Journal of Gambling Studies (2019) 35:1249–1267
https://doi.org/10.1007/s10899-018-9797-4

ORIGINAL PAPER

Enhancing the Relevance and Effectiveness of a Youth Gambling Prevention Program for Urban, Minority Youth: A Pilot Study of Maryland Smart Choices

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Published online: 18 August 2018

Abstract
Youth with problem gambling behaviors are susceptible to serious academic, behavioral, and mental health consequences including school failure, criminal involvement, and depression. Coupled with increased exposure to gambling formats, issues related to youth gambling have been deemed a serious public health issue requiring increased prevention efforts. However, the literature is limited in terms of evidence-based gambling prevention programs warranting the development of The *Maryland Smart Choices Program* (MD-Smart Choices), a gambling prevention program for middle and high school youth. This 3-session, 45-min program was developed for implementation in Baltimore City Public Schools, an urban and predominately African American district with specific aims to engage students, encourage positive behavior, and facilitate learning related to gambling disorder. Pre–post program participation assessments were collected from 72 students across 5 different schools. Results yielded significant increases in student awareness and knowledge following participation in *MD-Smart Choices.* Focus group data collected from program facilitators suggested high student engagement and participation, program feasibility, and ease of implementation. Study implications and future directions are discussed.

Keywords Problem gambling prevention · Youth gambling · Program adaptation · Urban youth · Decision-making

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Introduction

Youth Problem Gambling

Gambling disorder (GD) is defined as recurrent and persistent gambling activities resulting in clinically significant distress or impairment (American Psychiatric Association 2013). Core features of this diagnosis include preoccupation with gambling, restlessness or irritability when attempting to quit, and feeling a need to bet more money with increasing frequency. Although typically conceptualized as an adult disorder, there is increasing concern about youth gambling problems (Keen et al. 2017; Messerlian et al. 2005; Richard and Derevensky 2017) as illegal betting activities have become more common among adolescents. Recent estimates suggest that between 60 and 80% of youth under 17 years of age have gambled at least once during the past year (Delfabbro et al. 2014; Turchi and Derevensky 2006), with approximately 35% participating in such activities once a week. In fact, despite bans on youth gambling, a greater percentage of individuals under 18 participate in such activities at more problematic levels than adults (Ladouceur et al. 2013); 2% of adults meet criteria for GD as compared to 4–8% of adolescents with an additional 10–15% categorized as at-risk. Youth problem gambling has become a serious public health issue (Derevensky and Gupta 2000; Jacobs 2000; Richard and Derevensky 2017) that needs to be better researched to inform prevention and intervention strategies.

Much like adults, youth with problem gambling habits are susceptible to serious mental health, occupational, and relational consequences. Those whose gambling has negatively impacted their day-to-day functioning are at increased risk of developing anxiety (Gupta and Derevensky 1998; Richard and Derevensky 2017) and depression, in addition to comorbid substance abuse problems (Hardoon et al. 2004; Zhai et al. 2017) and illicit drug use (Peters et al. 2015). Wynne et al. (1996) also found that adolescents with problem gambling behaviors were more likely than peers to have strained relationships (familial and/or peer), engage in criminal behavior, and perform poorly in academic settings. The latter consequence may be uniquely harmful to youth considering the high value placed on education and the critical importance of academic achievement as it relates to employment opportunities and long-term upward mobility.

The range of aversive consequences related to GD is well documented in the literature, but only recent studies have highlighted the disproportionate vulnerability of specific populations. While more research and replication studies are needed, ethnicity and gender were identified by Simmons et al. (2015) as the two socio-demographic variables with which gambling behaviors were most significantly associated. Findings suggested that males endorsed more frequent gambling activity as compared to their female peers in a high school sample (ages 14–19), with 10.8% of males meeting criteria for at-risk or problem gambling but only 2.1% of females (Barnes et al. 2009; Simmons et al. 2015; Welte et al. 2009). In terms of ethnicity, African-American students appear to be at increased risk of problem gambling as 9.7% reported daily gambling activity as compared to only 4% of their Caucasian counterparts (Goicoechea et al. 2014; Lynch et al. 2004; Stinchfield 2000).

Furthermore, it appears that youth in urban settings endorse significantly higher rates of gambling related behaviors. A study conducted by Wickwire et al. (2007) found that 22% of males and 5% of females in an urban high school sample reported problem gambling. Perhaps more alarming, approximately one-third (31%) of males and 12% of females endorsed levels of activity placing them at-risk for problem gambling (Wickwire et al. 2007). Taken together (Messerlian et al. 2005), it is clear that effective gambling prevention programs

aimed at increasing youth knowledge and awareness are critically important, particularly for African American males and urban youth.

Gambling Prevention Programs

The literature indicates that there have been increasing efforts to develop and implement universal gambling prevention programs for youth (Keen et al. 2017; Ladouceur et al. 2013). Ladouceur et al. (2013) evaluated 13 of these programs and rated the research integrity of each as determined by five domains; presence of theoretical model, research design, measurement properties, follow-up evaluations, and replication studies. Programs categorized as "Gambling-Specific Prevention Programmes" were 1 session activities delivered in school settings with aims to provide basic information about problem gambling and associated risks (Ladouceur et al. 2013).

Each of nine identified programs reported use of pre–post measures and noted increases in student knowledge at post-assessment. Four other studies assessed for positive appraisal of gambling behaviors and analyses yielded significant decreases following participation in the respective programs. However, the "Gambling-Specific Prevention Programmes" have noteworthy limitations. First none of the programs conducted follow-up evaluations to assess for maintenance of learning over time and to consider the impact of the program on gambling behavior. Gauging long-term benefits following participation is critically important considering the brevity of these prevention activities in comparison to other interventions. Additionally, none of the studies were replicated to support initial results and generalization of findings to other settings and populations.

One other category of prevention programs identified by Ladouceur et al. (2013) was "Gambling and Related Skills Workshops." These programs were implemented over multiple sessions and included practical activities encouraging student contributions as they learned specific information and skills. The four programs evaluated were McGill Adolescent Gambling Prevention CD-ROM (Williams 2002), Gambling: A Stacked Deck' program (Williams et al. 2004, 2010), A Three-Session School-Based Awareness Workshop (Ferland et al. 2005), and A Curriculum of Problem Gambling (Turner et al. 2008). In addition to improving youth knowledge about gambling, this group targeted learning of broad skills potentially associated with problem gambling behaviors, including decision making, self-monitoring, and positive coping skills. Further, each program assessed for youth gambling, such as the amount of money and time spent on these activities.

General findings indicated small to moderate changes in youth gambling knowledge and targeted skills (i.e., decision-making, self-monitoring, coping) at post-assessment. Two research groups conducted follow-up studies yielding sustained effects of associated knowledge concepts at 4 months post-program (Williams et al. 2010) and maintenance of attitudes toward gambling 6 months after participation (Ferland et al. 2005). However, when analyzing the impact of teaching broad skills on youth engagement in risky gambling behaviors, only one study attained significant findings.

The program entitled "*A Stacked Deck*" (Williams et al. 2010) included a booster session (i.e., session 6) and found sustained changes in decision-making skills, as well as decreased frequency of gambling and related problems. These important gains were attributed to the *Booster Program*, added to the *Standard* "*A Stacked Deck*" curriculum, that reviewed material covered during the preceding five sessions.

When compared to the former group of prevention programs, "Gambling and Related Skills Workshops" demonstrate promise in being able to effectively impact sustained youth

gambling knowledge and skills. Be that as it may, the aforementioned programs are not without limitations. First, of the studies that included follow-up evaluations and replications (Ferland et al. 2005; Williams et al. 2004, 2010), findings were inconsistent. In the examination of "*A Stacked Deck*" specifically, modification of independent variables (i.e., adding the *Booster Session*) may have contributed to the discrepancies and warrant further investigation of program effectiveness. Second, most prevention programs had no effect on participant skill development and ultimate engagement in problematic gambling behaviors (with the exception of Williams et al. 2010). Third, the programs demonstrating effectiveness require six or more sessions and have not been evaluated for utilization with middle school youth, limiting the degree to which interventions can be generalized younger adolescents. A final limitation to explore is the lack of emphasis on urban, African American youth in gambling prevention efforts. Given the unique vulnerability of this population, the effectiveness of gambling prevention programs should be examined for youth at greatest risk of developing gambling related problems.

Taken together, many independent research groups have taken interest in youth gambling problems and developing prevention programs to support increased knowledge and skills amongst this population. Unfortunately, the current literature lacks effectiveness and efficacy studies to validate existing programs, remains undecided on essential concepts to be included in prevention programs, and evidences few efforts to intervene with urban, minority youth. The youth gambling prevention community is in need of additional innovations that have been validated for more diverse populations (ethnic, cultural, age, gender).

Smart Choices

The Maryland Center of Excellence on Problem Gambling piloted the *Smart Choices* program in collaboration with the Center for School Mental Health with aims of refining the curriculum as needed and working ultimately towards replication studies and randomized control trials. The *Smart Choices* program is a four-session, non-curriculum based middle/high school gambling prevention program led by a trained facilitator (International Centre for Youth Gambling Problems & High-Risk Behaviors 2004, 2006). Through use of interactive PowerPoint, the program aims to increase youth awareness and knowledge of inherent risks associated with gambling. Additionally, the *Smart Choices* program emphasizes positive decision-making skills which is considered an area of deficit in individuals with problem gambling habits (Dickson et al. 2002; Williams et al. 2010). Positive decision-making skills have been targeted in other youth gambling prevention programs (Williams et al. 2010).

The *Smart Choices* program is comparable to previously discussed programs in many ways, including goals to increase knowledge, emphasis on decision-making skills, and the lack of empirical evidence to support its effectiveness. However, this program was successfully implemented during a pilot study in Philadelphia Public Schools from 2009 to 2012 led by the Council on Compulsive Gambling of Pennsylvania, Incorporated (unpublished work). Additionally appealing aspects of the program include large-scale implementation with middle school youth, a reasonable of number sessions (i.e., 4), and the program's utilization of activities intended to engage young audiences.

The Maryland Center of Excellence on Problem Gambling selected the *Smart Choices* program to intervene with Baltimore City youth due to the presence of large, thriving casinos in the community and increasing marketing promoting gambling behaviors. Initially piloted in four Baltimore City Public Schools in the 2013–2014 school year, the program

experienced very limited success. In fact, it was discontinued mid-program in one school due to the lack of student engagement and severely disruptive behavior problems. Following program implementation, feedback was solicited from teachers, school-based mental health clinicians, and administrative staff about the programs strengths and challenges through a written survey.

Aims of increasing student knowledge about gambling and teaching decision-making skills were endorsed as preferred aspects of the program and viewed as important elements to retain. The main challenges noted were the style of delivery (e.g., PowerPoint, adult-driven) and developmental appropriateness of content. The latter concern included critiques of the data used to communicate prevalence rates (e.g., statistics that may be more resonant to adults) and difficulty of word problems used to practice application of skills. Coupled together, students could not identify with the curriculum and, in turn, were disengaged and susceptible to poor attention and disruptive behavior. Based on this feedback, the Maryland Center of Excellence on Problem Gambling in collaboration with the Center for School Mental Health adapted the program to better meet the learning needs and interests of students across urban middle and high school settings with predominantly minority populations.

Program Adaption: MD-Smart Choices

Literature indicates that an effective school-based prevention effort is theory driven, utilizes dynamic teaching modalities, supports positive youth-adult interactions, is culturally relevant, inclusive of outcome evaluation, and offers developmentally appropriate structure (Nation et al. 2003; Wentzel 2010). Given the well-established susceptibility of adolescents to risky behavior, mental health, and addiction problems, implementation of prevention activities attentive to their needs is critical. Therefore, *Smart Choices* was adapted by the two Centers in 2014 to improve the relevance of material for youth and increase student engagement.

Theories of cultural adaptation guided modification of the Smart Choices to address the needs of an urban, predominately African American target population (Castro et al. 2004). Information gathered from the original Smart Choices content (i.e., a PowerPoint presentation) and surveys completed by clinicians during a focus group following pilot implementation in Baltimore City prompted adaptations focused on alignment of program *content* with the developmental needs of urban, minority youth and form of program *delivery* to fit into a typical school context (Castro et al. 2004). For example, original program *content* favored advanced terminologies such as "chance" and "illusion of control" illustrated using complex, multi-step word problems. Adapted *content* focused on simplification of language to reduce reading and math fluency barriers that are more likely to be present in urban, low-socioeconomic communities.

Characteristics of the delivery person (Castro et al. 2004) were also addressed. Given the well-established importance of positive relationships with adults for youth development (Nation et al. 2003), the development team partnered with providers trained to establish positive relationships with and support the social-emotional needs of diverse school communities. Master's level school-based mental health clinicians, licensed or supervised outpatient therapists embedded within specific schools, served as primary delivery persons and co-facilitators during implementation of the adapted program. This adaptation was made to promote positive relationships with program facilitators and increase student

accountability for behavior as clinicians are connected to school staff, leadership, and community through mental health promotion, prevention and intervention responsibilities.

Incorporation of varied teaching methods, a behavior chart, and outcome evaluation were other adaptations made to meet the developmental needs of urban, predominately African American youth. Changes to the teaching methods included encouraging student participation through group activities and discussions, revamping PowerPoint slides, incorporating hands on demonstrations, and providing a student workbook. Scenarios used for group discussion feature similarly aged youth with relatable interests (e.g., shoes) and social challenges (e.g., desire for peer group acceptance) further encouraging participant engagement with the material.

Finally, a brief assessment was developed to assess changes in participant knowledge about and attitudes toward gambling at prior to and following participation in *MD-Smart Choices*. Assessments include seven items where participants select "true," "false," or "don't know" in response to youth gambling prompts. Additionally, a list of various activities requires discernment between activities *requiring mostly luck* as compared to items *requiring mostly skill.* To gauge existing gambling behaviors amongst participants, questions about experiences with lottery or scratch off tickets, dice games, card games, betting money on games of skill, and activities such as fantasy leagues are included.

The final version of the adapted program, referred to as the *Maryland Smart Choices Youth Gambling Prevention Program* (*MD-Smart Choices*), is a 3-session manualized curriculum designed to provide students with information about gambling, including risk factors associated with Gambling Disorder. Session one focuses on helping students to define gambling and differentiate between games of *skill* and *luck*. The second session introduces a decision making model and emphasizes the critical importance of positive choices as it relates to gambling, as well as other challenging situations (e.g., using drugs, alcohol). The third and final session asks students to employ the decision making model and apply acquired knowledge to role-play difficult, "real life" situations.

Additional features of the adapted program include a manual designed for utilization by experts or novelists in understanding and addressing mental health or gambling disorders (e.g., teachers, paraprofessionals, and administrators), a standardized set of classroom behavioral expectations, pre–post assessments of student gambling knowledge, and student worksheets for session activities. Much like other gambling prevention programs, *MD-Smart Choices* aims to increase student knowledge about gambling risks and fallacies (Keen et al. 2017). This program also emphasizes positive decision-making, a specific skill less frequently addressed by other gambling education programs (Keen et al. 2017). Other proximal goals include increasing student engagement in the prevention program and better standardization of implementation.

The current paper summarizes findings from the 2014–2015 implementation of the adapted *MD-Smart Choices Youth Gambling Prevention Program.* The goals of the pilot study were: (1) to implement the *MD-Smart Choice* program in 5 Baltimore City classrooms (middle and high), (2) ascertain degree of student engagement in gambling activities, (3) assess student knowledge about gambling as indicated by changes in pre–post assessment responses, and (4) explore the strengths and challenges of the adapted *MD-Smart Choices* program.

Method

Participants

Clinicians

The Maryland Center of Excellence on Problem Gambling facilitated an in-service training and gauged interest in the MD-Smart Choices program through a sign-up sheet. Preference for participation in the adapted program was given to clinicians that were trained in the original Smart Choices curriculum (i.e., during the 2013–2014 school year). The selected clinicians were five master's level, licensed mental health providers employed by an outpatient community mental health program serving schools in Baltimore City.

Students

Passive consent forms describing *MD-Smart Choices* content and program logistics (e.g., time, dates) were distributed to youth enrolled in selected classrooms (described in "Procedure") at least 2 weeks prior to implementation of session 1. Contact information for clinicians and classroom teachers were provided in the event that caregivers or students chose to opt-out of participation in the program. No student or caregiver initiated opt-outs were receive, thus, all in attendance participated in *MD-Smart Choices* programming.

To maintain the confidentiality of the schools and students, demographic information is presented in aggregate. A total of 89 students from five schools (3 middle schools, 2 high schools) participated in the 2014–2015 implementation of the MD-Smart Choices program. However, only students with complete pre–post data were included in the analyses; therefore, findings are based on information attained from 73 participants. Participant dropout is due solely to school attendance problems—a common challenge in urban school settings (Bemark et al. 2005). Students in the sample were disproportionately racial and/or ethnic minorities and of low socioeconomic status. The majority of participants were of African American descent (~73%), followed by Caucasian (~18%), Hispanic (~5%), and Asian (~4%). Participants ranged in age, from 11 to 18 years of age, and grade, from 6th to 12th and attended schools with free and reduced lunch rates of 80% or more, which is representative of the population in Baltimore City Schools (see Table 1).

Procedure

The Smart Choices program was adapted during the fall of 2014 in preparation for implementation in five Baltimore City schools during the spring of 2015. The manual was completed in October 2014 and five school-based mental health clinicians were trained in the new curriculum during a 3-h interactive didactic.

Trained clinicians led recruitment efforts by initiating meetings with administrative teams to gain approval of program implementation in their respective schools. The clinicians, school-based mental health providers, conducted non-standardized needs assessments to recruit teachers and students for the program. While specific criteria for participation were not set forth due to the pilot nature of the project, data collected from clinicians during focus groups (discussed below) indicated that clinicians commonly identified

Table 1 Aggregate demographic data for participating schools

School type	Race	Free and reduced lunch (%)
School 1: Elementary/middle	63% Caucasian 19% African American 9% Hispanic 7% Asian	80
School 2: Elementary/middle	93% African American 4% Hispanic 2% Caucasian	81
School 3: Elementary/middle	98% African American 1% Caucasian	99
School 4: High school	72% African American 17% Caucasian 8% Hispanic	78
School 5: High school	87% African American 8% Caucasian 2% Hispanic	63

May not total 100%

classrooms with reports of problematic conduct or youth engagement in gambling activities. Selected classrooms were shared with school leadership (e.g., principal and other administrators) and associated teachers for final approval.

The *MD-Smart Choices* representative from Maryland Center of Excellence on Problem Gambling, designated co-facilitator, then met with the clinician and identified teacher during one 45-min consultation session to provide orientation to the *MD-Smart Choices* curriculum. Consultations addressed curriculum duration, content, teaching modalities (e.g., use of PowerPoint, discussions, role play), behavioral management approach, and role of adults (i.e., clinician, co-facilitator, teacher). Additionally, program utilization of passive consent to recruit student participants and simple logistics (e.g., time and date) were discussed.

Trained school-based mental health clinicians and a representative from Maryland Center of Excellence on Problem Gambling led program implementation. Their responsibilities included shared facilitation of the program and active implementation of the behavior system. Teachers were asked to stay in the room at all times and encouraged to participate in program discussions, but were not required to monitor behavior or complete any program specific elements.

The *MD-Smart Choices* curriculum was implemented one time weekly (total length of program = 3 weeks) and each session lasted approximately 45–60 min. Pre-tests were administered 15 min prior to beginning the first session and post-assessments were given 1 week following program completion (i.e., approximately 4 weeks after beginning the program).

Pre–post assessment

Seven questions on the pre-test assessed students' involvement in gambling activities. For these questions, students were asked to rate how often they had engaged in a particular behavior according to the following scale: never, just once, about once a month, once or twice a week, and more than twice a week. Seven different items with the possible answers "true," "false," or "don't know" were used to tap students' factual knowledge of and attitude toward gambling. Questions included content about gambling addiction, games of chance, and potential problems associated with gambling.

Participants were also presented with a list of activities and asked to place a check ($\surd$) next to activities that required skill. The following activities were listed: smoking, blackjack, videogames, downloading music, betting on sports teams, poker, bowling, instant scratch lottery tickets, and skateboarding. The same list and described procedure was used to gauge knowledge of activities that could involve gambling. A third list included: watching TV, illegal drugs, betting money on games, extreme sports, videogames, smoking, drinking alcohol, and reading and asked participants to identify activities that could result in significant problems such as addiction. The tool was developed for the purposes of this study and remains in iterative form; therefore, psychometric data is not available at this time.

Five clinicians serving as *MD-Smart Choices* co-facilitators participated in 1, 2-h focus group in April of 2015 to discuss the adapted curriculum, help identify program strengths, and provide constructive suggestions. The Maryland Center of Excellence on Problem Gambling Prevention Manager and a pre-doctoral psychology intern from the Center for School Mental Health co-led the semi-structured feedback session. Approximately 30 min were allotted to provision of written information. Open-ended prompts and Likert scale items (1 = *not at all* to 5 = *very*) were used to assess perceptions of student engagement, the usefulness of the program, and the ease of program implementation. The latter portion enabled expansion upon written reports and were documented by the pre-doctoral psychology intern. Summary statements were shared following each verbal contribution to ensure written transcriptions captured essential themes.

Analyses

Student demographic data were analyzed in aggregate using descriptive statistics. Mean age and modal grade are reported in Table 1. *True*, *false*, and *don't know* responses were dummy coded and McNemar Chi square tests comparing frequency were employed to compare student knowledge and attitudes at pre- and post-prevention program implementation. Only data from students that completed both pre- and post-assessment are included in the current analyses; as a result, 16 students that participated in at least one session of the *MD-Smart Choices* prevention program are not represented in results. Missing data within included pre–post assessments were addressed using pairwise deletion in SPSS (available-case analysis). Focus group Likert scale data were analyzed using descriptive statistics and mean scores are reported (see "Results"). Notes were independently reviewed by session co-facilitators, Prevention Manager and pre-doctoral psychology intern, and commonly identified themes are described below.

Results

Pre- and Post-assessment of Students' Behavior, Knowledge, and Attitudes

Students' Involvement in Gambling Pre-assessment

When asked if they had ever received lottery or scratch off tickets as a gift, nearly half of students responded that they never had, while approximately 33% reported that they had one time. The majority of students denied that they had ever purchased lottery or scratch off tickets themselves.

The majority of students reported that they had never played and bet money on dice games; approximately 22% reported that they had engaged in this behavior just once to try it. Similarly, most students reported that they had never played and bet money during card games, with a small proportion reporting that they had done this one time. More students reported having bet money on games of skill, with slightly under half reporting that they never engaged in this activity, approximately 18% reporting that they had done it once just to try, and approximately one-fifth reporting that they bet about once per month. When asked to consider whether they had ever bet on other types of games (bingo, fantasy leagues, internet games, etc.), over half of students denied that they had ever done so and small proportions reported that they had done this just once to try it or reported that they engaged in this type of betting about once per month.

Students' Involvement in Gambling Post-assessment

Students completed the same seven questions regarding their involvement in gambling following engagement in the prevention program. No differences in students' involvement in gambling activities were yielded.

Students' Knowledge of Gambling and Chance

There was a significant increase in the percentage of students responding false to the statement "young people cannot develop a gambling problem" from pre- to post-assessment. Awareness of the roles of skill and chance in gambling also increased at post-assessment. For example, significantly more students responded false to the question "a good video game player will also be good at gambling" at post-test when compared to pre-test. In addition, significantly more students endorsed that the statement "nothing can increase your chances of winning" was true at post-test when compared to pre-test.

Awareness of factual information related to odds of winning the lottery also increased after the prevention program. Pre- and post-test differences in responses to the question "when playing the lottery, your chances of winning are better if you always play the same numbers over" were statistically significant. Similarly, there was a statistically significant increase in the number of students responding false to the statement that "playing special numbers increases the odds of winning the lottery."

For several questions, students' post-test scores changed in the expected direction but were not significantly different from pre-test. No significant difference in pre- to post-test responses to the question "people can be addicted to gambling like drugs" was present. For this question, the majority of students responded true at pre- and post-test. Similarly, no

Table 2 Distribution of student answers to gambling knowledge questions at pre- and post-assessment

Question	Pre (%)	Post (%)	X^2	*p* value
Young people cannot develop a gambling problem				
True	19.20	15.10		
False**	61.60	80.80	10.93	.01
Don't know	19.20	4.10		
People can be addicted to gambling like drugs				
True	82.20	87.70		
False	6.80	5.50	1.33	.51
Don't know	11.00	6.80		
A good video game player will also be good at gambling				
True	23.30	32.90		
False**	31.50	49.30	13.36	.004
Don't know	45.20	17.80		
Gambling is only a problem if you lose money				
True	20.50	19.20		
False	63.00	74.00	5.44	.14
Don't know	16.40	5.50		
Your chances of winning the lottery are better if you play the same numbers				
True	11.00	9.60		
False*	49.30	67.10	10.01	.02
Don't know	37.00	19.20		
Your chances of winning the lottery are better if you choose special numbers				
True	42.50	37.00		
False*	28.80	49.30	9.64	.02
Don't know	27.40	11.00		
Nothing can increase your chances				
True**	38.40	57.50		
False	32.90	24.70	11.64	.01
Don't know	26.00	15.10		

Chi square analyses were used to compare pre–post assessment of content knowledge. Total may not equal 100% due to missing data

*p value $\leq .05$

**p value $\leq .01$

significant difference in pre- and post-test responses to the question "gambling is only a problem if you lose money" was found. Approximately 10% more students responded false to this question at post-test when compared to pre-test. Described statistical outcomes and distributions of student endorsements at respective data collection periods are shown in Table 2.

Students' Identification of Activities Requiring Skill

See Table 3 for the distribution of student responses at pre- and post-test. Students' responses pre- and post-test responses were not significantly different for the following:

Table 3 Distribution of students' ratings of whether an activity requires skills at pre- and post-assessment

Activity	Pre (%)	Post (%)	*p* value
Smoking			
Yes	9.60	13.70	
No	86.30	84.90	1.0
Blackjack			
Yes	50.70	31.50	
No*	45.20	67.10	.01
Board games			
Yes	64.40	60.30	
No	31.50	38.40	.70
Video games			
Yes	83.60	89.00	
No	12.30	9.60	.59
Downloading music			
Yes	21.90	16.40	
No	74.00	82.20	.35
Betting on sports teams			
Yes	31.50	17.80	
No*	64.40	80.80	.03
Poker			
Yes	41.10	35.60	
No	57.10	63.00	.51
Bowling			
Yes	71.20	83.60	
No	24.70	15.10	.09
Instant scratch lottery tickets			
Yes	17.70	6.80	
No	82.00	91.80	1.0
Skateboarding			
Yes	76.70	78.10	
No	19.20	20.50	1.0

Chi square analyses were used to compare pre–post assessment endorsements. Total may not equal 100% due to missing data

*p value $\leq .05$

smoking, board games, videogames, downloading music, poker, bowling, instant scratch lottery tickets, and skateboarding. Significantly fewer students rated blackjack as requiring skill at post-test when compared to pre-test. Similarly, significantly fewer students rated betting on sports teams as requiring skill at post-test when compared to pre-test.

Students' Identification of Activities That are Gambling

No significant differences in students' ratings at pre- and post-test were found. However, as shown in Table 4 students' ability to identify forms of gambling was generally high at pre-test and remained high at post-assessment.

Table 4 Distribution of students' ratings of whether an activity is a form of gambling at pre- and post-assessment

Activity	Pre (%)	Post (%)	*p* value
Smoking			
Yes	16.40	12.30	
No	79.50	86.30	.34
Blackjack			
Yes	83.60	86.30	
No	12.30	12.30	1.0
Board games			
Yes	37.00	47.90	
No	58.90	50.70	.34
Video games			
Yes	28.80	43.80	
No	67.10	54.80	.06
Downloading music			
Yes	6.80	5.50	
No	89.00	93.20	1.0
Betting on sports teams			
Yes	69.90	69.90	
No	26.00	28.80	1.0
Poker			
Yes	83.60	89.00	
No	12.30	9.60	.62
Bowling			
Yes	20.50	21.90	
No	75.30	76.70	1.0
Instant scratch lottery tickets			
Yes	74.00	82.20	
No	21.90	16.40	.36
Skateboarding			
Yes	12.30	17.80	
No	83.60	80.80	.38

Chi square analyses were used to compare pre–post assessment endorsements. Total may not equal 100% due to missing data

Students' Identification of Activities That Could Lead to Addiction

The distribution of students' ratings at pre- and post-assessment can be found in Table 5. No significant differences were present when pre- and post-test were compared except for ratings on betting money on games. Analyses showed that significantly more students rated "betting money on games" as potentially leading to serious problems including addiction at post-test when compared to pre-test.

Table 5 Students' ratings of whether an activity leads to problems including addiction at pre- and post-assessment

Activity	Pre (%)	Post (%)	*p* value
Watching TV			
Yes	28.80	31.50	1.0
No	67.10	67.10	
Illegal drugs			
Yes	90.40	87.70	.13
No	5.50	11.00	
Betting money on games			
Yes**	60.30	84.90	.001
No	35.60	13.70	
Extreme sports			
Yes	21.90	20.50	.80
No	74.00	78.10	
Video games			
Yes	41.10	50.70	.29
No	54.80	47.90	
Smoking			
Yes	87.70	86.30	
No	8.20	12.30	.34
Drinking alcohol			
Yes	89.00	86.30	
No	6.80	12.30	.29
Reading			
Yes	15.10	12.30	
No	80.80	86.30	.55

Chi square analyses were used to compare pre–post assessment endorsements. Total may not equal 100% due to missing data

*p value $\leq .05$

**p value $\leq .01$

Focus Group Data

Results from Likert items on the survey indicated that all five clinicians reported that students appeared to be engaged ($M = 4.6$) in *MD-Smart Choices* and highly participative ($M = 4.4$). Specifically, they indicated the behavior management system ($M = 4.4$) to be an effective way of promoting appropriate conduct during curriculum implementation. Additionally, clinicians indicated that interactive activities ($M = 4.6$) and the potential to earn rewards ($M = 4.2$) seemed to encourage positive participation.

The manual was reportedly "very detailed" and included "all necessary materials" to support facilitation of the program. They also indicated that the manual content "flowed seamlessly" and "built upon previous sessions." Clinicians preferred the co-facilitation model and noted delineated responsibilities made the manual easy to implement. Suggestions for improving the adapted program were also solicited through use of open ended questions. In response to, "what are your suggestions for improving *MD-Smart Choices*," all five informants indicated that they made at least minor modifications to the content (e.g., omitting one activity) in an effort to complete sessions in the allotted 45–50 min.

Therefore, refinement of the curriculum to decrease the amount of time required for each session was the primary recommendation to improve the program.

Discussion

Youth problem gambling has become a serious public health issue as a result of increasing participation in such activities by individuals younger than 17 (Messerlian et al. 2005; Richard and Derevensky 2017). Particularly concerning is the disproportionality of youth susceptibility, with African American males and urban youth being at greatest risk (Goicoechea et al. 2014; Lynch et al. 2004; Stinchfield 2000). While important attempts have been made to develop and implement prevention programs that increase student knowledge and skills to cope with potentially dangerous influences, there are notable limitations to the existing literature. Generally, most of the available prevention programs have not been replicated, lack generalizability to school settings, or have limited empirical support for implementation with diverse middle school youth. Indeed, the youth gambling prevention literature would benefit from new, innovative initiatives aimed at effectively increasing youth knowledge and demonstrating long-term efficacy.

The current study sought to address the former goal of validating the effectiveness of a new program, *MD-Smart Choices* and to assess perceptions of specific program elements, such as the manual and behavior system. Participants were five master's level school-based mental health clinicians and 73 students ranging in age from 11 to 18. The *MD-Smart Choices* prevention program was implemented in each classroom over the course of three sessions and all students included in the analyses completed brief assessments, prior to and a week following participation.

Pre–Post Assessment Findings

Assessment of student involvement in gambling showed that most students (approximately 70–75%) reported that they had never bet money during dice or card games. More students (approximately 50%) reported that they had bet money on games of skill, while a little less than half of students also reported that they had bet money on other types of games (e.g., bingo, fantasy football leagues). Results from the assessment also indicated that the majority of students (80–90%) were able to identify blackjack, betting money, poker, and lottery tickets as forms of gambling.

In terms of gambling related knowledge, comparison of the pre- and post-assessment indicated that students showed increased awareness of the nature of gambling and the risks of gambling addiction. The number of students correctly responding "true" to the statement that gambling may lead to addiction, even in young people, increased from approximately 60% at pre-test to approximately 80% following the prevention program. This increase in knowledge was also shown in the post-assessment increase in the number of students rating betting on games as an activity that could potentially lead to addiction.

Student understanding of difference between games of skill and luck also improved at post-assessment. The number of students endorsing that gambling relies on luck rather than skill also increased following the prevention program, with 50–60% of students demonstrating an understanding of this concept during post-test compared to approximately 35% of students at pre-test. Similar changes were seen in students' understanding of the lottery and the concept that playing special numbers does not increase the odds of winning the

lottery. Furthermore, increases in students' knowledge were supported by the decreased number of students rating blackjack and betting on sports teams as requiring skill at post-test when compared to pre-test.

Along with increasing student knowledge about gambling, this project aimed to improve student engagement in prevention activities and to better standardize the implementation of *MD-Smart Choices* to allow for improved generalization across sites. Feedback obtained from clinicians about the program indicated that students were very engaged in the curriculum and that utilization of the positive behavior management system helped improve participation. Clinicians implementing the *MD-Smart Choices* curriculum reported that the MD-*Smart Choices* behavior plan helped to clarify expectations and increased student on-task behavior. In terms of the manual that was developed to improve the consistent implementation of the *MD-Smart Choices* program, clinicians reported that it was very easy to follow. Use of bold print, italics, arrows, and colors for differentiation between facilitator roles helped clinicians to seamlessly transition between lead speaker and support responsibilities (e.g., managing behavior plan, passing out papers).

One important challenge of implementing the program was the amount of time required for each session. Clinicians noted that high student engagement in the activities and discussions extended time spent on concept areas, resulting in longer sessions (i.e., 60 or more minutes). Although student engagement was a primary goal of the adapted version, ensuring program feasibility for future implementation in school settings takes precedence.

Limitations

As with any study, there are noteworthy limitations. First, *MD-Smart Choices* was a pilot program implemented in only five classrooms. The participants represent a sample of convenience as they were not randomly selected to participate. Coupled together, these findings cannot be generalized to settings outside of the current sample. Second, as with all paper and pencil measures, students' *report* of their behavior, rather than their *actual* behavior, was captured. Only one brief self-report measure was used to assess student engagement, knowledge, and attitudes as it relates to youth gambling. Such tools are susceptible to bias, lying, and misinterpretation which can result in skewed or inaccurate data. Furthermore, the assessment tool was informed by the literature but developed for the purposes of this study. The tool utilized lacks psychometric validity, not unlike other published works (Ladouceur et al. 2013; Keen et al. 2017), which decreases the perceived impact of findings. Third, fidelity checklists were not used to ensure adherence to the prescribed curriculum across classrooms. Program dosage and participant exposure to specific content areas likely varied between schools and facilitator dyads, as a result.

Conclusions and Future Directions

The *MD-Smart Choices* program was successfully implemented in five schools across Baltimore City during the 2014–2015 school year. Participants evidenced increased knowledge of important concepts at the conclusion of program and clinicians provided overwhelming positive reviews about the various manual elements. All in all, the *MD-Smart Choices* program demonstrates significant potential as an effective youth gambling prevention program. The program may s increase its success once noted challenges and limitations of the current study are addressed. The Maryland Center of Excellence on Problem Gambling in

collaboration with the Center for School Mental Health intends to address limitations and program feedback to continue to improve the *MD-Smart Choices* program and its readiness for future dissemination.

The Centers will refine the content to decrease the amount of time required for program implementation to 45–50 min. This may be achieved through re-evaluating the content to ensure that only essential information is presented. Additionally, the research team may consider making non-essential activities "optional." Modification of the pre–post assessment and development of fidelity checklists will also be contemplated.

Pre–post analyses indicated improvements in knowledge about gambling and student vulnerability to gambling addiction. However, a small percentage of students continued to endorse incorrect responses or expressed uncertainty (i.e., "don't know") related to key aspects of gambling and problematic gambling at post-assessment. After reviewing the questions, there were several issues that may have affected student responses. Students may have been confused by question format, for example: "nothing can increase your chances of winning." Sentences beginning with negatives are generally difficult for youth and should be avoided in future versions of the assessment tool. Second, some questions were intentionally ambiguous but may have been difficult for some participants, for example: "A good video game player will also be good at gambling." Changing this question to read, "A good video game player will *always* be good at gambling" is more definitive and assesses the same concept. Generally, future versions of the knowledge assessment should consider increasing clarity and specificity of the questions.

Ensuring implementation of program elements, like the pre–post assessment, through employment of fidelity checklists would benefit long-term goals of the investigating team, as well. This directly addresses a limitation of the current study and will support standardization of the curriculum in future studies and replications.

Another recommendation for future evaluations of *MD-Smart Choices*, as well as other prevention programs, is to solicit student and teacher perceptions about feasibility, social validity, and learning gains. As the literature remains undecided about core content and methods integral to the success of youth gambling prevention programs, future efforts may be significantly informed by participants (i.e., students) and collaborating agencies (e.g., teachers).

Finally, the state of the literature necessitates completion of replication studies and randomized control trials across diverse populations and settings. The *MD-Smart Choices* program will undergo a final round of revisions during the summer of 2015 and be piloted in at least eight Baltimore City Schools during the 2015–2016 school year. Specific goals for refining the program include distilling content to essential concepts, adapting the assessment for clarity and to include teacher/student evaluation of the program, and utilization of fidelity checklists. Beyond these aims, the Maryland Center of Excellence on Problem Gambling and the Center for School Mental Health plan to disseminate *MD-Smart Choices* statewide and assess the impact of this prevention program across Maryland schools in randomized control trials. The current study extends the literature in its introduction of new, interactive gambling prevention program for urban, minority youth and this team of investigators aspires to work towards making the *MD-Smart Choices Gambling Prevention Program* an evidence-based program.

Acknowledgements MD-Smart Choices is funded by the Maryland Center of Excellence on Problem Gambling supported by the Maryland Department of Health and Mental Hygiene/Behavioral Health Administration. Thanks to faculty and staff at the Maryland Center of Excellence on Problem Gambling and Center for School Mental Health for partnering to support the MD-Smart Choices program. Developers and coordinators of MD-Smart Choices are also deeply appreciative of the school mental health program (SMHP)

clinicians and partnering schools in Baltimore City for continued implementation of and commitment to this critical gambling prevention effort.

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