NC STACKED DECK

2019

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

EXECUTIVE SUMMARY

- Data for the 2019 Stacked Deck pre- and post- tests were collected through two online data collection surveys

- This report is based on the original data collection survey

- Eight community student groups, two middle schools, seven high schools, and one school with a mix of middle and high school students participated in the program in State Fiscal Year 2019

- Analysis conducted on the matched sample of middle school and high school students yielded the following findings:

    o Gambling is a very serious problem among NC youth; the prevalence estimates for weekly gambling and problem gambling are much higher than those of North Carolina adults

    o the Stacked Deck program led to changes in attitude toward and in knowledge and beliefs about gambling

        - Attitude toward gambling became more negative
        - Knowledge about gambling increased
        - Beliefs about gambling became more grounded on the law of averages

    o Decision-making and problem-solving skills improved

    o The Stacked Deck program led to reductions in gambling activities

        - Participants in the program played fewer games after intervention
        - They played less often that they did
        - Problem gambling went down

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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 gambling prevention 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 Stacked Deck through the North Carolina Problem Gambling Program since State Fiscal Year 2011. Outcomes have been consistently positive. The State transitioned into another online data collection system in 2019 which resulted in some data being entered in the old system and some in the new system. Since the questions in the two systems were not identical to each other, separate analyses were conducted for each online system. This report is based on the original data collection system.
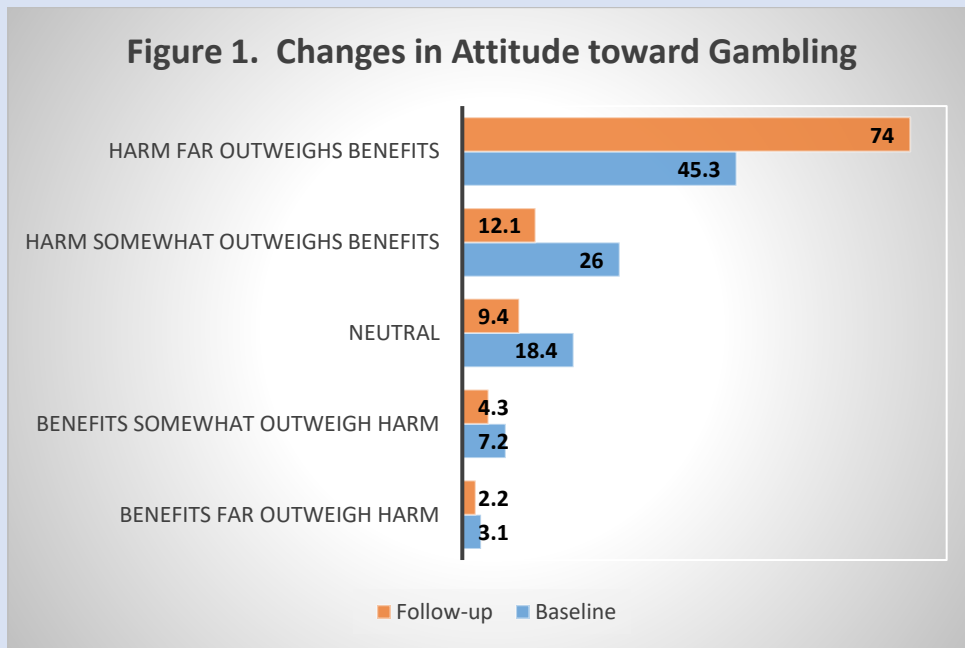
SFY 2019 Analysis and Results

Analysis was conducted on participants who had data on both tests to determine the impact of the intervention on gambling variables (attitude toward gambling, knowledge, beliefs, decision-making and problem solving, and gambling behaviors). The matched sample consisted of 226 middle and high school students. The number of males (n = 111; 49.1%) was about equal to the number of females (n = 115; 50.9%). Most participants were in middle school (n = 210; 92.9%).

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

Attitude toward 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 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.

Figure 1 shows changes in attitude after intervention. More participants believed that gambling had negative consequences after taking the Stacked Deck Curriculum, the intervention. The percentage of respondents who reported that harm from gambling far outweighed its benefits increased from 45.3 percent before intervention to 74 percent after intervention. At the same time, fewer thought that the benefits of gambling outweighed the harm it caused; the percentage who thought the benefits of gambling far outweighed its harm decreased from 3.1 percent before intervention to 2.2 percent after intervention; the percentage who thought its benefits somewhat outweighed its harm decreased from 7.2 percent to 4.3 percent.

Figure 1. Changes in Attitude toward Gambling

Category	Follow-up	Baseline
HARM FAR OUTWEIGHS BENEFITS	74	45.3
HARM SOMEWHAT OUTWEIGHS BENEFITS	12.1	26
NEUTRAL	9.4	18.4
BENEFITS SOMEWHAT OUTWEIGH HARM	4.3	7.2
BENEFITS FAR OUTWEIGH HARM	2.2	3.1

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 4.036 before intervention to 4.527 after intervention. The change in attitude was highly significant ($t = -5.594$; $df = 219$; 2-tailed significance = .000).

Participants Became More Knowledgeable About Gambling

With their participation in the Stacked Deck Curriculum, middle school and high school students 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 knew about the addictive nature of gambling even before the interventon (84.7% before intervention; 92.8% after intervention).
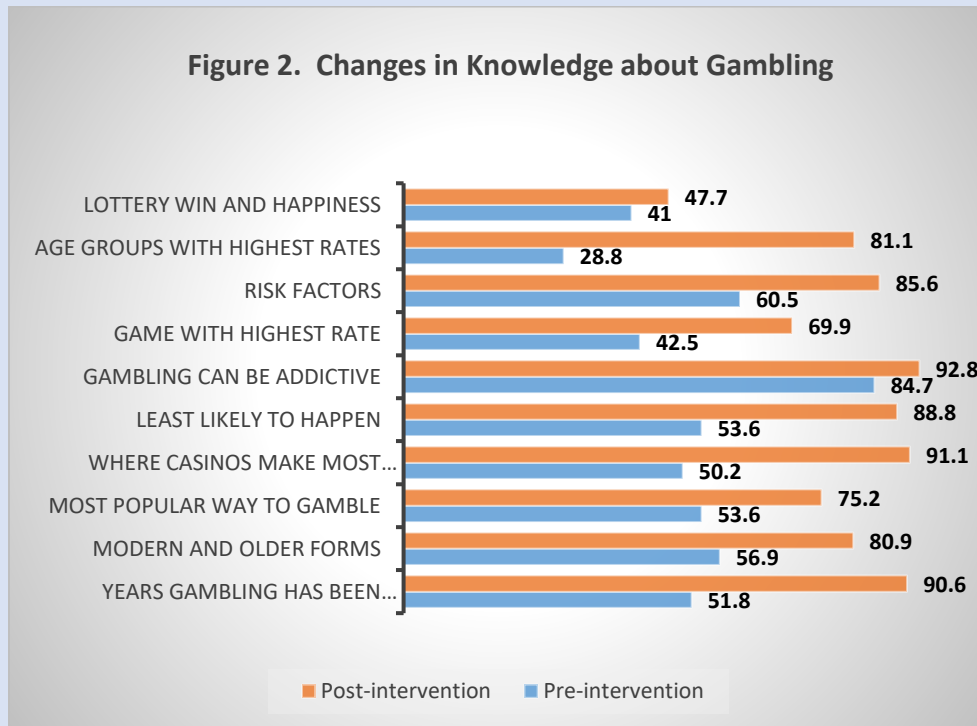

Figure 2. Changes in Knowledge about Gambling

Table 2. Changes in Knowledge about Problem Gambling

Knowledge	Pre-intervention %	Post-intervention %	% change
Years gambling has been around	51.8	90.6	42.83
Modern gambling and older forms of gambling	56.9	80.9	29.67
Most popular way to gamble	53.6	75.2	40.30
Where casinos make the most money	50.2	91.1	81.47
Least likely to happen to the average person	53.6	88.8	65.67
Gambling can be addictive	84.7	92.8	9.56
Games with highest rates of problem gambling	42.5	69.9	64.47
Risk factors for problem gambling	60.5	85.6	41.49
Age groups with highest problem gambling rates	28.8	81.1	181.6
Lottery win and happiness	41.0	47.7	43.30

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 belief score ranging from 0 to 10. Pre-intervention and post-intervention scores were compared using the paired t-test analysis. Mean knowledge scores increased from a mean of 5.26 before intervention to a mean of 8.16 after intervention (t = 15.581; df = 202; 2-tailed significance = .000). The change was highly significant.
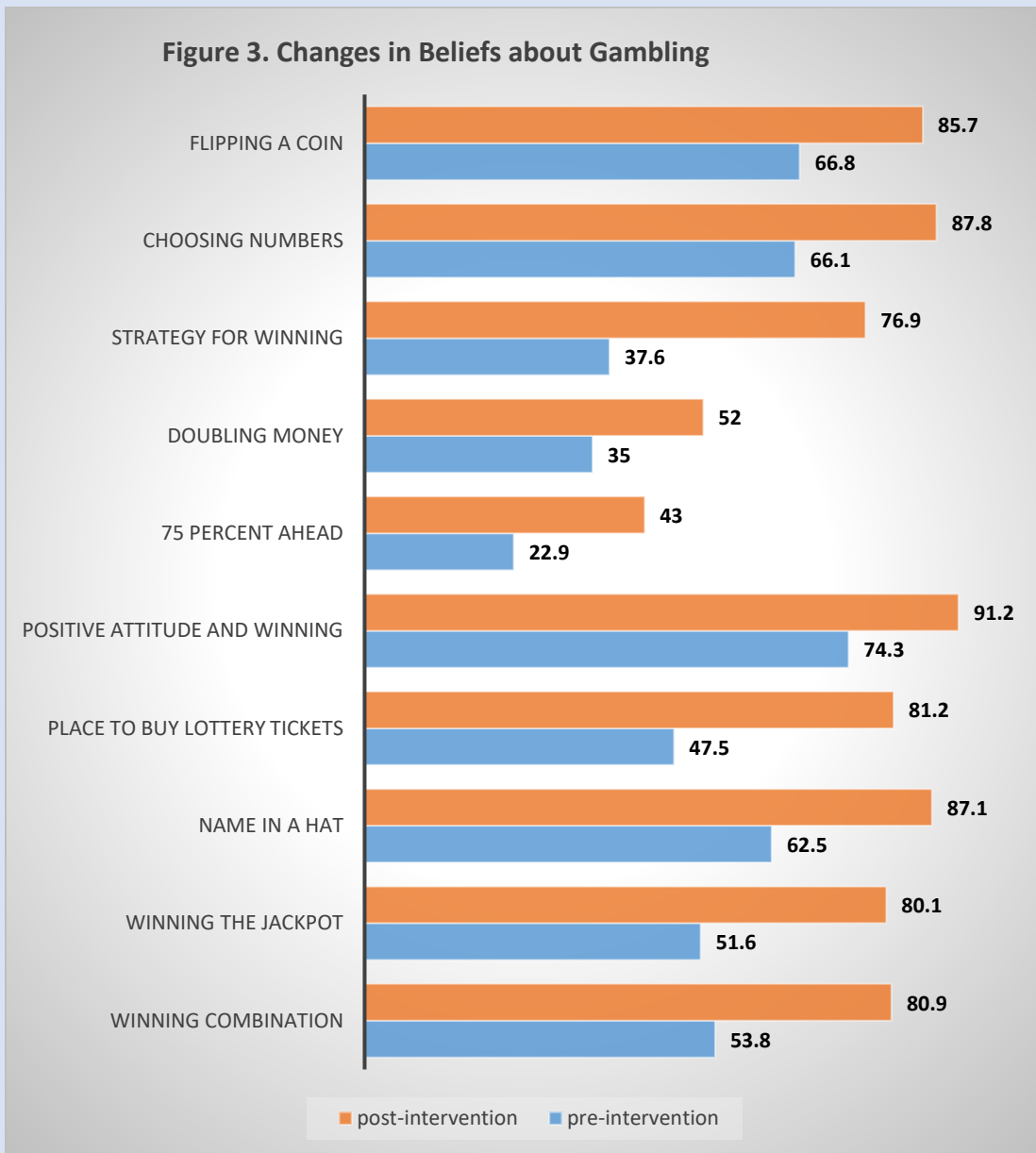
Participants Became More Resistant to Gambling Fallacies

Many people who gamble tend to hold beliefs 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.

With their participation in the Stacked Deck program, participants became more resistant to gambling fallacies. Each of the items that made up the belief scores showed changes that were all in the desired direction.

Figure 3 depicts the extent to which beliefs changed after intervention. All of the changes were in the positive direction.

Figure 3. Changes in Beliefs about Gambling

Belief Item	pre-intervention	post-intervention
FLIPPING A COIN	66.8	85.7
CHOOSING NUMBERS	66.1	87.8
STRATEGY FOR WINNING	37.6	76.9
DOUBLING MONEY	35	52
75 PERCENT AHEAD	22.9	43
POSITIVE ATTITUDE AND WINNING	74.3	91.2
PLACE TO BUY LOTTERY TICKETS	47.5	81.2
NAME IN A HAT	62.5	87.1
WINNING THE JACKPOT	51.6	80.1
WINNING COMBINATION	53.8	80.9

■ post-intervention   ■ pre-intervention

As shown in Table 4, the largest changes occurred in the items that asked about (1) the strategy for doubling one's money, (2) the number of times one has gone to the casino if one has come ahead 75 percent of the time, and (3) the best strategy for winning.

Table 4. Changes in Beliefs about Gambling

Belief	Pre-intervention %	Post-intervention %	% change
Winning combination	53.8	80.9	50.37
Winning the jackpot	51.6	80.1	55.23
Name in a hat	62.5	87.1	39.36
Place to buy lottery tickets	47.5	81.2	20.64
Positive attitude and winning	74.3	91.2	22.75
75 percent ahead	22.9	43.0	87.77
Doubling money	35.0	52.0	111.28
Strategy for winning	37.6	76.9	75.05
Choosing numbers	66.1	87.8	32.83
Flipping a coin	66.8	85.7	28.29

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 compared using the paired t-test analysis. Total belief scores increased from a mean of 5.22 before intervention to a mean of 7.73 after intervention ($t = -14.518$, $df = 202$; 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. Two items ask participants about the frequency with which they weighed pros and cons before they make a major decision and how often their decision proved to be the right one. The third asked how participants rated themselves while the fourth asked about how their friends rated them as decision-makers. The responses consisted of a five-point scale (rarely, sometimes, about half the time, most times, and almost every time) which was converted into scores ranging from 1 (rarely) to 5 (almost every time). 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 before making decisions increased from around 35 percent before the intervention to around 37 percent (37.1%) after intervention while the percentage of those who rarely or only sometimes weighed their decision decreased from around 42 percent (42.2%) before

the intervention to around 37 percent (37.2%) after the intervention. Chi-square analysis indicates that at least one of the changes was statistically significant (Chi-square = 32.176, n = 217, significance level = .000).
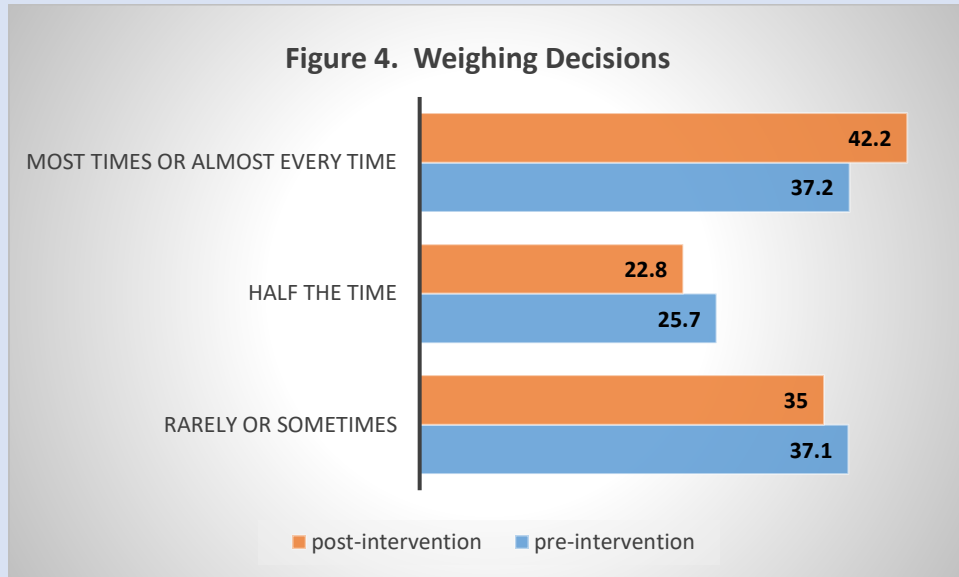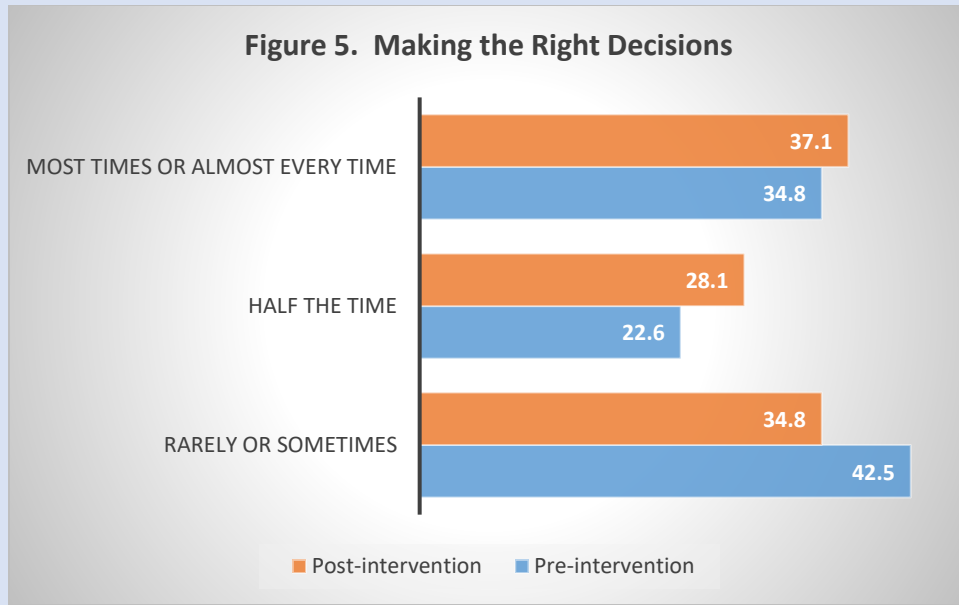

Figure 4. Weighing Decisions

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 about 35 percent (34.8%) before the intervention to about 37 percent (37.1%) after the intervention while the percentage who thought they made the right decision rarely or only sometimes decreased from around 43 percent (42.5%) to around 35 percent (34.8%). Again, chi-square analysis indicates that at least one of the changes was statistically significant (Chi-square = 25.163, n = 219, significance level = .000).

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Figure 5. Making the Right Decisions

	Post-intervention	Pre-intervention
MOST TIMES OR ALMOST EVERY TIME	37.1	34.8
HALF THE TIME	28.1	22.6
RARELY OR SOMETIMES	34.8	42.5

Two other items in the Decision-Making and Problem-Solving Section of the Stacked Deck Curriculum asked participants how they and their friends rated them on decision making and problem solving. Again, the responses consisted of a five-point scale (very good, good, average, fair, poor) which was also converted into scores ranging from 1 (poor) to 5 (very good). The five-point scale was further collapsed to construct a three-point scale combining "fair" and "poor" into 1, average as 2, and "good" and "very good" as 3.

Figure 6 shows changes in how participants perceived themselves as better decision makers and problem solvers after the intervention. Slightly more than a fifth (21.4%) of participants saw themselves as "fair" or "poor" decision makers or problem solvers before the intervention with the percentage decreasing to about 11 percent (10.7%) after the intervention. The percentage who saw themselves as "good or very good" decision makers increased from about 48 percent (47.8%) to about 63 percent (62.5%) after the intervention. At least one of the changes was statistically significant based on chi-square analysis (chi-square = 42.172; n = 224, significance level = .000).

Figure 6. Decision-Making and Problem Solving: Self-Perception

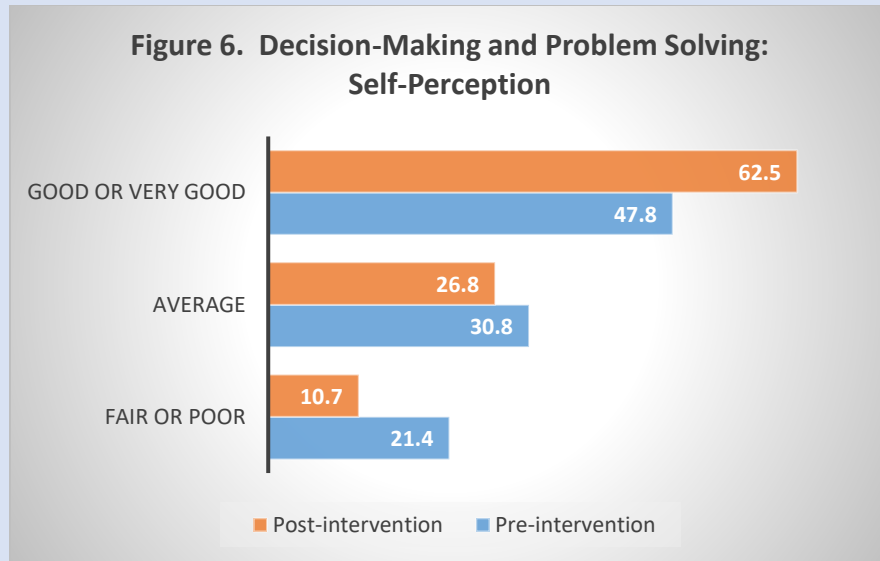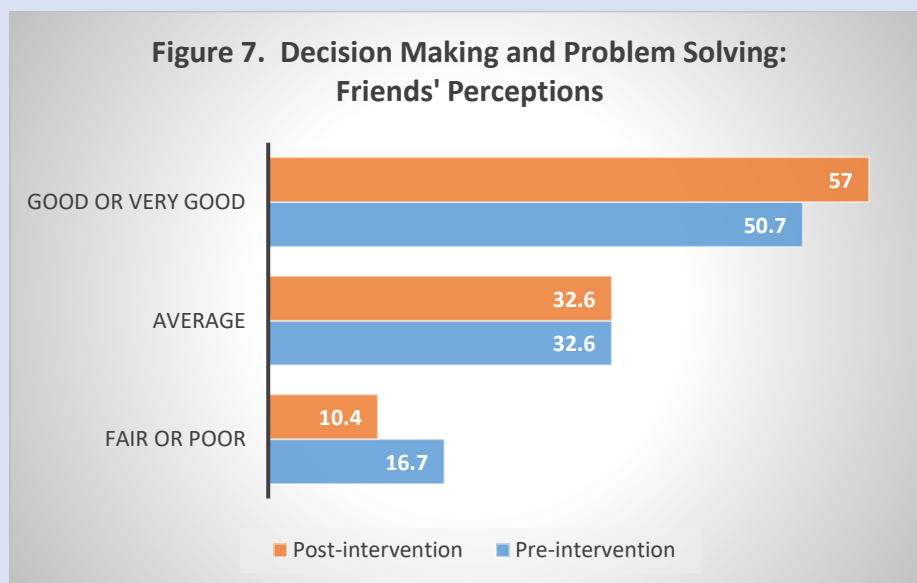|	Post-intervention	Pre-intervention
GOOD OR VERY GOOD	62.5	47.8
AVERAGE	26.8	30.8
FAIR OR POOR	10.7	21.4

Figure 7 shows changes in how participants thought their friends perceived them as decision makers and problem solvers. The changes mirror those seen in the self-perception item. The percentage of participants who thought their friends perceived them as "fair or poor" decision makers and problem solvers decreased from about 17 percent (16.7%) before the intervention to about 10 percent (10.4%) after the intervention. The percentage who thought their friends perceived them as "good or very good" decision makers and problem solvers increased from about 51 percent (50.7%) before the intervention to 57 percent after the intervention. At least one of the changes was statistically significant based on chi-square analysis (chi-square = 66.126, n = 221; significance level = .000).

Figure 7. Decision Making and Problem Solving: Friends' Perceptions

	Post-intervention	Pre-intervention
GOOD OR VERY GOOD	57	50.7
AVERAGE	32.6	32.6
FAIR OR POOR	10.4	16.7

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 of gambling at least once per month on each gambling activity decreased after the intervention as shown in Table 5.

The most popular games both before intervention were betting on sports (34.8%), betting on games of skill (33.9%), purchasing lottery tickets (30.2%), playing cards or dice for money (26.9%), buying instant-win tickets (26.9%), and bingo (26.4%).

The largest percentage changes occurred in playing slot machines with a percentage change of about 49 percent (49.14%).

Table 5. Gambling Games Played Before and After Intervention

Games	Pre-intervention %	Post-intervention %	% Change
Games of skill (pool, golf, darts, video games)	33.9	24.4	-28.02
Playing cards or dice for money	26.9	17.6	-34.57
Sports betting	34.8	20.4	-41.38
Lottery tickets	30.2	16.2	-41.36
Instant win tickets	26.9	16.6	-38.29
Bingo	26.4	16.4	-37.88
Slot machines	23.2	11.8	-49.14
Horse or dog racing	19.5	11.5	-41.03
Internet gambling	22.0	14.8	-32.73
Other	21.0	17.7	-15.71

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, more than half of the participants in the matched sample engaged in at least one gambling behavior. More than one out of three were gambling at least once per month and close to one out of three were gambling at least once a week. 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 = 223)

Gambling Behavior	Pre-intervention %	Post-intervention %	Chi-square Value	Significance Level
Any gambling	52.4	40.0	57.385	.000
More than once a month	37.3	25.3	61.371	.000
At least once a week	32.4	19.1	58.117	.000

The mean number of games played in the past three months decreased significantly from 2.61 to 1.63 (t -4.814; df = 222; 2-tailed significance = .000.).

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 at school or work as an indicator of problem gambling. The percentage who reported serious problems consequent to gambling was 11.7 percent before the intervention, a figure which went down to 8.1 percent post intervention. The decrease was statistically significant (chi-square = 36.631; n = 223; 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 32 percent of those who gambled weekly reported serious problems associated with their gambling prior to the intervention.

Conclusions

Gambling is undeniably a problem among North Carolina youth. Before intervention, close to 12 percent of middle school and high school students who participated in the Stacked Deck Program in SFY 2019 reported that their gambling led to serious psychological, financial, legal consequences and impaired their functioning at school and at work. More than half of participants (52.0%) reported engaging in at least one gambling activity in the three months preceding the pre-test. More than a third (37.3%) gambled at least once monthly while close to a third (32.4%) played for money weekly.

The extent of gambling among the young is much higher than adult North Carolinians. The NC Behavioral Risk Factor Surveillance System (BRFSS) survey conducted in 2018 found the prevalence estimates of weekly gambling among adults at 6.1 percent and monthly gambling at 6.1 percent (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. North Carolina has been implementing the program since 2011. Outcomes have consistently been positive. Attitudes toward gambling became more negative, knowledge about gambling increased, beliefs about the chances of winning became more grounded on probability theory, and gambling activities declined among students who participated in the program.

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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