

Tobacco Prevention Using Social Skills Education and Puppet Scripts in an After-School Program

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Abstract

The purpose of this study was to explore the feasibility of implementing a tobacco use prevention intervention using social skills education and puppet scripts in an afterschool program. A total of 75 K-2 students attending an afterschool program in a rural Midwest area participated in a 4-lesson youth development tobacco prevention curriculum and completed a pre-post tobacco knowledge quiz. Additionally, 10 program mentors completed a pre-post program strengths and difficulties (SDQ) questionnaire on their assigned students. A series of t-tests were computed to examine differences in the pre and post scores of participants on the SDQ subscales, and total scales and descriptive statistics were computed on the tobacco knowledge quiz. Statistically significant differences were noted on 4 pre-post subscales scores of the SDQ and the total SDQ. Use of youth development curriculum using interactive puppet-based strategies implemented in afterschool settings may be a feasible health education strategy.

Key words: youth development, social skills, social competence, tobacco prevention

Introduction

Tobacco product use (e.g., cigarettes, hookahs, smokeless tobacco, e-cigarettes) usually starts in youth, and earlier onset of the behavior is related to greater health risk (Centers for Disease Control and Prevention [CDC], 2020). Recent surveys note that 7% of middle school students and 20% of high school students have used any type of tobacco in the past month. In 2016, almost four million secondary school students reported using tobacco with about half reporting use of at least two types of products. Sustained efforts and strategies are recommended to deter youth tobacco use (Jamal et al., 2017).

Elementary school is an important developmental time for cognitive and social skill acquisition. In this transition period, children are more aware of their physical and social environment (DelGiudice, 2017). Specifically, during these early academic years, students are expected to acquire cognitive regulation skills to attain goals, follow teacher directions, and problem-solve. In order to build positive social relationships, children must also transition from recognizing their own emotions to demonstrating empathy for others. Social skills take on a more important role as students use their cognitive and emotional self-regulation skills to navigate social situations with peers and adults (S. Jones et al., 2017). Because perceptions about tobacco and other substance use are formed early on, prevention-intervention programming should start early in a student's school career (Faggiano et al., 2014) to help decrease risk factors for later substance use. For example, for males of lower socioeconomic status, childhood risk factors were indirectly associated with substance abusing behaviors in adolescence (Sitnick et al., 2013).

Tobacco Use Prevention Programs

School-based, universal substance-use prevention interventions have been used to reduce risk factors for later substance-use behaviors in youth. For example, a school-based prevention intervention for low-income, urban elementary students did seem to reduce future drug use in high-risk, male participants (Kellam et al, 2014). Nationally, most schools provide substance-use prevention education as part of their instructional standards, and most elementary school programs focus on social skill-building approaches. However, much curricular content was found not to be evidence-based (Bruckner et al., 2014). Reviews were mixed on the effects of those school-based interventions on substance-use prevention and reduction. For elementary-level students, self-regulation, academic skills, and interpersonal or social skills are their developmental challenges. Therefore, universal prevention interventions that focus on social

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skills, problem solving, and self-regulation of emotions seemed to be most effective for most elementary students (Onrust et al., 2016).

Effectiveness of school-based tobacco use prevention curricula was reviewed for never-smokers including elementary-level students, and smoking onset was decreased in long-term follow-up for participants. Those curricula with a social skills emphasis and taught by adults had a positive effect on tobacco use prevention, possibly due to the emphasis on decision-making skills, interpersonal skill acquisition, and self-regulation skills (Thomas et al., 2015). In a review, school-based prevention interventions that included skills training seem to be more effective than education-only programs (Stockings et al., 2016), and those with a social-emotional focus have shown some promise in reducing health risk factors (Sancassiani, 2015). Similarly, for any drug use in middle school students, school-based interventions that included social skills training showed some effectiveness for prevention (Faggiano et al., 2014).

Positive Youth Development and Social Skills Education

The opportunity exists, therefore, for prevention interventions that emphasize positive youth development including social skills education to capitalize on this developmental period. Support for this approach is broadly represented through Lerner and Lerner's 5 Cs Model of Positive Youth Development and the Search Institute's 40 Developmental Assessments Model (Harvard University, n.d. & Search Institute, 2021). The 5 Cs model focuses on building competence, confidence, connection, character, caring/compassion which, when successfully fostered, lead to a sixth C, contribution (Harvard University, n.d.). This model has been implemented with positive results within the context of the 4-H program and demonstrated favorable results regarding youth avoiding risk behaviors and excelling academically (Tufts University, 2012). In the 40 Developmental Assets model, half of the assets focus on external supports while the other half are internal assets that reflect pro-social skills, commitments, and values (Search Institute, 2021). In one study, social skill levels of low-income kindergarten students were related to later risk for substance use in secondary school (D. E. Jones et al., 2015). For older youth in another study, teen smoking behavior was related to anti-social behaviors in a large, diverse group of adolescents. Accordingly, it seems that interventions that aim to decrease anti-social, bullying, and other difficult behaviors may affect future smoking behaviors (Turbin et al., 2017).

Positive youth development programming, a strengths-based approach to increasing substance-use prevention and mental health protective factors in youth, has been delivered in both community and school settings. In a review, however, instructor training, training resources,

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and instructor attitude—as capacity-building strategies for intervention implementers—may influence effective intervention implementation (Leeman et al., 2015). Overall, curriculum-based interventions that included social skills and social–emotional education improved participant emotional self-regulation (Curran & Wexler, 2017). The positive youth development approach can buffer social and environmental risk factors, such as peer pressure to use tobacco and other substances, by providing youth the opportunity to learn and practice self-regulation and pro-social skills (Bonell et al., 2016). The life skills approach to prevention education also encompasses programming to improve participant social skills, social-emotional competence, self-regulation/management, and drug resistance skills. Considered an effective strategy in both the long and short term, life skills-based interventions work by improving participant resilience through social skills mastery. Specifically for elementary students, effective programs use active-learning techniques to teach interpersonal as well as drug resistance skills (Botvin & Griffin, 2015).

In an analysis, school-based social-emotional interventions improved elementary and secondary student participants' social skills and overall health (Taylor et al., 2017). For those elementary students who fell behind their peers in social skill development, social–emotional skills education significantly improved their teacher-reported social skill levels (Low et al., 2015). In addition, an early analysis of social skills education and social–emotional learning interventions currently being employed in substance-use prevention initiatives indicates a cost benefit (Belfield et al., 2015). Higher abilities to identify and understand their and others' emotional states seems to be related to more pro-social behavior in pre-school and elementary school-aged children (Imuta et al., 2016). Social skills education interventions with an emphasis on accurate interpretation of other's emotions did seem to improve those skills in participants. Longer lessons included in interventions of shorter length showed the most improvements in participant social skills (Hoffman et al., 2016). In addition, approaches teaching self-regulation of emotions for children and youth demonstrated effectiveness not only on self-regulating behaviors but also on decreased substance use in participants. Most interventions of this type were curriculum-based with accompanying instructor training and were used effectively in both school and community settings (Pandey et al., 2018).

Social Skills Education in the After-School Setting

Because social skills education has demonstrated some success when used in school and community settings, the after-school setting may be an appropriate setting for programming. Lack of adult supervision while spending considerable time with peers during out-of-school time

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increases risk of tobacco use and of higher levels of tobacco use for adolescents. Programs to reduce unsupervised time in the out-of-school setting have been recommended to help reduce substance use (K. T. H. Lee & Vandell, 2015). In a review, out-of-school-based interventions using social skills and communication strategies were deemed an effective prevention approach (Duncan et al., 2018). A curriculum-based life skills intervention was also implemented in an out-of-school setting. Elementary-level participants improved their smoke-free attitudes as well as their self-regulation and social skills (Tymes et al., 2016).

Drama-based educational strategies have been shown over the years to positively affect participant academic performance, especially when an adult was the instructor, there were multiple lessons in the curriculum, and the lessons were integrated into the school curriculum (B. K. Lee et al., 2015). Puppets have been used in health and healthcare education by educators and nurses to teach children about health topics through play. In the clinical setting, puppet simulation has been used by nurses to educate pediatric patients about medical procedures and to help calm their fears (Tilbrook et al., 2017; Reid-Searl et al., 2017). Puppet play through puppet shows has also been demonstrated to have some promising positive effects on elementary students' knowledge and attitudes towards people with disabilities (Dunst, 2012, 2014). For health education, puppets have improved elementary student knowledge and awareness of stroke (Sharkey et al., 2016).

Program Purpose

Beliefs about tobacco and other substance use are formed early in childhood; therefore, prevention education should start early in a student's school career (Faggiano et al., 2014). Because elementary-aged students' main developmental tasks include cognitive and social skill acquisition, prevention interventions emphasizing social skills education can take advantage of this developmental phase. School-based social-emotional skills education was found to have some success in improving elementary student social skills and general health (Taylor et al., 2017), and teaching emotional self-regulation skills decreased substance use in elementary-level participants (Pandey et al., 2018; Onrust et al., 2016). With demonstrated success in schools, social skills education for prevention may be applicable for use in the after-school setting. For elementary students, using puppet play as a teaching strategy was shown to influence some knowledge and attitudes (Dunst, 2012, 2014). Therefore, Tobacco Tips, a tobacco use prevention intervention using social skills education and puppet scripts, was implemented as a preliminary pilot project to explore the feasibility of this type of program in the after-school setting.

Methods

Participants

All 10 after-school program mentors at a youth-serving agency in a rural county in the Midwest were asked to participate in the study portion of the program, and all consented to participate. All were White, all but one were female, and all were between the ages of 18 and 22 years old.

All 75 elementary school-aged children attending the after-school program at a youth-serving agency in a rural county in the Midwest were also asked to participate in the study portion of the program. All received parent/guardian consent and gave assent to participate. Participants were 10 children in kindergarten (four boys, six girls; 100% White), 38 children in first grade (20 boys, 18 girls; 89% White), and 27 children in second grade (15 boys, 12 girls; 92.5% White).

Instruments

The Strengths and Difficulties Questionnaire ([SDQ]; California Evidence-based Clearinghouse for Child Welfare, 2015), with strong psychometrics, was used by the after-school program mentors to rate child participants on their pro-social behaviors before and after attending the Tobacco Tips intervention. The questionnaire poses five questions or statements in each of five behavior categories: emotional problems, conduct problems, hyperactivity, peer problems, and pro-social. Examples of attributes rated include "Often loses temper"; "Generally liked by other children"; "Often offers to help others"; and "Easily distracted, concentration wanders." Parents or teachers rate the truth of each statement 0 (*not true*), 1 (*somewhat true*), or 2 (*certainly true*) for each child.

The Tobacco Tips Evaluation (Mercer County Behavioral Health Commission, 2017), a 10-item true/false quiz accompanying the Tobacco Tips curriculum was used to assess participant pre- and post-intervention tobacco prevention knowledge. Based on curricular content, the quiz covered the health dangers of tobacco and second-hand smoke as well as tobacco advertising. Items included "It is harmful to breathe secondhand smoke," "Smoking can cause heart disease," and "Nicotine is the addictive drug in cigarettes." The brief written quiz with content validity is scored using the percentage of correct answers.

Innovative Program

Tobacco Tips, a tobacco use prevention intervention for elementary-aged students, uses social skills education and puppet scripts as a creative approach to encourage healthy lifestyle behaviors. The curriculum can be obtained by contacting Mercer County Behavioral Health Commission, Inc. (<http://www.mercercountybhc.org/home-page/contact/>). The active-learning intervention seeks to increase participant knowledge of tobacco use risk and foster pro-social behaviors, specifically the 5 Cs (Harvard University, n.d.), through participant interaction with puppet characters. The developmentally appropriate lessons tell a short tobacco prevention story narrated by Arnold the Farmer, the puppet character who opens and closes each lesson. Several unique characters with distinct personalities live on his pond: Tad Pole, youngest with many questions; Buddy Beaver, good decision-maker; Clay-Ton Crab, instigator with low self-esteem; Handy Gander, problem-solver; Daisy Duck, active listener and good friend to all; Freddie Fish, makes poor choices to “fit in”; Merry Mermaid, pond gossip; and Bull Frog, wise and humble. The characters along with the Tobacco Tips program instructors are shown in Figure 1. Students choose their puppet (taking turns each lesson so all who desire can participate), come to the front of the room as the “stage,” and move and gesture their puppet as trained community volunteers stand behind them and voice the puppets’ scripted statements. Volunteers use specific speech rhythms to demonstrate each puppet character’s unique traits during the show. Lesson format includes an anticipatory set, scripted, manualized lessons for the puppet shows, and follow-up activities for student knowledge and skill application (Mercer County Behavioral Health Commission, 2017).

The characters in the story learn an important prevention lesson after finding a pack of cigarettes near the pond! During Lesson 1, “Just the Facts, Man,” Handy and Buddy discover some cigarettes and decide whether to try them as the other characters demonstrate critical thinking skills and competence/confidence in response. Reasons not to smoke, harmful effects of tobacco, and a smoke-free activity are covered. In Lesson 2, “Caring Means Sharing,” Daisy and Tad wish to know how to talk with their parents about quitting smoking as all learn how to teach others about the dangers of tobacco use through connection and character. Students discuss healthy coping, emotional regulation, and tobacco awareness, and make an anti-tobacco poster project. In Lesson 3, “Scared Silly,” Tad is offered cigarettes by some older students, and the other characters assist him with refusal skill tips by demonstrating caring. Coping with peer pressure, a balloon activity, and trouble tips are communicated. During Lesson 4, “We All Can Help,” Buddy presents a tobacco use prevention peer-teaching lesson (contribution) for younger students as the other characters help him practice. Reasons not to smoke, a fabulous facts activity, and a crossword puzzle are shown (Mercer County Behavioral

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Health Commission, 2017). As an early, pro-active intervention, Tobacco Tips used in the after-school setting can support school-based efforts. The intervention also follows best practices and guiding principles for positive youth development (Shek et al., 2019). For example, students are active as puppeteers as well as being able to interact with the puppets, sing along and participate in the lesson-reinforcing songs and activities, or just watch the show. Interactions with puppets focus on which decisions to make, how to teach others, making creative projects, and role-playing real situations. With a variety of ways to be involved in a program with a consistent structure, all students can be included in learning about protective factors, emotional regulation, and social skills application. Community volunteers are integrated into the program to provide positive interaction and small group support (Shek et al., 2019).

Figure 1. Tobacco Tips Program Instructors Shown With Cast of Puppet Characters



Back row, left to right: Handy Gander, Daisy Duck, Merry Mermaid, Bull Frog, and Freddie Fish. Front row, left to right: Tad Pole, Buddy Beaver, Clay-Ton Crab, and Arnold the Farmer.

Procedure

During fall 2019 and after Institutional Review Board approval, all after-school program mentors completed and returned to the researcher the confidential pre-SDQ and post-SDQ for each participant in their group 1 week before the first Tobacco Tips lesson and 1 week after the last

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lesson, respectively. Mentors recorded pre/post data for each student so that it could be matched accordingly during analysis. All student participants completed and returned to the researcher the confidential pre-program quiz immediately before the first Tobacco Tips lesson and the post-quiz immediately after the last lesson. Knowledge tests completed by the students contained no identifying information and could not be matched for pre and post measures.

The SDQ was comprised of five subscales: conduct problems, hyperactivity, emotional problems, peer problems, and pro-social. Additionally, conduct problems and hyperactivity items collectively made up the externalizing scale, and emotional problems and peer problems made up the internalizing scale. A total difficulties scale was comprised of all the subscales except the pro-social subscale. Each item had three options scored as follows: *not true*, *somewhat true*, *certainly true*; items were coded and reverse-coded appropriately. A total difficulties score was created from the sum of four of the five categories (except pro-social) with a score range between 0 and 40. An externalizing subscale score (possible scores 0 to 20) was created by summing the conduct problems and hyperactivity subscales. An internalizing subscale score (possible scores 0 to 20) was created by summing the emotional problems and peer problems subscales. Missing items resulted in a score not being computed for that participant. Cronbach alphas were computed for all subscale and scales for pre and post measures and ranged from 0.57 to 0.92. See Table 1.

Table 1. Cronbach Alphas for SDQ Subscales and Scales at Pre and Post Measurement

Subscale or scale	Pretest α	Posttest α
Conduct problems (subscale)	0.85	0.89
Hyperactivity (subscale)	0.83	0.89
Emotional problems (subscale)	0.57	0.73
Peer problems (subscale)	0.55	0.74
Prosocial (subscale)	0.80	0.89
Externalizing scale	0.89	0.92
Internalizing scale	0.72	0.81
Total difficulties scale	0.81	0.91

The 10-item true–false Tobacco Tips knowledge quiz responses were coded as 1 (*correct*) or 0 (*incorrect*). A total score was computed by summing all items. Items that were left blank were coded as incorrect.

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Two weeks before teaching the lessons, all six community substance-use prevention coalition members who volunteered to teach the curriculum in the agency's after-school program were trained by a certified health education specialist following the training manual (Mercer County Behavioral Health Commission, 2017). The 6-hour training was conducted over three afternoons and involved a curricular overview and goals, presentation skills, an introduction to puppetry skills and the puppet personalities, and lesson presentation practice. One 45-minute manualized lesson was delivered by teaching pairs to each grade level over 4 weeks. Each lesson was formatted to include small group, topic-based, interactive educational activity(ies) followed by the puppet show (participants act out the scene with the puppets as the teachers narrate) emphasizing that topic and concluding with a summary and preview of the next lesson.

Analysis

For the SDQ, pre and post data were appropriately matched for each student and paired samples *t*-tests were computed on the five separate subscale scores, the externalizing scores, the internalizing scores, and the total difficulties scores. Pre and post knowledge tests could not be matched for the Tobacco Tips evaluations, as the organization where the study took place would not allow identifying information of any kind to be captured on the students' tests. As such, only descriptive statistics were computed on the pre and post knowledge tests.

Results

All students ($n = 75$) and mentors ($n = 10$) participated in the study from beginning to end (from pre-program test to post-program test). Skewness and kurtosis were computed on the SDQ total difficulties scores at pre and post measures. At pre-program measure, skewness was 0.47 ($SE = 0.28$) and kurtosis was -0.10 ($SE = 0.55$). At post-program measure, skewness was 1.29 ($SE = 0.28$) and kurtosis was 1.04 ($SE = 0.55$). For the SDQ, three of the five paired samples *t*-tests computed on the subscales were found to be statistically significant. These included the subscales for conduct problems, hyperactivity, and pro-social. Participant results for the conduct problems subscale of the SDQ were significantly lower in post-program test scores than in pre-test scores. Post-program test scores for the hyperactivity subscale also were significantly lower than pre-program test scores. For the pro-social subscale, participant results were significantly higher post-program than pre-program. Posttests in the emotional problems subscale were not significantly different than pretest scores. Likewise, post scores for the peer problems subscale were not significantly different than pre scores.

In addition to the subscales above, statistically significant differences for the externalizing scale and the total difficulties scale were noted. For the externalizing scale, post scores were

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significantly lower than pre scores. Similarly, post scores of the total difficulties scale were significantly lower than pre scores. Lower scores reflect lower perceived externalizing problems and total difficulties. Finally, the Internalizing subscale post scores were not significantly different than pre scores. See Table 2. Pre- and post-intervention means, standard deviations, and *t*-test results for the five subscales and the externalizing, internalizing, and total difficulty scales are summarized in Table 2.

The Tobacco Tips evaluation (i.e., the knowledge test) was completed pre- and post-intervention with post scores higher ($M = 8.37$, $SD = 1.48$) than those completed before the intervention ($M = 6.96$, $SD = 1.35$). Higher scores reflect greater knowledge. At pre-intervention measure, skewness was 0.02 ($SE = 0.32$) and kurtosis was -1.16 ($SE = 0.63$). At post-measure, skewness was -1.04 ($SE = 0.31$) and kurtosis was 0.21 ($SE = 0.61$).

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Table 2. Paired Samples *t*-Test Results for the Strength and Difficulties Questionnaire Scales and Subscales

Subscale or scale	<i>n</i>	Pre mean	Pre <i>SD</i>	Post mean	Post <i>SD</i>	<i>df</i>	<i>t</i>	Cohen's <i>d</i>
Conduct Problems (subscale)	74	1.80	2.05	1.39	2.14	73	2.34*	0.19
Hyperactivity (subscale)	75	4.84	2.91	3.31	3.10	74	4.25*	0.51
Emotional Problems (subscale)	75	1.17	1.43	0.75	1.49	74	2.00	0.29
Peer Problems (subscale)	74	1.96	1.69	1.54	1.99	73	1.67	0.23
Prosocial (subscale)	75	5.55	2.42	6.71	2.85	74	-3.63*	-0.44
Externalizing Scale	74	6.68	4.61	4.70	4.92	73	4.37*	0.42
Internalizing Scale	74	3.12	2.79	2.28	3.08	73	2.00	0.29
Total Difficulties Scale	73	9.90	5.55	7.07	7.19	72	3.90*	0.44

* $p < .05$

Discussion

Tobacco Tips, an innovative social skills and puppet-based, tobacco-use prevention intervention, was implemented as a preliminary pilot project to explore the feasibility of this type of program in the after-school setting. Data provide very preliminary evidence of intervention impact and feasibility; however, no comparison group was used, and only SDQ data were matched. Pre-post knowledge scores could not be matched. Therefore, all results should be interpreted in light of these limitations. Posttest results of the Tobacco Tips intervention indicate potential positive shifts in social skills and prevention knowledge among the 75 elementary student participants. Significantly lower posttest scores in the total difficulties scale, externalizing subscale, conduct problems subscale, and hyperactivity subscale indicate that the program may support social-emotional development through a reduction in high-risk social behaviors. This finding is further supported by the significant increase in the pro-social subscale at posttest, indicating a positive promotion in social skills among participants. However, it should be noted that the effect size for significant differences was small to medium. Given the limited extent of this intervention, this is not necessarily surprising. Additionally, higher posttest scores among participants taking the Tobacco Tips evaluation knowledge quiz indicate that this intervention may have successfully supported an increase in student prevention knowledge related to the dangers of tobacco use, secondhand smoke, and tobacco advertising. However, the knowledge quiz results represent data trends only and do not reflect statistical differences in these means scores. With a small sample size and unmatched data, some lessons learned include the importance of working with community partners to develop a plan to match student knowledge data utilizing a strategy with which they are comfortable, and consideration of strategies to increase the sample size, such as including additional after-school programs in the study.

These program outcomes align with previous findings on the effectiveness of using positive youth development curricula, life skills-based interventions, and drama-based educational strategies to support social skill development and drug resistance skills (Botvin & Griffin, 2015; Curran & Wexler, 2017; B. K. Lee et al., 2015). Targeting the social and developmental needs of elementary students, the Tobacco Tips intervention followed a curriculum of interactive activities to promote self-regulation and pro-social behaviors. These activities were then reinforced through active learning techniques utilizing the strategy of playing with puppets. Adding to previous research that puppet play promotes positive knowledge acquisition related to disabilities and stroke awareness, this study indicates that puppet play may also be an effective strategy for social skill building and substance-use prevention among elementary students (Dunst, 2012, 2014; Sharkey et al., 2016).

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This study also demonstrates that after-school program settings may be an effective venue for social skills and tobacco use prevention education among elementary students. Previous studies identified school-based interventions as successful in social-emotional learning and health development (R. D. Taylor et al., 2017). Positive youth development curricula have also been successfully implemented in afterschool programs for school-age students in order to promote academic improvement and reduce high-risk behaviors (Jenson et al., 2018). The Tobacco Tips intervention builds upon these studies to demonstrate how curriculum-based prevention education may be successfully incorporated into an after-school program's focus on positive youth development in order to build drug use resistance skills.

Limitations

While this study highlights the strengths of incorporating social skills and prevention education into an after-school program setting for elementary students, there are several limitations that must be noted. First, lesson attendance was not tracked for the 75 program participants. While the before- and after-study approach tests skill building and knowledge acquisition, it is uncertain whether lesson attendance impacted the outcomes. Second, the study did not employ a control group of comparable students; thus, it is unknown if testing effects or additional variables outside of the scope of the study may have impacted student outcomes. For example, the study did not account for possible in-school instruction or skill building that may have taken place concurrently with the after-school program curriculum. Finally, the study results should not be generalized across populations of elementary students due to the homogenous nature of the sample. The experimental group consisted of predominantly White elementary students in a rural county of the Midwest; therefore, further studies are needed to determine results in other settings with diverse populations.

Conclusion

Positive youth development approaches engage youth in a constructive way to promote the developmental strengths that build resiliency for the future. The Tobacco Tips intervention provides an example of elementary-level prevention education that may be reproduced by after-school program settings seeking to incorporate positive youth development approaches to tobacco use prevention. Considering the importance of intervention at the elementary level, this program may provide a model for early social skill building that promotes the development of drug resistance skills and the acquisition of prevention knowledge. Additionally, the use of puppet play demonstrates that interactive, drama-based learning strategies may be an effective tool in after-school programs as well as future studies of social skill prevention education.

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While this study demonstrated significant some outcomes for participants, four recommendations emerged for future research of social skills and prevention education. First, future research should examine implementation of the Tobacco Tips intervention in after-school program settings with diverse populations in order to measure effectiveness and transferability. Additionally, future studies should incorporate a control group of participants in order to account for additional variables, particularly those introduced by school-based programming. In this way, the effectiveness of social skills and prevention education and drama-based learning strategies can be identified across populations and specific to the after-school program setting. Also, future research should be conducted that allows for pre and post knowledge scores to be appropriately matched so that definitive determinations on knowledge acquisition of tobacco use prevention and the promotion of social skills among the participants can be made. Finally, future studies should consider following elementary school participants into middle and high school in order to evaluate the relationship between program outcomes and long-term prevention.

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