

Alcohol and Your Developing Brain: PROGRAM EVALUATION

PROGRAM HISTORY AND DEVELOPMENT

Launched in 2003 by the **Foundation for Advancing Alcohol Responsibility (Responsibility.org)**, *Ask, Listen, Learn: Kids* and *Alcohol Don't Mix* was developed with an overarching goal in mind: to prevent underage drinking by encouraging parents to have conversations with their kids about alcohol. Since its inception, shaped by expert input, from the U.S. Department of Education, the American Academy of Family Physicians, and the Centers for Disease Control the program has taken on many forms. Initiatives have included television ad campaigns with Nickelodeon, in-school events with elected officials, partnerships with Olympic athlete role models like Apolo Ohno, Ashley Wagner, and Simone Biles, and distribution of resource material through Scholastic. The program has evolved to meet the current needs of three primary audiences: parents, educators, and kids ages 9-12.

After nearly a decade of successful and effective programming, it was time to innovate again. The landscape of education was changing; technology was becoming more present in the classroom, and middle school aged kids had grown up as digital natives. In order to continue to provide quality, creative, and relevant content, *Ask, Listen, Learn* set out to develop a fully digital suite of resources focused on alcohol and the developing brain.

Teacher experience and focus groups had demonstrated kids' fascination with how their brains and bodies work. With the importance of digital format in mind, staff and expert consultants narrowed the program's focus to the brain, what alcohol does to it, and how that affects behavior and health. All content went through a series of review with teachers, counselors, and students. Program content regarding alcohol's effect on the developing brain was reviewed by

the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and is consistent with currently available science. Each iteration incorporated suggestions on content, with a particular concentration on student engagement and ease of implementation for teachers.

The final product (*Alcohol and Your Developing Brain*) is a fully digital suite of content accessible online free of charge. It features seven vibrant animated videos, as well as lesson plans, resources for parents, games and activities, and more. All content is aligned to Common Core, Next Generation Science, and National Health Education Standards.

With the support of partners like the American School Counselor Association and the National Association of School Nurses, the new content was released in November 2016. Since that launch, *Ask, Listen, Learn* has built a community of over 10,000 educators and parents, and has distributed the program to 210,000 classrooms and reached millions of parents. Responsibility.org has a long-standing tradition of researching and evaluating their programs and initiatives-- from development through implementation. Independent evaluations in 2005, 2010, and 2014 led the program into each of its new and creative iterations. In 2017, a science-based assessment of the new curriculum was the natural next step.

Responsibility.org then commissioned an independent, external study of program effects, selecting a team of nationally prominent researchers with a collective 60 years studying substance abuse education. The researchers were tasked with executing a rigorous large-scale study, primarily of fifth through seventh graders from schools across the nation. The evaluation strategy focused on measuring the efficacy of the program's impact, both on its intended objectives, as well as on variables known to decrease the probability of later underage drinking. The following report summarizes the execution and key findings of the study.

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METHODOLOGY

This study served two purposes: **(1)** to assess the immediate effect of student exposure to the *Ask, Listen, Learn* program, and **(2)** to inform program developers of any potential programmatic issues that might suggest improvements in curricular content and presentation strategies. A systematic research design was created, including a pilot study and a large national cohort of classes. Measurement instruments were carefully designed and tested.

The Pilot Study

In the spring of 2017, Responsibility.org recruited teachers in seven schools to deliver the full seven-lesson sequence of the program and also to pilot the evaluation measures with their students. Preliminary outcomes from the pilot demonstrated increases in communication with caregivers and knowledge both about brain function and alcohol's adverse neurological effects. A very high percentage of students reported that they enjoyed the course and had become more interested in the effects of alcohol and in neuroscience.

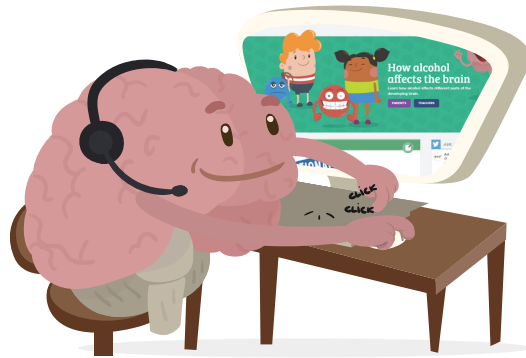
The National Study

Based on the results of the pilot study, researchers refined their measures and designed a large-scale national study that was fielded in the fall of 2017. With the assistance of its broad *Ask, Listen, Learn* network, Responsibility.org recruited 70 schools and 72 teachers to implement the course and administer two anonymous student surveys (i.e., a pre-test and post-test). Teachers were encouraged to administer all activities in all lessons. Teachers tracked all activities they actually conducted. They received a small incentive if they completed regular online reports of their activities and if they administered both pre- and post-test paper surveys to their students. Teachers' online reports included which lessons they

had administered, and which specific activities they used in each lesson.

The post-tests' questions to which students responded were more extensive than those asked on the pre-test, under the assumption that very few would have had a sufficient introduction to brain science prior to their exposure to the program.

Generally speaking, the additional questions appearing on the post-test survey covered the following topics: students' attitudes towards the class, the program, and brain science; knowledge questions concerning facts about the brain and the effects of alcohol on the brain.



STUDENT FINDINGS

Student Participants

There were 3,482 surveys analyzed, including 1,772 pre-tests and 1,710 post-tests. Attrition was minor, but there could not be an exact match for individual responses on each survey. Regarding grade level, 88% of the students were 5th, 6th or 7th graders; 12% were 4th or 8th graders. The total sample was comprised nearly equally of boys and girls.

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Highlights of Findings

Analysis of outcomes followed the intended objectives of the program, all consistent with the logic of prevention science. Results strongly confirmed the key objectives of the program. Exposed to the lessons, students in the study,

- (1) gained knowledge about brain function,
- (2) better understood alcohol's effect on specific parts and functions of the brain, including alcohol's harmful effects and resulting behavioral problems,
- (3) experienced or initiated considerably more dialogue about underage drinking with teachers and significant adults, and
- (4) reported class-related attitudes consistent with future intentions toward healthier decisions regarding underage drinking.

Outcomes for pre-post items reached high levels of statistical significance.

Details of Findings: Objectives and Outcomes

1 *Students acquired specific knowledge about brain anatomy and function.*

The post-test asked several sophisticated questions (in a true/not sure/false format) about the function of different parts of the brain. Overall, students performed well; only a fourth of the sample gave incorrect responses to difficult questions. For example, only 31% of the students responded the incorrect "true" to "Excitatory neurotransmitters slow the brain down," and only 7% responded the incorrect "false" to "The hippocampus makes and stores memories." Perhaps the most dramatic

finding was the question "What are neurotransmitters?" asked both on the pre- and post-tests. Responses reflecting the correct answer of four options-- chemical messengers-- moved from 21% to 70%. The response I don't know shifted from 63% to 0%.

2 *Students acquired an understanding about the effects of alcohol on brain function.*

Results of several pre-post items reflected significant changes in student awareness. Altogether, 96% in the post-test (vs. 44% in the pre-test) said they had been taught in school about the effects of alcohol and the brain. Correct "false" responses on the statement "Alcohol affects only certain parts of the brain" rose from 23% to 70%. Agreement with "I could explain to friends how drinking alcohol affects the brain" surged from 39% to 74%, with only 5% disagreeing on the post-test.

3 *The program enhanced communication with adults (teachers, parents, caregivers) about underage drinking.*

Although there were no units in the curriculum involving this specific objective, the subject is a major emphasis of the broader *Ask, Listen, Learn* campaign. Students were asked if they had ever talked with teachers about underage drinking. Results showed an impressive degree of increased dialogue due to the classes (from 44% to 95% in the post-test). Students were also asked how many times they had discussed underage drinking with parents and other adults. Results showed an unexpectedly substantial increase in the number of such conversations during the period in which the classes were given. For example, there was a 50% decrease in the post-test for students who reported never having had such a discussion.

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4 *Students developed a greater perception of the harmful effects of underage drinking and report attitudes and values consistent with making better decisions in the future.*

One objective of the program was to stress the harmful effects of alcohol, particularly on young people. Responding to the statement “I could explain to friends why drinking alcohol is more harmful for young people than for adults,” students answering “yes” increased from 45% to 76% from pre- to post, and those responding, “I don’t think so” decreased from 18% to 5%. Looking at post-test results reflecting attitudes and future intentions, 83% of students agreed that “Knowing about the effects of alcohol on the brain will help young people make better decisions about drinking.” Additionally, 86% of the students agreed that “This class has given me enough information to help me make good decisions in high school about drinking alcohol.”

5 *Students reacted positively to the program.*

Aside from mastery of content, it is important to assess the probability that further use of the program will appeal to students. Asked how much they enjoyed the classes, 88% responded “A lot” or “Some”; only 4% said “Not at all.” When asked if they wanted to learn more about the effects of alcohol, of those indicating a preference, 74% said yes, and only 16% indicated a lack of interest. The hypothesis that students are interested in brain function was supported by a 70% majority who felt that the class either definitely or possibly made them “interested in neuroscience.” Too often, evaluation research gives short shrift to assessing program implementation. In the national study, considerable basic data was provided by participating teachers in the pilot study and comprehensive feedback was given in the large study.

TEACHER FINDINGS

Pilot Test Response

- Teachers in the spring pilot test all reported that they were able to access program materials online in their classroom, all enjoyed teaching the program, and all reported that the curriculum materials provided them with sufficient content and information to answer their students’ questions. All indicated that the content matched the grade level to which they taught.

Regarding responsiveness to the program – often considered an integral part of measures of program fidelity – all specified that their students were more enthusiastic about it than their other health and science curricula. Almost all the teachers reported that their students were “very engaged” or “engaged” during the lessons. All but one of the teachers said that were “very likely” or “likely,” to recommend the program to other teachers and to the school.

- For the national study in the fall of 2017, the 72 teachers completed the fidelity checklists online, specifying which lesson-specific activities they had implemented and providing useful information about what was actually presented in the classroom. Aside from the animated videos, the numbers of possible activities for implementation vary by lesson, from nine to eleven, comprising nearly 70 activities in all.

Teachers could select the activities they wished to use. In interpreting the results, it is important to understand that the basic statistical analysis treated all activities as equally important, which they clearly are not. Altogether, averaged across all seven lessons, teachers implemented 57% of the possible activities provided, the range across the seven lessons running from 48% to 68%.

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It is interesting to note that there appeared no meaningful correlation between the percentage of activities implemented and a composite score of student knowledge acquisition. Further analyses will shed light on which types of activities, within and across lessons, that were most frequently omitted or implemented, and which may be deserving of further programmatic attention. However, the overall data suggest that a thoughtful, partial implementation of key activities is sufficient to produce robust student outcomes.

CONCLUSIONS AND IMPLICATIONS

“Ask, Listen, Learn: Alcohol and Your Developing Brain” represents an innovative model for early alcohol education, both in its digital nature and use of age-appropriate animations.

Also unique is its focus on the relationship between alcohol and “brain science,” which is emerging as an increasingly important concept in understanding the impact of substance misuse.

This research project does have significant limitations and additional studies can be useful, but there are few other such programs that are comparable in flexibility, cost, validated content, and now a demonstrated efficacy in diverse settings. Based on the data from this study, it seems most reasonable to target the program to 5th and 6th graders, understanding that some schools may use it with 4th graders and less so with 8th graders. Overall, the research studies justify interest in this initiative as a promising program, both for content and for ease of implementation.

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