development, 88, 1156–1171. doi: https://doi.org/10.1111/cdev.12864

Weiner, B. J., Lewis, C. C., Stanick, C., Powell, B. J., Dorsey, C. N., Clary, A. S., Boynton, M. H., & Halko, H. (2017). Psychometric assessment of three newly developed implementation outcome measures. Implementation Science, 12, 108. doi: https://doi.org/10.1186/s13012-017-0635-3

Yeager, D. S., Dahl, R. E., & Dweck, C. S. (2018). Why interventions to influence adolescent behavior often fail but could succeed. Perspectives on Psychological Science, 13, 101–122. doi: https://doi.org/10.1177/1745691617722620

Zins, J., & Elias, M. (2007). Social and emotional learning: Promoting the development of all students. Journal of Educational and Psychological Consultation, 17, 233–255. doi: https://doi.org/10.1080/10474410701413152