Tobacco & Alcohol Use Prevention for Children

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Abbreviated Abstract
This application involved the development of an interactive, multimedia program called Gopp’s Galaxy, a tobacco and alcohol use prevention tool for K-2 children. The need for this product arises from the continuing trends toward increased tobacco and alcohol use in adolescents, despite the availability of prevention programming in the later elementary grades. Prevention experts suggest that prevention programs need to begin as early as kindergarten. To address this need, Gopp’s Galaxy combines state-of-the-art tobacco and alcohol use prevention guidelines, developmental research, and advances in multimedia technology to develop a practical tool for improving substance use prevention and social competence skills in young children. The program is delivered through an engaging animation format for children between the ages of 6-8, and includes class and take-home activities.

In Phase I, we received input from teachers, prevention experts, parents, and children. This resulted in a technical plan for the CD-ROM, an annotated script, a design of the teacher manual, and creation and acceptance testing of a Gopp’s Galaxy demo. Phase II addressed the development and usability testing of a prototype CD-ROM, a field study with K-2 students, and parent and teacher acceptance and satisfaction.

Primary Investigator
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Emil Chiauzzi, Ph.D., has 20 years of clinical, research, and training experience in the addictions and psychiatric fields. He is currently Vice President of Product Development at Inflexxion in Newton, MA. He has served as Principal Investigator on numerous SBIR grants with various branches of the National Institutes of Health, and has completed: Rebels, a teen smoking cessation CD-ROM (NCI); Safe and Sober, an HIV prevention CD-ROM for substance abuse clients (NIAAA); the Health Habits Survey, a brief alcohol intervention CD-ROM for primary care offices; and Facing the Future, a relapse prevention CD-ROM for alcoholic clients (NIAAA); My Student Body: Alcohol, a college high risk drinking prevention website (NIAAA); My Student Body: Tobacco, a college tobacco cessation website (NCI); Gopp’s Galaxy, a tobacco and alcohol prevention CD-ROM for K-2 children (NCI); On the Air, a tobacco cessation CD-ROM for substance abusers (NCI); and Crash Site, an impaired driving prevention CD-ROM for high school students (NIDA). Dr. Chiauzzi authors content for these projects, including multimedia scripts and manuals for providers and participants. Dr.

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Chiauzzi is the author of Preventing Relapse in the Addictions (Allyn & Bacon) and is the primary author on Time Effective Treatment (Hazelden).

**Research Team & Affiliations**

Emil Chiauzzi, Ph.D.; Simon Budman, Ph.D.; Donald Wertlieb, Ph.D.
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**Total Budget**

$815,814

**Research Objectives**

Aim 1: Completion of production and usability testing of prototype to be field tested.
Aim 2: Implementation of a comprehensive and extensive field test of the program.
Aim 3: Assessment of child, parent, and teacher acceptance and satisfaction.

**Theory/Hypothesis**

In comparison to a control group (an education-as-usual group), we expected that students exposed to the Gopp’s Galaxy would evidence greater:
- perceived social competence, as measured by child self-ratings,
- problem-solving ability,
- social competence skills, as measured by parent and teacher ratings.

In comparison to control parents (education-as-usual group), we expect that parents exposed to the Gopp’s Galaxy will report significantly greater self-efficacy discussing alcohol and tobacco issues with their children.

**Experimental Design**

Efficacy Study: A group of recruited students from 10 different high schools were randomly assigned, within school, to either an experimental group or control group. Students completed baseline assessments and two follow-up assessments, at one- (30 days) and four-months (120 days).

The measures for this project assessed knowledge about tobacco and its consequences (for both tobacco nonusers and users), and for users only: quit rates, reduction rates, and the stage-of-change continuum (Prochaska et al., 1994).

Randomization took place after the baseline assessments and was structured so that there was equal representation of gender and minorities in both the Experimental and Control groups. Experimental participants used Rebels and Control participants viewed four, color videos about nicotine/tobacco designed for adolescents.

User Acceptance and Satisfaction Study: Using the participants from the efficacy study, acceptance will be evaluated using the computer to track how participants are using (or not using) the Rebels program. Satisfaction will be examined by an in-person interview.

Final Sample Size & Study Demographics

For all data points, 205 children were assessed on the pictorial scale (90.7%) and 199 children completed all PIPS assessments. A total of 178 (78.8%) parents completed the assessments, 168 of which returned a demographic questionnaire.

Data Collection Methods

A Clinical Evaluator (C.E.) was stationed at each elementary school and will be blind to experimental condition. Working with participating teachers, the Inflexxion R.A. obtained informed consent from the parents and assent of children. We set up a schedule for the C.E. to administer the baseline child battery to both Experimental and Control children at school, taking them out of class for 20 minutes each. During the same period, an Inflexxion R.A. sent out baseline assessment packets to parents and teachers, which were mailed to Inflexxion. The Inflexxion R.A. was responsible for following up with parents and teachers who have not returned the assessments. Children were randomized into one of two conditions (Experimental and Control Group) following completion of the baseline assessment.

Teachers administered these interventions as follows.

Experimental Group Intervention Administration. If the child was in the Experimental group, he or she was introduced to the Gopp’s Galaxy program as part of regular classroom activity. In order to facilitate delivery of the program, all Experimental classes received a computer equipped with a CD-ROM and printer. Teachers assigned a different “planet” each week and children were instructed to use the CD-ROM program once during the week (about 20 minutes). After a child completed a session, he or she was given a take home assignment and asked to return it at the end of the week. Children were encouraged to seek assistance from the teacher if any problems arise. As with the Control Ss, Experimental Ss completed the post-intervention assessment one week after the seventh session and be scheduled for the three-month follow-up assessment.

Control Group Intervention Administration. Control children, parents/guardians, and teachers underwent the same evaluation in the same manner as participants in the Experimental condition. As in the Experimental Group, Control children attended seven weekly 30-minute classes and complete seven take home assignments with their parents. Because we wanted to find a curriculum that was meaningful to teachers, tested in schools, and relevant to elementary education, we decided upon a program entitled Myself and Others (Educational Development Center, 1994). This science-based program, developed with funding from the National Science Foundation, teaches child appreciation of physical similarities and differences between people. This program controlled for teacher attention factors and child participation in a special program. Myself and Others has 13 learning experiences, eight of which will be selected for the field study: (1) Introduction to Myself and Others, (2) Alike and Different, (3) Body Outlines, (4) Handfuls (measure how much can be held), (5) Our Eyes, (6) Our Hair, (7) Our Skin, and (8) Completion of Body Outline. Experimental Ss completed the post-intervention assessment one week after the seventh session and be scheduled for the three-month follow-up assessment.

Post-Intervention Assessment. The post-intervention assessment was conducted within a week of completion of the eighth session of each condition. Children received the same face-to-face assessment questions with the C.E. as the baseline. An Inflexxion R.A. mailed the same teacher and parent batteries of questions as given at baseline, except for the
Demographic Questionnaire. In addition, children, parents/guardians, and teachers completed a Satisfaction Questionnaire. Child satisfaction data was obtained through interview with a C.E., while parent/guardian and teacher data was provided through questionnaires mailed with their respective batteries. C.E.s collected all post-intervention child data at school, while teachers and parents were asked to mail back their data.

Three-Month Follow-up Assessment. Child, teacher, and parent/guardian follow-up assessments were conducted at 90 days post program completion. These assessment sessions were scheduled by the Inflexxion R.A. at the end of program (Control or Experimental) completion. The assessments used were identical to the post-intervention assessment, except for the Satisfaction Questionnaire. As with the post-intervention assessment, child data was collected at school, while teachers and parents mailed back their assessments. It is important to note that some Ss did not complete all seven sessions. An intent-to-treat design was employed so that, once randomized, all Ss were followed and evaluated, regardless of whether they completed the Gopp’s Galaxy program or not.

Outcome Measures

Parent Demographic Questionnaire. This questionnaire will record the parent-respondent’s age, gender, race, marital status, occupation, and family income level. This form will also include the child’s age, gender, race, and school grade.

Parent Self-Efficacy Assessment. Research indicates that parent-child discussions promote the development of conventional norms (i.e., abstinence-based) concerning alcohol use among adolescents (Brody et al., 1998). Measuring the frequency of such discussions between parents and five to eight year-olds would not be informative, due to the relatively infrequent opportunities for such discussions. Instead, it is more meaningful to assess parents’ self-efficacy in conducting such discussions should opportunities present themselves. Indeed, there seems be much consensus regarding effective ways for parents to discuss substance prevention with their children (Department of Education, 1998; ONDCP, 1999). However, we were unable to identify a measure that assesses parental self-efficacy in communicating about alcohol and tobacco issues with children. Therefore, in Phase II, we developed a parent self-efficacy questionnaire of approximately 20 items. The following areas were tapped: (1) discussing the negative effects of alcohol or tobacco when the child and parent observe it in other people; (2) openly discussing alcohol or tobacco use in the family; (3) educating children about how foods, poisons (household chemicals), medicines, and illegal drugs differ; (4) explaining the difference between unsafe and safe medications; (5) explaining why some adults may drink but why it may be harmful for children; (6) helping children set up a clear daily schedule involving good nutrition and exercise; and (7) helping children identify and access appropriate help when they are having a problem.

Pictorial Scale of Perceived Competence and Social Acceptance. Peer rejection in early elementary grades has been linked to later antisocial behavior and school problems (Hawkins et al., 1992), while low self-esteem has been linked to later smoking (USDHHS, 1994). To counter such potential negative influences, Gopp’s Galaxy seeks to enhance a child’s sense of competence in relationships with peers and parents through various skill-building components. Perceived self-competence will be measured using the Pictorial Scale of Perceived Competence and Social Acceptance (PSPCSA; Harter & Pike, 1984), which is used with children in our target age group. This 24-item instrument is designed to measure child perceptions in four domains, each with six items: Cognitive Competence, Physical Competence, Peer Acceptance, and Maternal Acceptance. Each item is rated on a four-point scale.

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containing a negative pole (e.g., "This boy gets lonely sometimes because other kids don’t ask him to play") and a positive pole (e.g., "This boy usually gets asked to play with the other kids"). For each item, children must make two decisions: (1) whether the positive or negative pole better describes them, and (2) whether the most extreme or less extreme response on that pole is true for them. The average scores for each subscale form a profile of perceived competence and social acceptance. The PSPCSA has excellent psychometric properties. For a sample of preschool/kindergarten children, internal consistency ranged from .62 to .87 for the individual subscales (Harter and Pike, 1984). For the total scale, internal consistency was .88. Factor analysis revealed two main factors, general competence (cognitive and physical competence) and social acceptance (peer and maternal acceptance). Internal consistency for general competence subscales was .76 and social acceptance was .87. Test-retest reliability for the four subscales ranges from .76 - .92 (Holguin & Sherrill, 1990).

Child Behavior Checklist Social Competence Scale (Teacher and Parent Versions). These measures were used to assess the effects of Gopp’s Galaxy on children’s social competence. Teacher and parent ratings of child social competence will be obtained using the Social Competence scales of the Child Behavior Checklist/4-18 (Achenbach, 1991a, b). Both parent and teacher scales are part of a larger problem behavior rating scale. The parent scale includes 20 questions in seven domains tapping child participation in sports, activities, organizations/clubs, chores, quality of relationships with peers and siblings, ability to play independently, and performance in academic subjects. The teacher scale is referred to as the Adaptive Functioning Scale and has conceptually similar items. These scales yield raw scores in three areas (Activities, Social, and School), as well as a Social Competence Total.

PIPS: Preschool Interpersonal Problem-Solving Test. Peer rejection in early elementary grades has been linked to later antisocial behavior and school problems (Hawkins et al., 1992), while low self-esteem has been linked to later smoking (USDHHS, 1994). To counter such potential negative influences, Gopp’s Galaxy seeks to enhance a child’s sense of competence in relationships with peers and parents through various skill-building components. Perceived self-competence will be measured using the Pictorial Scale of Perceived Competence and Social Acceptance (PSPCSA; Harter & Pike, 1984), which is used with children in our target age group. This 24-item instrument is designed to measure child perceptions in four domains, each with six items: Cognitive Competence, Physical Competence, Peer Acceptance, and Maternal Acceptance. Each item is rated on a four-point scale containing a negative pole (e.g., "This boy gets lonely sometimes because other kids don’t ask him to play") and a positive pole (e.g., "This boy usually gets asked to play with the other kids"). For each item, children must make two decisions: (1) whether the positive or negative pole better describes them, and (2) whether the most extreme or less extreme response on that pole is true for them. The average scores for each subscale form a profile of perceived competence and social acceptance. The PSPCSA has excellent psychometric properties. For a sample of preschool/kindergarten children, internal consistency ranged from .62 to .87 for the individual subscales (Harter and Pike, 1984). For the total scale, internal consistency was .88. Factor analysis revealed two main factors, general competence (cognitive and physical competence) and social acceptance (peer and maternal acceptance). Internal consistency for general competence subscales was .76 and social acceptance was .87. Test-retest reliability for the four subscales ranges from .76 - .92 (Holguin & Sherrill, 1990).
Evaluation Methods

Questionnaires

Research Results

Results indicated that Gopp’s children with lower baseline Peer Acceptance scores showed greater improvement in both the Peer Acceptance and Cognitive Competencies of the PIPS. From baseline to post, children who used Gopp’s Galaxy came up with significantly more non-force solutions to real-life interpersonal problems solutions compared to control children. However, this difference was not sustained over follow up. The proportion of relevant solutions given by the children improved over time, with the Gopp’s Galaxy group improving significantly. The students’ Total Adaptive Functioning scores increased over the study period, but there were no statistically significant differences in adaptive functioning between students in the experimental or control condition. Overall, the children enjoyed using the program: 98% endorsed the statement ‘Gopp’s is fun’ and 89% said they ‘Want to play Gopp’s again’. Evaluations from the 59 parents (75% response rate) were also positive. The overall program satisfaction was 84%; 71% said that the program affected communications with their child about substance abuse prevention. The six teachers (100% response rate) felt that the children retained information from the CD-ROM and generally enjoyed using the program in class.

Barriers & Solutions

Developing prevention approach for a young audience that is not actually using tobacco or alcohol. We approached it by teaching social competence skills, the lack of which are related to later substance use.

Product(s) Developed from This Research

Gopp’s Galaxy: seeks to enhance socially competent behavior in K-2 children to help reduced the risk of later underaged alcohol and tobacco use. The program includes 7 session CD-ROMs, teacher curriculum, and a parent guide. Children visit seven “planets” with the assistance of Gopp and other animated characters representing various aspects of socially competent behavior—problem-solving, media literacy, alcohol/tobacco knowledge, feelings awareness, friendship-making, help-seeking, etc. They learn about these key skills, practice them in class, and review them with their parents.