NC STACKED DECK

2020

A REPORT ON THE NC STACKED DECK PROGRAM TO PREVENT GAMBLING AMONG YOUTH

EXECUTIVE SUMMARY

- Thirty-nine grants were awarded by the NC Gambling Program to colleges, schools, community organizations and a facility to implement the Stacked Deck Curriculum, an evidence-based gambling intervention for youth, in SFY 2020

- Twelve high schools, six middle schools, one mixed elementary and middle school, and one detention facility in 20 locations had data available for the Stacked Deck analysis

- 2,143 children and youth had one or both of pre- and post-tests data entered in the Stacked Deck online files
    - 983 had data on pre-tests only
    - 264 had data on post-tests only
    - 896 had both pre- and post-test data

- Analysis for this report is restricted to the sample of middle and high school students who took the Stacked Deck Curriculum and who had both pre- and post-test data

- Of the matched sample who had data on gender, 56.6% were females; 43.4 percent were males.

- Analysis yielded the following findings:

    - NC youth gamble more than North Carolina adults
        - 25 percent of middle and high school students gambled at least once a month before the intervention; 18.8 percent gambled monthly after the intervention
        - 14.8 percent of middle and high school students gambled at least once a week before the intervention
        - the 2018 North Carolina Behavioral Risk Factor and Surveillance Survey (NC BRFSS) reported the prevalence estimates for the general population of North Carolina at 6.1 percent for monthly gambling and 5.9 percent for weekly gambling.

- o The Stacked Deck program led to changes in attitude towards gambling
  - 73.4 percent thought that the benefits from gambling outweighed its harm prior to intervention
  - the percentage who though that the benefits from gambling outweighed its harm increased to 77.4% after intervention

- o Knowledge and beliefs about gambling improved
  - Knowledge scores significantly increased from a mean of 5.8 before intervention to a mean of 7.6 after intervention
  - Belief scores significantly increased from a mean of 5.7 before intervention to a mean of 7.4 after intervention

- o Decision-making and problem-solving skills improved
  - the percentage who analyzed their choices and weighed consequences most times or almost every time before making decisions increased from 30.8 percent before the intervention to 37.6 percent
  - the percentage who rarely or only sometimes weighed their decision decreased from 50.5 percent before the intervention to 44.8 percent after the intervention.
  - the percentage who thought they made the right decision most times or almost every time increased from 31.9 percent before the intervention to 35.8 percent after the intervention
  - the percentage who thought they made the right decision rarely or only sometimes decreased from 44.4 before the intervention to 40.3 percent after the intervention

- o The Stacked Deck intervention program led to reductions in gambling activities
  - the percentage who gambled at least once a month went down from 25 percent before intervention went down to 18.8 percent after intervention
  - the percentage who gambled at least once a week went down from 14.8 percent before intervention to 10.5 percent after the intervention
  - problem gambling, or gambling associated with serious problems such as stress, anxiety, arguments with friends or family, worries about money, health, and the law as well as problems at school or work went down from 10.5 percent before the intervention to 8.8 percent after the intervention
  - problem gambling, or gambling associated with serious problems such as stress, anxiety, relationships, functioning in school or at work, worries about money, health, and the law, went down from 10.5 percent before the intervention to 8.8 percent after the intervention

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Introduction

Stacked Deck is the only evidence-based program that has been found to be effective in preventing and reducing the risk of problem gambling among teens and young adults. Offered in five to six sessions that extend from 35-45 minutes each, the program is aimed at changing gambling-related attitudes, knowledge, beliefs, and practices. It also seeks to improve decision-making and problem-solving. The Stacked Deck Curriculum is heavily interactive, including activities such as role-playing. Participants have designed posters and produced videos with prevention gambling messages. In addition, the curriculum includes take-home "family pages" to engage parents and other family members in the program. Participating students are tested on the curriculum before and after the intervention.

The State has been implementing the Stacked Deck (SD) through the North Carolina Problem Gambling Program (NCPG) since State Fiscal Year (SFY) 2011. More than 20,000 teens and youth have taken the SD curriculum since then. Outcomes have been consistently positive. NCPGP awarded 39 grants to colleges, schools, community organizations and a detention facility to implement the SD curriculum in SFY 2020. Twelve high schools, six middle schools, one school that had a mix of elementary and middle school students, ten Boys and Girls Club, a teen center, and a detention facility administered the intervention curriculum in the current fiscal year and had data entered on either one or both of the tests. Of 2,143 children, youth, and young adults for whom data were available, 983 completed only the pre-test, 264 completed the post-test only, while 896 completed both tests.

SFY 2020 Analysis and Results

Analysis was conducted on participants who had data on both tests to determine the impact of the intervention on gambling variables (attitude towards gambling, knowledge, beliefs, decision-making and problem solving, and gambling behaviors). Of the matched sample, 522 were high school students; 255 were middle-school students; 205 were in Boys and Girls Club and the Teen Center; 20 were from a detention facility; 19 were from a mixed school of elementary and middle school students. Of 893 participants who had data on gender, 56.6 percent identified as female while 43.4 identified as male.

Results of the matched-pair analysis are shown below for attitudes, knowledge, beliefs, decision-making and problem-solving, and gambling behaviors.

Attitude towards Gambling Became More Negative after Intervention

Participants were asked about the benefit or harm that gambling has for society. The response options were used to construct a five-point a gambling attitude score with the response "benefits far outweigh harm" rated as 1, "benefits somewhat outweigh harm" as 2, "benefits are about equal to harm" as 3, "harm somewhat outweighs benefits" as 4, and "harm far outweighs benefits" as 5.

The five-point scale was collapsed into a three-point scale by combining "benefits far outweighs the harm" with "benefits somewhat outweighs the harm" into one category and "harm somewhat outweighs benefits" with "harm far outweighs benefits" into another category. The number (n = 610) of respondents for the item on attitudes is much smaller than the matched sample (n = 896) as some schools had modified their question on attitudes towards gambling. Responses to the modified item on attitude were not included in the analysis. Figure 1 shows changes in attitudes before and after the Stacked Deck Curriculum, the intervention. More participants believed that gambling had negative consequences for society after taking the curriculum. Close to three-fourths (73.4%) actually had negative attitudes towards gambling prior to the intervention; the percentage increased to about 77 percent (77.4%) after intervention. The percentage who had positive attitudes towards gambling (benefits outweigh harm) increased from about 9 percent (9.2%) before intervention to about 5 percent (4.8%) after intervention.

Figure 1. Changes in Attitudes towards Gambling (N = 610)
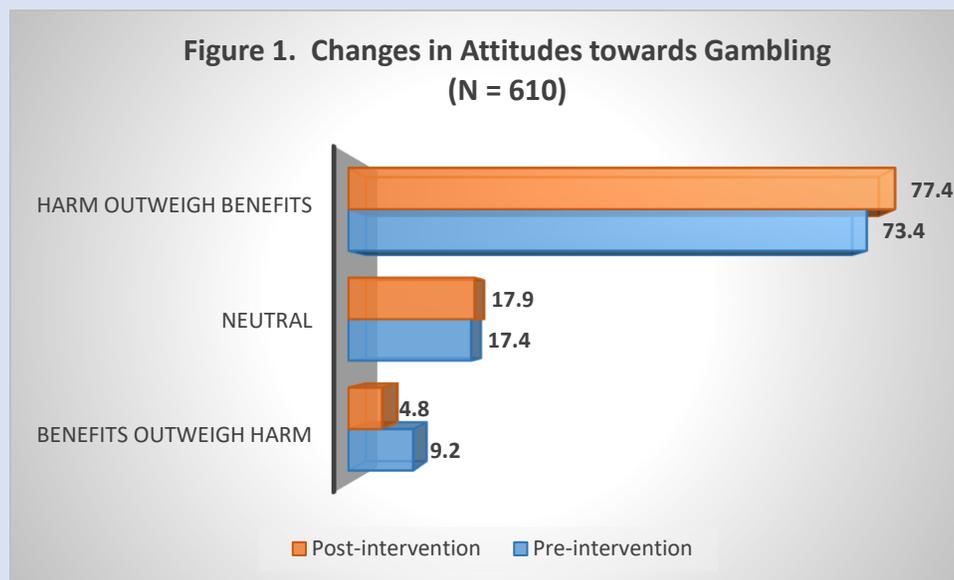
A paired t-test analysis was conducted to determine whether the Stacked Deck intervention resulted in a significant change in attitude. The attitude score increased from 4.1 before intervention to 4.28 after intervention. The change in attitude was highly significant ($t = -4.618$; $df = 609$; 2-tailed significance = .000).

Participants Became More Knowledgeable About Gambling

With their participation in the Stacked Deck Curriculum, children and youth increased their knowledge about gambling. They learned that gambling can be addictive, that hitting the jackpot does not always make the winner happier, and that teenagers and youth in their 20's have the highest rates of problem gambling.

Figure 2 and Table 2 show the extent of the changes in the gambling knowledge of participants for each of the ten items that make up the knowledge score. The largest change occurred in the item related to the "age groups with the highest problem gambling rate," while the smallest occurred in the item "gambling can be addictive. Most participants (85.2%) knew about the addictive nature of gambling even before the intervention; more than 96 percent (96.5%) knew about its addictive nature after the intervention.
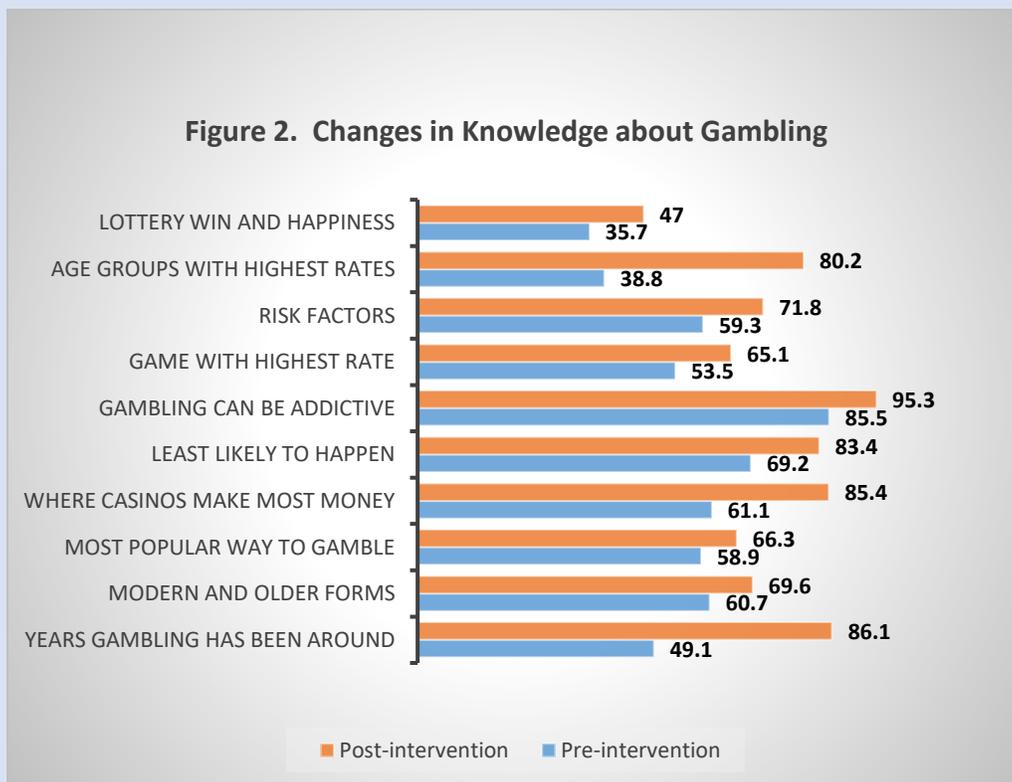
Figure 2. Changes in Knowledge about Gambling

Item	Post-intervention	Pre-intervention
LOTTERY WIN AND HAPPINESS	47	35.7
AGE GROUPS WITH HIGHEST RATES	80.2	38.8
RISK FACTORS	71.8	59.3
GAME WITH HIGHEST RATE	65.1	53.5
GAMBLING CAN BE ADDICTIVE	95.3	85.5
LEAST LIKELY TO HAPPEN	83.4	69.2
WHERE CASINOS MAKE MOST MONEY	85.4	61.1
MOST POPULAR WAY TO GAMBLE	66.3	58.9
MODERN AND OLDER FORMS	69.6	60.7
YEARS GAMBLING HAS BEEN AROUND	86.1	49.1

Table 2. Changes in Knowledge about Problem Gambling

Knowledge	N	Pre-intervention %	Post-intervention %	% change
Years gambling has been around	886	49.1	86.1	73.56
Modern gambling and older forms of gambling	886	60.7	69.6	14.66
Most popular way to gamble	880	58.9	66.3	12.56
Where casinos make the most money	882	61.1	85.4	39.77
Least likely to happen to the average person	881	69.2	83.4	20.52
Gambling can be addictive	878	85.5	95.3	13.26
Games with highest rates of problem gambling	853	53.5	65.1	21.68
Risk factors for problem gambling	852	59.3	71.8	21.08
Age groups with highest problem gambling rates	883	38.8	80.2	106.70
Lottery win and happiness	883	35.7	47.0	31.65

Each correct answer on the ten items of the Knowledge Section of the curriculum was scored as "1" and added together to construct a total knowledge score ranging from 0 to 10. Pre-intervention and post-intervention scores were compared using paired t-test analysis. Mean knowledge scores increased from a mean of 5.8 before intervention to a mean of 7.6 after intervention ($t = -23.401$; $df = 764$; 2-tailed significance = .000). The change was highly significant.

Participants Became More Resistant to Gambling Fallacies

Many people who gamble tend to hold false beliefs (or gambling fallacies) that certain values, attitudes, and behaviors increase the probability of winning. For instance, there are individuals who believe that small convenience stores in rural areas that have not previously sold a winning ticket in a lottery jackpot have a greater likelihood of winning or that a certain combination of numbers is more likely to win than others. The Stacked Deck Curriculum includes a section on beliefs that teach participants about the likelihood of winning (all other things being equal) based on probability theory.

After taking the Stacked Deck Curriculum, participants became more resistant to gambling fallacies. Figure 3 depicts the extent to which beliefs changed after intervention. All of the changes were in the expected direction. For most of the items, more than half held beliefs that were empirically-based before the intervention. More than three-quarters (75.5%) knew the probability of getting one's name out of other names from a hat. About 73 percent (72.9%) knew the odds of having a "head" or a "tail" come up when flipping a coin. Less than a quarter (22.2%) knew the "correct" response to the item that asked about the number of times one has gone to the casino if one has come out ahead 75 percent of the time prior to the intervention. Only about 29 percent (29.2%) knew the "correct" response after the intervention.

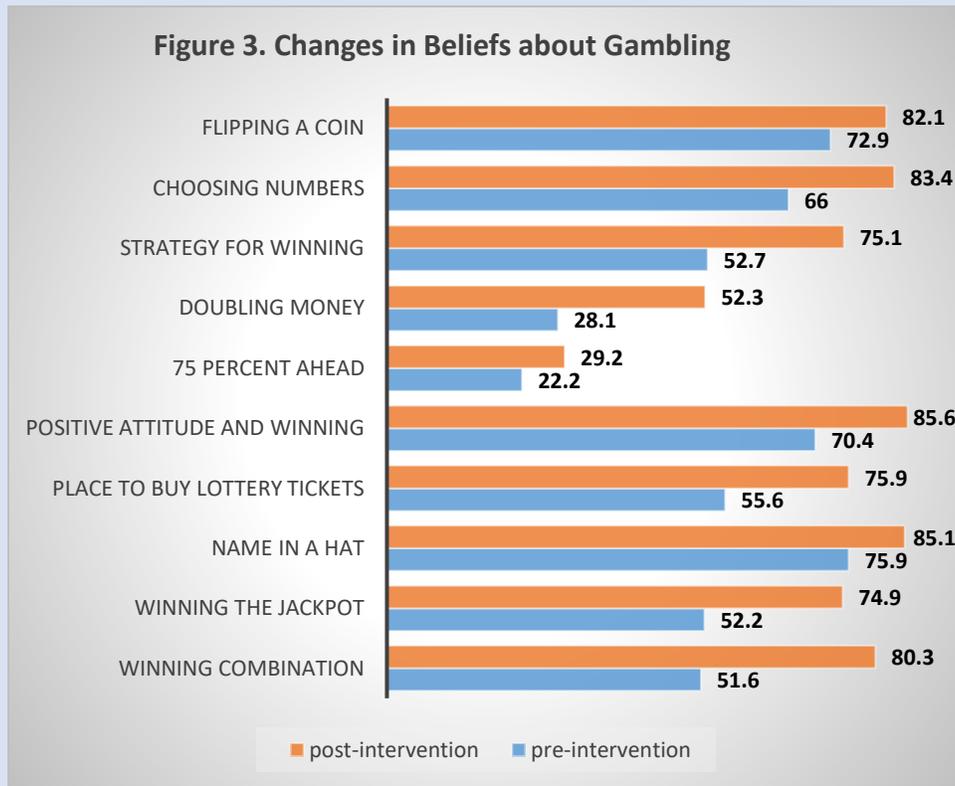Figure 3. Changes in Beliefs about Gambling

Table 4 shows the percent changes on each of the belief items between pre- and post-intervention. The largest percent change (86.12%) occurred in the item that asked about the strategy for doubling one's money which had one of the two the items that had the lowest percentage (28.1%) of "correct" answers before the intervention.

The smallest percent changes are seen in the item (1) "If your name and nine others were put into a hat and one was drawn for a prize, how likely is it that your name would be chosen?" and (2) the

item that asked about the likelihood of getting a head on the next flip after correctly guessing heads on the last five flips.

Table 4. Changes in Beliefs about Gambling

Belief	N	Pre-intervention %	Post-intervention %	% change
Winning combination	876	51.6	80.3	55.62
Winning the jackpot	874	52.2	74.9	43.49
Name in a hat	874	75.9	85.1	12.12
Place to buy lottery tickets	868	55.6	75.9	36.51
Positive attitude and winning	883	70.4	85.6	21.59
75 percent ahead	871	22.2	29.2	31.53
Doubling money	854	28.1	52.3	86.12
Strategy for winning	754	52.7	75.1	42.50
Choosing numbers	864	66.0	83.4	26.36
Flipping a coin	857	72.9	82.1	12.62

Each correct answer on the ten items of the Beliefs Section of the curriculum was scored as "1". Belief items were added together to construct a total belief score ranging from 0 to 10. Pre-test and post-test scores were then compared using paired t-test analysis. Total belief scores increased from a mean of 5.7 before the intervention to a mean of 7.4 after the intervention ($t = -19.971$; df $= 707$; 2-tailed significance $= .000$). The increase was highly significant statistically.

Decision-Making and Problem-Solving Skills Improved

The Stacked Deck Curriculum includes a section designed to improve decision-making and problem-solving skills through a discussion of risk-taking behavior in general and risk-taking behavior with specific reference to gambling, barriers to good decision-making, and ways to overcome them. Four of the items in the tests completed before and after intervention address these skills. The first of these items asks "How often did you analyze your choices and weigh the pros, cons, and odds of successes before making your decisions?" The second asks "How often did your decision prove to be the right one?" The last two questions ask "How would you rate yourself as a decision-maker and problem-solver" and "How would your friends rate you as a decision-maker and problem-solver?" The responses consist of a five-point scale (rarely, sometimes, about half the time, most times, and almost every time) which were converted into numeric scores ranging from 1 (rarely) to 5 (almost every time) for this report. The five-point scale was further collapsed to construct a three-point scale combining "rarely" and "sometimes" as 1, "about half the time" as "2", and "most times" and "almost every time" as "3".

Figure 4 shows the changes in the responses that participants in the matched sample made to the item about the frequency with which they analyzed their choices and weighed the pros, cons, and odds of success before making their decision. The percentage who analyzed their choices and weighed consequences most times or almost every time before making decisions increased from around 31 percent (30.8%) before the intervention to around 38 percent (37.6%) after intervention while the percentage of those who rarely or only sometimes weighed their decision decreased from around 51 percent (50.5%) before the intervention to around 45 percent (44.8%) after the intervention. Chi-square analysis indicated that at least one of the changes was statistically significant (Chi-square = 95.739, df = 4, significance level = .000).

Figure 4. Weighing Decisions (N = 858)

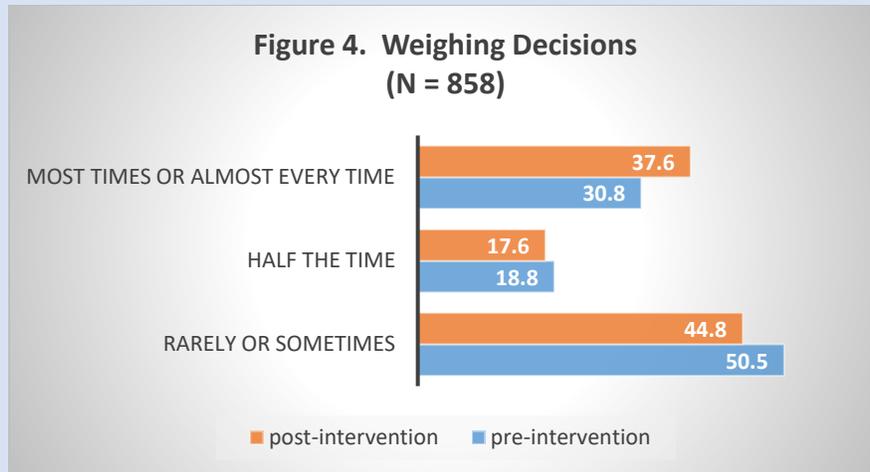|	post-intervention	pre-intervention
MOST TIMES OR ALMOST EVERY TIME	37.6	30.8
HALF THE TIME	17.6	18.8
RARELY OR SOMETIMES	44.8	50.5

Figure 5 shows the responses participants in the matched sample made to the item that asked how often their decision proved to be the right one. The percentage who thought they made the right decision most times or almost every time increased from around 31 (31.9%) percent to around 36 percent (35.8%) after the intervention while the percentage who thought they made the right decision rarely or only sometimes decreased from around 44 percent (44.4%) to around 40 percent (40.3%). Again, chi-square analysis indicated that at least one of the changes was statistically significant (Chi-square = 115.304, df = 4, significance level = .000).

Figure 5. Making the Right Decisions (N = 854)

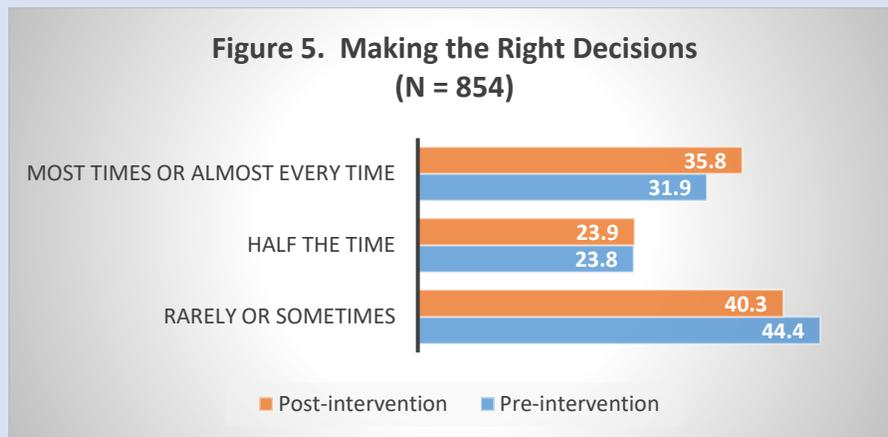|	Post-intervention	Pre-intervention
MOST TIMES OR ALMOST EVERY TIME	35.8	31.9
HALF THE TIME	23.9	23.8
RARELY OR SOMETIMES	40.3	44.4

Figure 6 shows changes in how participants perceived themselves as decision makers and problem solvers before and after the intervention. The percentage who saw themselves as "good or very good" decision makers increased slightly from about 46 percent (45.9%) to about 48 percent (47.6%) after the intervention. The percentage of participants who saw themselves as "fair" or "poor" decision makers or problem solvers decreased from 14 (14.4%) percent before the intervention to about 11 percent (11.3%) after the intervention. At least one of the changes was statistically significant based on chi-square analysis (chi-square = 161.107; df = 4; significance level = .000).

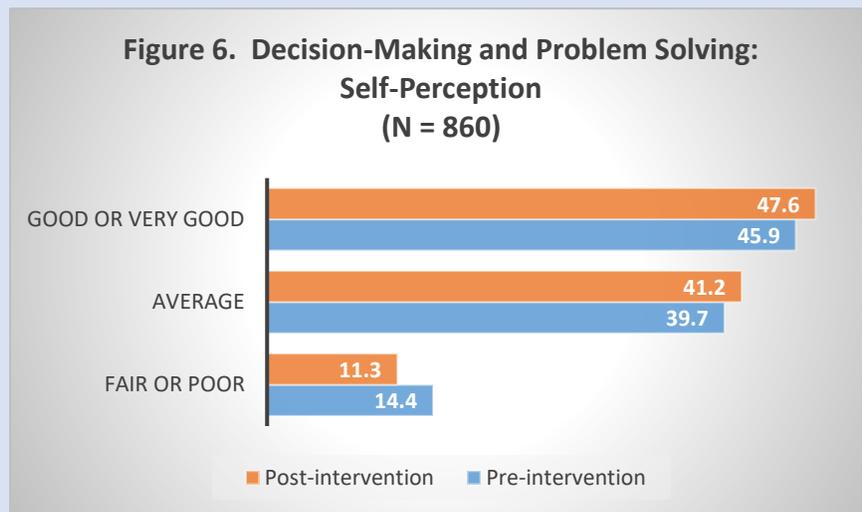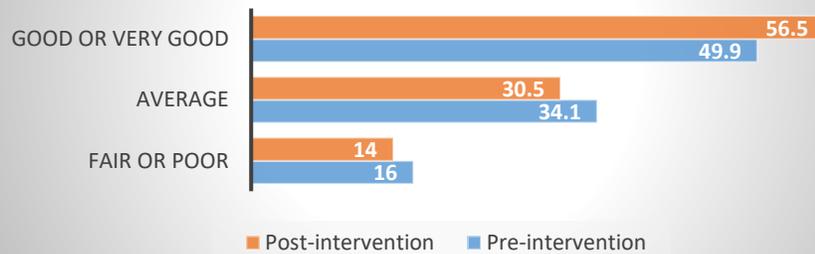**Figure 6. Decision-Making and Problem Solving: Self-Perception (N = 860)**

Figure 7 shows changes in how participants thought their friends perceived them as decision makers and problem solvers. The percentage who thought their friends perceived them as "good or very good" decision makers and problem solvers increased from about 50 percent (49.9%) percent before the intervention to about 57 percent (56.5%) after the intervention. At least one of the changes was statistically significant based on chi-square analysis (chi-square = 126.926; df = 4; significance level = .000). The percentage of participants who thought their friends perceived them as "fair or poor" decision makers and problem solvers decreased from 16 percent before the intervention to 14 percent after the intervention.

**Figure 7. Decision Making and Problem Solving:
Friends' Perceptions
(858)**

	Post-intervention	Pre-intervention
GOOD OR VERY GOOD	56.5	49.9
AVERAGE	30.5	34.1
FAIR OR POOR	14	16

■ Post-intervention   ■ Pre-intervention

Gambling Behaviors Decreased

Curriculum participants were asked about the frequency with which they spent money on a list of ten popular gambling activities ranging from games of skill to internet gambling (enumerated in Table 5 below) in the three months preceding the pre- and post-tests on specified games. The response options were (a) "two to seven times a week", (b) "once a week", (c) "2 to 3 times a month", (d) "once a month or less', and (e) "did not gamble on the activity".

The percentages who engaged in any form of gambling decreased modestly in all of the games enumerated in the pre- and post-tests as shown in Table 5.

The most popular games before and the intervention were betting on games of skills such as darts, pool, golf, or video games, betting on sports, playing cards or dice for money, and bingo.

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Table 5. Gambling Games Played Before and After Intervention

Games	N	Pre-intervention %	Post-intervention %	% Change
Games of skill (pool, golf, darts, video)	740	22.6	19.7	-12.83
Playing cards or dice for money	791	17.4	14.2	-18.39
Sports betting	776	19.7	14.8	-24.87
Lottery tickets	774	16.4	11.6	-29.27
Instant win tickets	770	10.5	9.4	-10.48
Bingo	774	17.3	13.0	-24.86
Slot machines	770	8.8	5.6	-36.36
Horse or dog racing	785	7.6	7.3	-3.95
Internet gambling	779	10.3	7.8	-24.27
Other	588	9.9	7.3	-26.26

Five gambling behavior variables were constructed based on the frequency with which each game specified in the pre- and post-tests were played in the three months preceding the tests. These are any gambling, gambling more than once a month and gambling at least once weekly. The fourth measure is the sum of each specified gambling game with a score of "1" indicating that the participant gambled in a game at least once in the three months preceding the test.

As shown in Table 6 below shows the frequencies for gambling before and after the intervention. All three gambling behavior measures decreased after intervention, with the changes being statistically significant, based on the results of chi-square analysis.

Table 6. Frequency of Gambling Behaviors Three Months Preceding Pre- or Post-Test
(N = 831)

Gambling Behavior	Pre-intervention %	Post-intervention %	% Change	Chi-square Value	Significance Level
Any gambling	45.0	39.1		207.159	.000
More than once a month	25.0	18.8		136.414	.000
At least once a week	14.8	10.5		132.842	.000

The mean number of games played in the past three months decreased significantly from 1.39 to 1.14 (t -3.204; df = 818; 2-tailed significance = .001).

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Problem Gambling Decreased

The Stacked Deck tests ask respondents whether they experienced serious problems such as stress or anxiety, arguments with friends or family, worries about money, health, and the law, or problems about at school or work as an indicator of problem gambling. The percentage who reported serious problems consequent to gambling was 10.5 percent before the intervention, a figure which went down to 8.8 percent post intervention. The decrease was statistically significant (chi-square = 98.485; df = 1; significance level = .000).

The frequency of gambling may also be considered an indicator of problem gambling. People who consistently and regularly gamble at least once a week may be at risk for problem gambling. However, only 36.9 percent out of 129 who gambled weekly reported serious problems associated with their gambling prior to the intervention. Among 90 who were gambling weekly post-intervention, 35.6 percent considered their gambling to have serious consequences.

Conclusions

Gambling is undeniably a problem among North Carolina youth. The extent of gambling among the young is much higher than adult North Carolinians. A quarter of SD curriculum participants gambled monthly; about 15 percent played for money weekly prior to their participation in the Stacked Deck Program. While the percentage for monthly gambling decreased to 18.8 percent and the percentage for weekly gambling went down to 10.5 percent after the intervention, they were still higher than the prevalence estimates of 6.1 percent for monthly gambling and 5.9 percent for weekly gambling for adults based on the 2018 results of the North Carolina Behavioral Risk Factor and Surveillance Survey (https://schs.dph.ncdhhs.gov/data/brfss/2018/nc/all/play.html).

There is an evidence-based program called Stacked Deck to prevent gambling among youth that North Carolina has been implementing since 2011. Outcomes have consistently been positive. Among program participants, attitudes towards gambling became more negative, knowledge about gambling increased, beliefs about the chances of winning became more grounded on probability theory, and gambling activities declined.

The Stacked Deck curriculum can be implemented easily. It comes with a manual and a video that guides teachers through didactic lessons and interactive group activities that students find entertaining. The cost of implementing it is relatively minimal.

Stacked Deck is clearly a program that works in preventing problem gambling and needs to be expanded to more schools throughout the state. Because of the high prevalence of gambling among youth, it needs to be supplemented with information about resources available to students whose gambling behavior needs more specialized treatment.

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