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# RESEARCH BULLETIN



**Impact on High School Students'  
Behaviors and Protective Factors:  
A Pilot Study of the  
"Too Good for Drugs and Violence"  
Prevention Program**

November, 2001  
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A Project Funded by the Mendez Foundation, Inc.  
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*Too Good for Drugs and Violence Prevention Program***

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Submitted by:

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## Research Summary

### Impact on High School Students' Behaviors and Protective Factors

The purpose of the study was to examine the effectiveness of the *Too Good for Drugs and Violence (TGFD&V)* program in impacting young people's substance and violence use intentions, attitudes and perceptions. The study examined the following questions. Do students receiving the *TGFD&V* prevention program in comparison to control students indicate: 1) fewer intentions of smoking cigarettes, drinking alcoholic beverages, using marijuana, and engaging in aggressive behaviors within the next 12 months; 2) more positive attitudes regarding the inappropriateness of substance and violence use; 3) more knowledge of the prevalence of peer substance and violence use; 4) more positive perceptions of peer disapproval of substance and violence use; 5) higher levels of emotional competence, goal setting and decision making, and social and peer resistance skills; 6) more awareness of the harmful effects of substance use; and 7) perceive their parents to be less approving of tobacco, alcohol or marijuana use?

### Method

Two hundred and one students from 11 classrooms in a large Florida high school participated in the pilot test of the revised *TGFD&V* prevention curriculum. The total sample was 49% female, approximately 68% White, 9% African American, 20% Hispanic, 2% Asian, and 1% American Indian and Multiracial. Forty-six percent of the students were ninth graders, 26% tenth graders, 12% eleventh graders, and 16% twelfth graders. Nine percent of the sample was categorized as economically challenged by status of receipt of free or reduced lunches. The school is rated "B" based on the Florida School Indicators Report, suggesting a student population that is overall fairly successful academically and in other performance indicators such as, attendance, mobility, and drop out rate.

All students in the treatment and control group were pretested using a survey questionnaire prior to delivery of the *TGFD&V* prevention program, and posttested at the end of the semester following the delivery of the program. The program was delivered to students in six health classrooms once a week for 50-55 minutes overall 14-week period by trained *TGFD&V* instructors.

## Results

1. Given that school-based drug and violence prevention programs are a piece of the broad spectrum of prevention/intervention strategies--their usefulness, benefit or contribution to healthy growth and decision-making on the part of young people--is highly dependent on the integrity, potency and commitment in which it is delivered and maintained. Prevention research shows a direct relationship between the quality of program implementation and the program's potential to impact participants. In this study, classroom teacher responses to items on a survey questionnaire suggest the *TGFD&V* program was **implemented as planned with a high degree of quality and fidelity to curriculum content and learning activities.**
2. **Prior to delivery of the *Too Good for Drugs and Violence* program, students in treatment and control classrooms indicated similar levels of intentions to use/not use tobacco, alcohol, or marijuana, and similar levels of intentions to engage in aggressive behaviors within the next 12 months.** When the students in the pilot sample were asked, prior to the deliver of the program, how strongly they agreed or disagreed with statements about their intentions to use substances and violence: 75% agreed or strongly agreed that they did not plan to use tobacco; 41% indicated they did not plan to use alcohol; 69% indicated they did not intend to use marijuana; and 66% indicated they did not plan to engage in aggressive or violent behaviors.

3. Following program delivery, item responses for students who did not intend to use substances or violence were reexamined. **Following program implementation, students participating in the *TGFD&V* program evidenced positive differences in comparison to the control group. Student responses suggest the following:**
- a. **INTENTIONS TO SMOKE CIGARETTES**  
After program delivery, students participating in *TGFD&V* indicated 40% fewer intentions to smoke than did students in the control group.
  - b. **INTENTIONS TO DRINK ALCOHOL**  
After program delivery, students participating in *TGFD&V* indicated 50% fewer intentions to drink alcohol than did students in the control group.
  - c. **INTENTIONS TO SMOKE MARIJUANA**  
After program delivery, students participating in *TGFD&V* indicated 45% fewer intentions to smoke marijuana than did students in the control group.
  - d. **INTENTIONS TO USE VIOLENCE**  
After program delivery, students participating in *TGFD&V* indicated 45% fewer intentions to engage in aggressive behaviors than did students in the control group.
4. Prevention research has identified certain risk factors that increase the likelihood that a student will use drugs and engage in aggressive behaviors and certain protective factors that decrease or buffer the impact of the risk factors. The *TGFD&V* program incorporates curriculum and instructional activities aimed at building protective factors. Survey questionnaire items associated with nine protective factors were examined in this study. **Student responses to protective survey items at the time of the posttest suggest the following:**

- (a) Students participating in the *TGFD&V* program had statistically significant higher scores or more **appropriate attitudes regarding drug use** in comparison to students in the control group.
- (b) Students participating in the *TGFD&V* program had statistically significant higher scores or more **appropriate attitudes regarding aggressive or violent behaviors** in comparison to students in the control group.
- (c) Students participating in the *TGFD&V* program had statistically significant higher scores or were more **knowledgeable of actual rates of substance and violence use among youth in their age group** (peer norms) in comparison to students in the control group.
- (d) Students participating in the *TGFD&V* program had statistically significant higher scores or thought their **peer group was less accepting of tobacco, alcohol, marijuana, or violence use** in comparison to students in the control group.
- (e) Students participating in the *TGFD&V* program had statistically significant higher scores or higher levels of **emotional competence/self efficacy** in comparison to students in the control group.
- (f) Students participating in the *TGFD&V* program had statistically significant higher scores or more positive perceptions of their **goal setting and decision making skills** in comparison to students in the control group.
- (g) Students participating in the *TGFD&V* program had statistically significant higher scores or more positive perceptions of their **social and peer resistance skills** in comparison to students in the control group.
- (h) Students participating in the *TGFD&V* program had statistically significant higher scores or perceptions of the

**harmful effects of smoking, drinking and marijuana use** in comparison to students in the control group.

- (i) Students participating in the *TGFD&V* program had higher scores or perceptions of **parental disapproval of youth substance use** in comparison to students in the control group.
5. In summary, the *TGFD&V* program evidenced positive effects on high school students' intentions to use tobacco, alcohol or marijuana or to engage in aggressive behaviors. The program was also successful in impacting students' protective factors associated with strengthening young people's abilities to make positive, healthy decisions.
6. There are limitations that need to be considered when interpreting the results. Generalizing the findings to more academically and economically challenged school settings may be limited. No extended follow up testing was conducted to examine long term effects of the program on students' intentions, attitudes and perceptions. Sample size was limited in the pilot, preventing reasonable exploration of potential differences in program impact due to grade-level, gender, ethnicity, high risk, exceptional needs, and economic status. Future research for examining the efficacy of this program should include larger samples representing a broad spectrum of student populations with program effects examined over time.

## Introduction

This study was conducted to examine the impact of the *Too Good for Drugs and Violence-High School* (Mendez Foundation, Inc., 2000) prevention program on students' substance use, aggressive behaviors and protective factors. For the reader who may be unfamiliar with the *Too Good for Drugs and Violence-High School* (TGFD&V) prevention program, a brief description of the curriculum is provided first, followed by a summary of the theoretical framework for the program's development. The remainder of the paper is presented using the following research sections: purpose of the study; method; procedures; results, and conclusions.

## Program Description

The *Too Good for Drugs and Violence-High School* program is a multifaceted, interactive social influence intervention using a universal education strategy. The *Too Good for Drugs and Violence-High School* curriculum and its companion programs *Too Good for Drugs II* and *Peaceable Place* for elementary and middle school students are currently used in more than 2000 school districts across 48 states. The TGFD&V program consists of: (a) 14 Core Curriculum lesson units delivered by trained teachers or TGFD&V instructors, (b) 12 infusion lessons to be incorporated into subject areas across grade-levels, (c) Staff Development Curriculum for Educators, (d) parent component consisting of newsletters and interactive homework assignments for families, and (e) strategies for involving community partners. The program is designed to benefit everyone in the school providing needed education in social and emotional competencies and by reducing risk factors and building protective factors that affect most, if not all students in this age group. Instructional strategies strongly emphasize cooperative learning activities, role play situations, and skills-building methods including modeling, practicing, reinforcing, providing feedback, and promoting generalization of skills to other contexts.

The curriculum for students focuses on developing personal and interpersonal skills to solve conflicts non-violently and to resist pressures to use drugs. Skill development focuses on strategies for: goal setting, decision making, managing emotions, managing stress, assertiveness, affective communication, bonding and relationships, conflict resolution, and respect for self and others. The curriculum also provides information about normative peer behavior in drug use and violence, and the negative consequences of drug use and the benefits of a non-violent, drug-free lifestyle.

### **Theoretical Background**

Evidence from a number of sources indicates that alcohol, tobacco and other drug (ATOD) use and youth violence are complex problems with many contributing factors. Individuals use drugs or engage in aggressive behaviors, or abstain from using them, for a variety of reasons. ATOD and violence prevention, therefore, requires complex interventions utilizing many strategies.

*Too Good for Drug and Violence* is a multifaceted prevention program based on a number of theoretical constructs which have been strongly supported by research in the field. Elements of Social Learning Theory (Bandura, 1977); Problem Behavior Theory (Jessor and Jessor, 1977; Jessor, 1982; Perry and Jessor, 1983); and Social Development Theory (Hawkins & Weis, 1985; Hawkins, Lishner, Catalano & Howard, 1986) contribute to the theoretical basis for *Too Good for Drugs and Violence*. In addition to these theories, TGF&V uses strategies based on the Developmental Assets (Search Institute, 1996) approach to healthy youth development. The following paragraphs describe the relevance of these theories and models to TGF&V.

### **Foundation for Instructional Strategies**

*Too Good for Drugs & Violence* is a universal drug and violence prevention program, targeting all high school students. This universal approach provides primary prevention to low-risk stu-



dents and secondary prevention to high-risk, aggressive students who are also in the classroom. When teachers are trained to provide the universal education program in the classroom, they become more likely to monitor and reinforce high-risk students' competent use of social skills. Universal interventions also help all students in the class to become more adept at social problem-solving, thereby raising the rate of positive interactions that aggressive children have with their peers (Lochman, Dunn and Klimes-Dougan, 1993). Research indicates an additional benefit of a universal prevention program which teaches conflict resolution and negotiation skills. When students learn to resolve their conflicts autonomously and constructively, they stop referring their conflicts to their teachers, which allows teachers to spend more time on instruction and less time on discipline problems (Johnson, Johnson, Dudley and Acikgoz, 1994).

*TGFD&V* provides extensive prevention education throughout a student's years in high school. It provides 14 lessons in one grade level plus 12 additional booster lessons for other high school grade levels. When used with its companion K-8 programs, *Too Good for Drugs II* and *A Peace-Able Place*, *TGFD&V* provides continuous and consistent prevention programming for students in grades K-12. A comprehensive, multi-year, multi-component approach is recommended over more traditional single-intervention programs (Elias, et al., 1994). Research findings suggest that effects decay over time in the absence of continued, supporting the need for long-term programs which expose students to skills and concepts at each grade level instruction (Ellickson, Bell and McGuigan, 1993; & Botvin, et al., 1990). *Preventing Crime: What Works, What Doesn't, What's Promising: A Report to the United States Congress* (Sherman, et al., 1997) concludes that "longer-term, multi-component strategies located in natural school settings, using staff readily available to the schools, employing methods that are acceptable to regular school staff are most likely to produce the strongest and most durable effects."

*TGFD&V* builds skills and uses age-appropriate concepts and teaching methods. Research has shown that opportunities for active participation should be developmentally appropriate to the student's current level of skills, in order to motivate the student to engage in the learning process (Csikszentmihalyi and Larson 1980). *TGFD&V* uses cooperative learning as a key teaching method. Cooperative learning activities allow all students to participate and to have responsibilities. Research has shown that cooperative learning activities promote student's development of pro-social skills and academic achievement (Marr, 1997; Slavin, 1996; & Cinelli, et al., 1994). Cooperative learning strategies have been used in several prevention projects which demonstrated reductions in delinquent behavior (Gottfredson, Gottfredson and Hybl, 1993; Gottfredson, 1987; Gottfredson, 1986; & Gottfredson, 1990). *TGFD&V* lessons are highly interactive. Research shows that interactive programs that emphasize interpersonal skills and use a participatory teaching approach are more effective than programs which rely on moral exhortation, scare tactics or self-esteem building (Gottfredson, 1997; Tobler and Stratton, 1997; & Bosworth and Sailes, 1993). *TGFD&V* uses role play situations involving not only fighting, violence and drug use, but also other problem behaviors, such as skipping school, stealing, and vandalizing. Research has shown that youth who are involved in one health-compromising behavior are likely to engage in others (Jessor, 1982; & Jessor and Jessor, 1977). Studies also show that role-playing is effective in reducing student's racial prejudice (MacGregor, 1993). Research comparing prevention programs shows that programs which include frequent role-playing, rehearsal of skills and behavioral modeling are more effective than those which do not (Ringwalt, et al., 1994). *TGFD&V* emphasizes recognizing, avoiding and handling bias, stereotypes, prejudice and discrimination in effective, non-violent ways. Activities are designed to develop students' social perspective taking abilities and empathy. Meta-analysis has integrated findings from studies that examined the effectiveness of role-playing and antiracist teaching to reduce students' racial prejudice. Analysis of data from 26 studies indicated that role-playing and antiracist teaching signifi-

cantly reduced racial prejudice and were similarly effective (McGregor, 1993).

### **Foundation for Curricular Content**

*TGFD&V* is based on a strong theoretical background. Social Learning Theory proposes that aggression is influenced by the developing child's cognitive resources, which may be modified by teaching cognitive skills such as recognizing conflict cues (Dodge & Newman, 1981), generating non-aggressive solutions to interpersonal conflicts (Richard & Dodge, 1982), and predicting consequences of aggressive responses (Guerra, 1989; & Guerra and Slaby, 1989). Studies indicate that Social Learning Theory is a feasible construct for explaining drug involvement in the young (Fournet, 1990). Social-cognitive theory, an extension of social learning theory, has formed the basis of several violence prevention and conflict resolution programs. These interventions include four components: 1) information designed to increase awareness and knowledge of the consequences of behavior; 2) social and self-regulative skills development aimed at translating knowledge into preventive action; 3) opportunities for guided practice and corrective feedback in applying skills in high-risk situations, resulting in skills enhancement and self-efficacy; and 4) changes in social norms and social supports for desired behavior change. Studies support the use of a social cognitive theoretical approach to school-based violence prevention (Durant, et al., 1996).

*TGFD&V* is based on the Social Development Model, a theory of change which explains positive development in terms of three protective factors: social bonding with positive people and institutions; adoption of non-violent, pro-social norms; and development of social and emotional skills or competencies. According to this model, the development of skills depends on opportunities to participate, and reinforcement, rewards or recognition for skillful involvement. (Hawkins, Farrington and Catalano, 1998; Catalano, et al., 1996; Mortimore, 1995; & Hawkins and Weiss, 1985).

*TGFD&V* reduces risk factors and builds protective factors. Research has shown that reducing risk factors and building protective factors leads to resiliency in youth. Resiliency is the ability to lead healthy lives and avoid involvement in drug use, violence and other problem behaviors in spite of risk factors (Hawkins, et al, 2000; Benson, 1997; Catalano, et al., 1996; Hawkins and Catalano, 1992; Hawkins, Catalano and Miller, 1992; Werner, 1992; & Loeber and Dishion, 1983). Several recent reviews summarize the research literature linking risk factors, such as conduct problems, aggression, low levels of self-control and social competency skills, and low attachment to school with crime (Gottfredson, Sealock and Koper, 1996; Howell, Krisberg, Wilson and Hawkins, 1995; & Hawkins, Catalano and Miller, 1992).

*TGFD&V* is a comprehensive drug and violence prevention program employing multiple components and strategies. Studies show that multiple strategies mediate drug use (Hansen, 1996). Normative education and resistance skills in combination are more effective than resistance skills alone (Hansen & Graham, 1991). Combining social problem-solving skills with education on the relationship between drug use and violence has also shown positive effects. (Gainer, Webster and Champion, 1993). It appears that the most effective universal prevention programs implemented in schools are those that involve more extensive social or life skills training and often include homework assignments with parents (Donaldson et al, 1994).

Normative education is an integral part of the *TGFD&V* program design. Drug use and violence are influenced by normative values, which are perceptions about other people's attitudes and behavior—such as “Only chickens or sissies walk away from a fight,” or “Everybody drinks.” Many students incorrectly believe that aggression is acceptable, appropriate and necessary, and that most people their age fight to solve their conflicts and approve of other people fighting or using violence. Many believe that experimenting with drugs is a normal part of growing up, and that most teenagers use drugs. Normative education corrects these

misperceptions by providing accurate information about the percentage of youth who are actually involved in these behaviors, and also about the percentage who would disapprove if their friends did so. Several studies show normative education to be a successful prevention strategy (Botvin et al, 1995; Dent, et al., 1995; Donaldson, 1994; & Hanson and Graham, 1991). This type of programming has produced the most consistently successful preventive effects with the general population (Donaldson, et al., 1996).

*TGFD&V* is highly focused on critical skill areas. The curriculum includes a wide variety of social and emotional competency skills. Social competence is the ability to solve a problem or cope with a social demand without creating new problems. Socially competent persons successfully recognize and control their emotions so that they can make socially competent choices in problem situations. Poor social competency--as measured by self, peers, teachers and other adults--is related to later problem behaviors (Shedler and Block, 1990; Block et. al., 1988; Kellam et al., 1981; & Smith and Fogg, 1978). Increased social and emotional competence is associated with greater academic success and reductions in violence, drug use and other problem behaviors. These skills include anger management, empathy and perspective-taking, social problem-solving, media resistance, social resistance, communication and general social skills for building and maintaining positive relationships (Greenberg, et al., 1995). There is evidence that schools can promote the development of skills to avoid violent behavior through the use of classroom curricula that seek to promote social competence (Goleman, 1995) and teach skills for anger management, impulse control and empathy (Grossman, et al., 1997). Sherman (1997) concludes that "the preponderance of evidence is positive" for the effectiveness of "comprehensive instructional programs that focus on a range of social competency skills (e.g., developing self-control, stress-management, responsible decision-making, social problem-solving and communication skills) and that are delivered over a long period of time to continually reinforce skills."

*TGFD&V* includes an emphasis on social influences such as advertising and media as well as the influence of friends and family members as role models. Several studies suggest that a focus on social influences is a critical aspect of effective prevention education (Epstein, et al., 1999; Donaldson, et al., 1996; Botvin, et al., 1995; Dielman, et al., 1992; Hansen, 1992; Botvin, et al., 1990; Ellickson and Bell 1990; & Pentz, et al., 1989).

*TGFD&V* includes information about the harmful effects of using alcohol, tobacco and other drugs. Research has shown that knowledge of the consequences of drug use is not enough to prevent adolescents from using drugs; however, drug information is seen by researchers to be an effective prevention strategy insofar as it causes students to perceive themselves as personally susceptible to the likely consequences of drug use (Hansen, et al., 1991).

*TGFD&V* promotes a caring and supportive classroom environment and a sense of belonging. Studies show that schools in which students feel as though they belong and that people in the school care about them experience less disorder and student misbehavior (Duke, 1989). The teaching methods and teacher tips used in *TGFD&V* are designed to promote bonding. Studies show that students who bond with positive people and institutions, such as the teacher and the school, are less likely to become involved in violence and other problem behaviors (O'Donnell, Hawkins and Abbott, 1995).

### **Purpose of Study**

Youth's use of violence, alcohol, tobacco and other drugs have been a social, educational and inter- and intra-personal concern for decades (Berberian et al., 1976). The contributors and reasons for young people's substance use and the consequences to the individual and the communities around them are complex and multifaceted (Brounstein et al., 1998). Effective school-based prevention programs have been identified as one of the important and useful interventions to the overall substance prevention effort (Summerfield, 1995).

As a piece of the entire prevention and intervention effort, prior research guides current trends in school-based prevention programs to maximize their utility and impact on young people's behaviors and perceptions (Drug Strategies Inc., 1999). The *Too Good for Drugs and Violence* curriculum was developed based on the merging of federal, state and prevention agency guidelines as well as research findings of studies using the social influence model (Evans, 1976; Evans et al., 1978; Luepker et al., 1983) and the cognitive-behavioral model (Botvin, 1982; Botvin & Dusenbury, 1987; Botvin & Tortu, 1988; Botvin et al., 1990; Ellickson & Bell, 1990) for school-based drug prevention programs.

The purpose of the study was to examine the effectiveness of the *Too Good for Drugs and Violence-High School* program in impacting young people's substance and violence use intentions, attitudes and perceptions. The study examined the following questions. Do students receiving the *TGFD&V* prevention program in comparison to control students indicate:

1. fewer intentions of smoking cigarettes, drinking alcoholic beverages, using marijuana, and engaging in aggressive behaviors within the next 12 months;
2. more positive attitudes regarding the inappropriateness of substance and violence use;
3. more knowledge of the prevalence of peer substance and violence use;
4. more positive perceptions of peer disapproval of substance and violence use;
5. higher levels of emotional competence, goal setting and decision making skills, and social and peer resistance skills;
6. more awareness of the harmful effects of substance use; and
7. perceive their parents to be less accepting of substance use?

## Method

### Sample

Two hundred and one students from 11 classrooms in a large Florida high school ( $n = 1792$ ) participated in the pilot test of the revised *TGFD&V* prevention curriculum. The total sample was 49% female, approximately 68% White, 9% African American, 20% Hispanic, 2% Asian, and 1% American Indian and Multiracial. Forty-six percent of the students were ninth graders, 26% tenth graders, 12% eleventh graders, and 16% twelfth graders. Nine percent of the sample was categorized as economically challenged by status of receipt of free or reduced lunches. The school is rated "B" based on the Florida School Indicators Report, suggesting a student population that is overall, fairly successful academically and in other performance indicators such as, attendance, mobility, and drop out rate.

### Prevention Program

The *TGFD&V* curriculum used in this study included 14 lesson units delivered to students participating in the treatment classrooms by program instructors. The high school curriculum is designed to develop skills in: (a) goal setting and decision making, (b) managing emotions and stress, (c) effective communication, (d) social skills and peer resistance, (e) bonding and relationships, (f) conflict resolution, and (g) respect for self and others. The curriculum also provides information about normative peer behavior in drug use and violence, and the negative consequences of drug use, and the benefits of a non-violent, drug-free life style. Teaching methods were highly interactive and engaged students through the use of role-play, cooperative learning, games, small group activities and class discussions. Students were provided many opportunities to be active participants and received recognition for their contributions and involvement. Teaching methods modeled and encouraged bonding with prosocial others. Students were also encouraged to share the "Home Workouts" with family members to reinforce concepts practiced during the lesson units.



## **Training for Program Providers**

The selection of quality implementers is critical for successful replication. The Mendez Foundation recommends using experienced teachers, school counselors, health educators or prevention specialists as program providers. The minimal educational requirement is a 4-year college degree. Program providers can be internal (school-based educators) or external (off-site educators) as used in this study. Selection of program providers should be based on their appropriateness as positive role models, interest and enthusiasm for prevention, experience, classroom management skills, ability to develop rapport with students, belief in the efficacy of the program, participation in training workshops and willingness to implement carefully and completely according to the *TGFD&V* Core Curriculum manual. The Mendez Foundation highly recommends a 1 to 2-day training in the use of the *TGFD&V* Core Curriculum, prevention principles, risk and protective factors.

Training sessions provide a research base for students' current use of substance and violence and literature findings of the processes currently recognized as being most effective in impacting young people's use and attitudes. Training sessions are highly interactive, reflecting the instructional style needed in the delivery setting. Trainees role play and practice the modeling of the *TGFD&V* lesson plans. Suggestions for organizing lesson activities and materials are also provided. Refresher training sessions may also be useful in encouraging providers to stick with the curriculum and to expand their infusion of prevention concepts into the regular curriculum. Implementation of the *TGFD&V* program across many classrooms or sites would benefit for a Project Coordinator to ensure the efficacy and fidelity of the program implementation.

## **Assessment of Program Implementation**

Classroom teachers of students participating in the *TGFD&V* program were asked to complete the *Teacher Evaluation of Program Implementation* survey questionnaire to gauge treatment fidelity and quality of implementation. Teachers responded to

questions about the number of *TGFD&V* lessons offered, length of lessons, and whether confounding programs were offered during the treatment period. Teachers were also asked to respond to 15 Likert type items ('5 = Strongly Agree' to '1 = Strongly Disagree') to rate *TGFD&V* instructors' preparation, presentation and interaction with and among students during the delivery of the program treatment.

### **Procedure**

All students in the treatment and control classes were pretested using a survey questionnaire prior to delivery of the *TGFD&V* prevention program, and posttested at the end of the semester following the delivery of the program. School administrator and teacher support was solicited for the data gathering initiative. The prevention program was delivered to students in six treatment classrooms in their assigned health class in 55-60 minute lessons once a week over a 14-week period by trained *TGFD&V* instructors. Students in the five control classrooms participated in the standard physical education curriculum and were not exposed to the *TGFD&V* program content.

### **Instrumentation**

A pilot instrument was developed based on research findings and contributions from a variety of alcohol, tobacco, and other drug (ATOD) prevention agencies and nonpublic investigators that focus on key risk and protective factors associated with young peoples' ability to face the challenges of resisting substance and violence use (Bacon, 2000; Center for Substance Abuse Prevention, 1998; National Institute on Drug Abuse, 1997; & EMT Associates, Inc., 1992). Student responses to the questionnaire items were examined using a series of item analysis techniques.

Four items were used to gauge students' intentions to use tobacco, drink alcoholic beverages, use marijuana, or engage in fighting within the next 12 months (5-point response scale ranging from 'Strongly Agree' to 'Strongly Disagree'). Student responses to these four items were later dichotomized to represent a category

of students strongly confident of their intentions to not use tobacco, alcohol or marijuana, or engage in aggressive behaviors from students less certain or who were currently engaging in these behaviors.

In addition, student responses to 61 Likert type items ranging from 'Strongly Agree' to 'Strongly Disagree' were grouped into nine protective subscales associated with impacting young peoples' resistance to substance and violence use. It should be noted that item responses were recoded such that higher scores (5.0) indicate more positive perceptions or behaviors. Estimates of reliability using Cronbach's alpha coefficient for the Intentions Scale and the Protective Scale were  $r_{\alpha} = .74$  and  $r_{\alpha} = .93$ , respectively. Protective factors were computed using the mean of the item scores for each subscale consisting of: Positive Attitudes toward Non-Drug Use ( $r_{\alpha} = .85$ ); Positive Attitudes toward Non-Violence ( $r_{\alpha} = .80$ ); Perceptions of Peer Normative Substance and Violence Use ( $r_{\alpha} = .80$ ); Perceptions of Peer Disapproval of Substance and Violence Use ( $r_{\alpha} = .67$ ); Perceptions of Emotional Competence ( $r_{\alpha} = .84$ ); Perceptions of Goal Setting and Decision Making Skills ( $r_{\alpha} = .77$ ); Perceptions of Social and Peer Resistance Skills ( $r_{\alpha} = .76$ ); Perceptions of Harmful Effects of Substance Use ( $r_{\alpha} = .74$ ); and Perceptions of Parental Attitudes toward Substance Use ( $r_{\alpha} = .59$ ).

## Results

Data were analyzed using the statistical procedures contained in SAS 8.01 (SAS Institute, Inc., 2000) for descriptive and inferential purposes. Fidelity of program implementation was examined first, followed by an analysis of student attrition rates, pretest score equivalence for the treatment and control condition, and an analysis of the results using the classroom as the unit of analysis. Finally, program impact on student outcomes were examined by focusing on changes in students' reported willingness to use substances and aggressive behavior and changes in students' protective scale scores.

### **Program Implementation**

Classroom teachers rated the intensity and quality of program delivery for the *TGFD&V* instructors across the treatment classrooms. Teachers' indicated that all 14 lessons were delivered to students in their classes and the average lesson ranged between 45 to 55 minutes. All respondents indicated that no formal school-based instruction related to substance and violence prevention had been provided during the delivery of the *TGFD&V* program. Health classes are a very conducive setting for implementing prevention programs, allowing the natural infusion and ongoing reinforcement and practice of treatment skills in the classroom (Botvin, Mihalic, and Grotpeter, 1998).

Classroom teachers' responses to the items on the Evaluation of Program Implementation survey suggest that *TGFD&V* instructors modeled desirable instructional behaviors such as being well prepared for lesson presentations; providing clear directions; defining complex terms and concepts; responding to students' questions; applying appropriate classroom management strategies; providing students opportunities to participate and practice skills; and recognizing and reinforcing students' participation (score range 4.50 to 5.00). Teacher responses suggest that *TGFD&V* instructors were successful in developing a bond or rapport with students (5.00). Teachers felt the *TGFD&V* program would have a positive influence on their students' behaviors or choices (5.00) and that students themselves had commented that they enjoyed participating in the program (5.00), and felt the activities were relevant to their daily lives (5.00). Teachers' written comments offered additional support for their positive responses to the items on the survey questionnaire.

Overall, the findings from the Teacher Evaluation of Program Implementation survey questionnaire suggest the *TGFD&V* program was delivered to students as designed, covering 14 lessons averaging 50 minutes each with quality instruction and adult-student and student-student interaction.

## Attrition and Score Equivalence

One of every researcher's nightmares is the loss of usable data. Attrition rates are an ongoing challenge and concern for any social science study gathering information over time, and the potential bias of missing respondents a threat to the validity of the findings (Mohai, 1991; Botvin, et al., 1990). In this study, students were provided a special coding sheet where they generated a series of random numbers and letters using their name and birth date that they transferred to an electronic scan sheet. A total of 394 students completed the pretest and 337 students completed the posttest. A loss of 15% ( $n=57$ ) would be an acceptable loss of matching data given student mobility and absences. However, only 201 (60%) out of the 337 posttest questionnaires could be matched to pretest scores. The conundrum raised then is how to examine the data so some reasonable judgment can be made about the integrity of the data that can be used to summarize the findings of the study. The data was examined three ways to get at this question.

Examining Pretest Scores and Attrition. First, a two-way multivariate analysis of variance (MANOVA) was conducted using treatment condition and attrition as independent variables and students' pretest scores on intentions to use tobacco, alcohol, marijuana, or engage in fighting as dependent variables. As shown in Table 1, no significant main effects or interactive effects were found for Treatment (Wilks' Lambda .988,  $df = 4, 384, F = 1.15, p = .331$ ), Attrition (Wilks' Lambda .990,  $df = 4, 384, F = 1.02, p = .399$ ), or Treatment x Attrition (Wilks' Lambda .991,  $df = 4, 384, F = 0.90, p = .463$ ). The findings for attrition offer some confidence that the loss of student data or failure to match students on the posttest was not biased relative to students' predisposition towards their future substance use or aggressive behavior.

Table 1. Multivariate Analysis of Pretest Scores by Treatment Condition and Attrition

<b>Pretest Equivalence of Treatment Condition by Attrition</b>				
Effect	Wilks' $\Lambda$	<i>df</i>	<i>F</i>	<i>p</i>
<b>Multivariate Between Effects</b>				
Treatment/Group	.988	4, 384	1.15	.331
Attrition	.990	4, 384	1.02	.399
Treatment x Attrition	.991	4, 384	0.90	.463
	<b>Study Sample</b>		<b>Attrition Group</b>	
<u>Mean Scores</u>	<u>Treatment</u>	<u>Control</u>	<u>Treatment</u>	<u>Control</u>
Intention to Smoke	4.21	3.91	3.79	3.97
Intention to Drink	3.15	3.01	3.00	3.17
Intention to use Marijuana	4.05	3.88	3.68	3.75
<u>Intentions to use Violence</u>	4.04	3.76	3.94	3.67

Note: Dependent variables measured on a rating scale ranging for 1.0 to 5.0. Scores are coded such that a score of 5.0 is the most positive or desirable result.

Examining All Posttest Scores. Assuming a near perfect world where student error in entering random coding did not occur or a better coding did not occur or a better coding procedure was used, the question remained if there was potential bias related to the impact of the prevention program based on scores that could be matched with a pretest score and those that were lost due to a failure to match. In other words, was there something unusual in the response patterns of the entire population of treatment and control groups at the end of the semester relative to students' scores that would be used for formal reporting of the study results.

Two one-way multivariate analysis of variances were conducted using all available posttest scores (see Table 2). Potential differences between students' posttest scores on intentions to use tobacco, alcohol, marijuana or engage in fighting within the next 12 months for the Treatment condition showed a significant main effect (Wilks' Lambda .956 *df* = 4, 328, *F* = 3.44, *p* = .009), suggesting students in the treatment group held fewer intentions or

were less likely to engage in these behaviors in comparison to students in the control group. The second MANOVA examined potential differences between students' posttest scores on the protective subscales. A significant main effect for the Treatment condition was found (Wilks' Lambda .770,  $df = 4, 328$ ,  $F = 10.88$ ,  $p = .0001$ ), suggesting students in the treatment group had higher scores on the protective factors in comparison to students in the control group. The results of these two tests offer some evidence that the pattern of the findings using all students did not differ from the pattern of findings for the sample of 201 students with paired pretest and posttest scores. In other words, if all available data could have been used, the results of the study would suggest the same conclusions.

Table 2. Multivariate Tests of Program Impact Using All Available Posttest Scores

<b>Posttest for Unmatched Pairs for Intentions to Use Substances/Violence</b>				
Effect	Wilks' $\Lambda$	$df$	$F$	$p$
Multivariate Between Effects				
Treatment/Group	.956	4, 328	3.44	.009
<b>Posttest for Unmatched Pairs for Students' Protective Factors</b>				
Effect	Wilks' $\Lambda$	$df$	$F$	$p$
Multivariate Between Effects				
Treatment/Group	.770	9, 327	10.88	.0001

Examining Pretest Equivalence for Matched Scores. Potential differences between matched students' pretest scores on intentions to use tobacco, alcohol, marijuana or engage in fighting within the next 12 months for the treatment and control group show no significant main effect for the Treatment condition (Wilks' Lambda .980,  $df = 4, 196$ ,  $F = 1.01$ ,  $p = .406$ ). The findings suggest that students in both groups held similar levels of intentions to use or not use tobacco, alcohol, marijuana or aggressive behavior in the future prior to the delivery of the program (see Table 3).





more positive intentions to not use substances or violence in comparison to control classrooms ( $F = 10.19, p = .01$ ). Sixty-four percent of the variance in the dependent variable "intentions to not use substances and violence" was associated with the treatment condition ( $\eta^2 = .64$ ). A significant between group effect was also noted for the Protective Score, with treatment classes evidencing higher protective score in comparison to control classes ( $F = 20.58, p = .002$ ). Eighty-one percent of the variance in the dependent variable "Protective Factors" was associated with the treatment condition ( $\eta^2 = .81$ ).

The findings for class-level data provide some confidence in exploring the data at the student-level. Comparisons between classes prior to program delivery suggest similar levels of intentions to use or not use substances and violence, and similar levels of protective factors for both groups. Following the delivery of the prevention program, treatment classrooms evidenced significant, positive effects in behavior, attitudes and perceptions relative to control classes.

Table 4. Analysis of Variance of Class Means Using Pretest Scores by Condition, and Analysis of Covariance of Class Means Using Adjusted Posttest Scores by Condition

<b>Classroom as the Unit of Analysis Using Pretest Scores</b>					
Source of Variance	SS	df	MS	F	p
<u>Pretest Intentions Score</u>					
Between Groups	.1781	1	.1781	3.27	.1100
Within Groups	.4902	9	.0545		
<u>Pretest Protective Score</u>					
Between Groups	.0293	1	.0293	2.26	.1671
Within Groups	.1165	9	.0130		
-----					
<b>Classroom as the Unit of Analysis Using Adjusted Posttest Scores</b>					
Source of Variance	Adjusted SS	df	MS	F	p
<u>Posttest Intention Score</u>					
Between Groups	.2449	1	.2449	10.19	.0128
Within Groups	.1923	8	.0240		$\eta^2 = .64$
<u>Posttest Protective Score</u>					
Between Groups	.4686	1	.4686	20.58	.0019
Within Groups	.1821	8	.0228		$\eta^2 = .81$

$\eta^2 =$  Eta Squared, estimate of variance accounted

## Intentions Toward Substance and Violence

It should be noted when the design of the study was developed, the decision was made not to ask students to report their personal use or frequency of use of either tobacco, alcohol, marijuana or aggressive behavior. The reason for this decision was twofold. First, the right to privacy and informed consent would require signed parental agreement for students to respond to questions of this nature. Second, the very nature of these types of questions require youths to indicate whether they are directly engaging in illegal or inappropriate behaviors. It is the judgment of the researcher that young people's responses to items regarding their likelihood or intentions to experiment or use ATOD or engage in aggressive behavior in the near future can also be used--perhaps in a less threatening way--to group respondents and examine changes in intentions to use and/or current use of tobacco, alcohol, marijuana or violence (Bacon, 2000).

Responses to four survey items that asked students to indicate their level of agreement with statements about their personal decisions to not engage in tobacco, alcohol, marijuana or violence use within the next 12 months were used to estimate students' behavior status. Item scores were dichotomized to create categories of students less likely to be engaging in ATOD or violent behaviors from students who were more likely or engaging in one or more of the ATODs or violent behaviors. Students who felt strongly about their decision to not use tobacco, alcohol, marijuana or violence, at the time of the pretest, were coded as "nonusers." Student who were less certain of their intentions to not engage in ATOD or violent behaviors were coded as "potential users." The nonuser-potential user categories were computed to parallel other researchers' examination of prevention treatment effects on youths who reported not using tobacco, alcohol or marijuana prior to program implementation and youths' reported ATOD behaviors after program implementation (Ellickson & Bell, 1990; Botvin et al., 1990; Botvin, 1980). Students' reported intentions to use substances or violence on the posttest were examined for students identified as not using tobacco, alcohol, marijuana or violence at

the pretest. In essence, the researcher was looking for the rates of new users of substances or violence following the delivery of the program. Due to sample size, alpha levels were set at .10.

Intentions of Tobacco. The findings suggest that 15% (13 out of 88) of the students in the treatment condition indicated greater likelihood or actual tobacco use at the end of program delivery in comparison to 25% (13 out of 63) of the students in the control group ( $X^2 = 2.67, p_{\alpha} = .07$ ). Following the delivery of the TGFD&V program, the proportion of student smoking initiation or intentions were reduced by 40% for the treatment group relative to students in the control group.

Intentions for Drinking. Nineteen percent (9 out of 48) of the students in the treatment condition indicated greater likelihood or actual alcohol use at the end of program delivery in comparison to 38% (13 out of 34) of the students in the control group ( $X^2 = 3.85, p_{\alpha} = .04$ ). In other words, following the delivery of the TGFD&V program, the proportion of student drinking initiation or intentions were reduced by 50% for the treatment group relative to students in the control group.

Intentions for Marijuana. Fifteen percent (12 out of 79) of the students in the treatment condition indicated greater likelihood or actual marijuana use at the end of program delivery in comparison to 27% (16 out of 59) of the students in the control group ( $X^2 = 2.97, p_{\alpha} = .06$ ). Following the delivery of the TGFD&V program, the proportion of student marijuana initiation or intentions were reduced by 45% for the treatment group relative to students in the control group.

Intentions for Fighting. Sixteen percent (12 out of 77) of the students in the treatment condition indicated greater likelihood or use of aggressive behavior at the end of program delivery in comparison to 29% (15 out of 52) of the students in the control group ( $X^2 = 3.30, p_{\alpha} = .05$ ). Following the delivery of the TGFD&V program, the proportion of fighting intentions were

reduced by 45% for the treatment group relative to students in the control group.

### Impact on Protective Factors

The mean item score for the nine protective subscales on the posttest were examined using a Multivariate Analysis of Covariance (MANCOVA) procedure with the pretest score as the covariate and treatment condition as the independent variable. Observed and adjusted protective subscale scores by treatment condition are provided in Table 5. A significant multivariate main effect was observed for the Treatment condition (Wilks' Lambda .675,  $df = 9, 190$ ,  $F = 10.18$ ,  $p = .0001$ ).

Table 5. Observed and Adjusted Posttest Protective Scores by Treatment Condition

<u>Protective Subscales</u>	<u>Treatment</u>				<u>Control</u>			
	<u>Observed</u>		<u>Adjusted</u>		<u>Observed</u>		<u>Adjusted</u>	
	M	SD	M	SE	M	SD	M	SE
Attitudes Towards Drugs	3.98	.721	3.94	.060	3.33	.803	3.37	.068
Attitudes Towards Violence	4.01	.767	3.97	.065	3.51	.784	3.55	.073
Perceived Peer Norms	3.36	.815	3.34	.070	2.67	.721	2.69	.079
Peer Disapprove of Use	3.32	.831	3.30	.078	2.75	.840	2.77	.087
Emotional Competence	4.11	.515	4.09	.048	3.76	.587	3.79	.054
Social & Resistance Skills	4.10	.559	4.07	.050	3.69	.667	3.73	.056
Goals & Decision Making	3.79	.722	3.76	.065	3.29	.856	3.33	.073
Perceived Harmful Effects	4.07	.771	4.03	.073	3.39	1.00	3.44	.082
Parental Expectations	4.20	.721	4.17	.065	3.95	.733	3.98	.073

Note: M = Mean; SD = Standard Deviation; SE = Standard Error of the Measure.

Shown in Table 6, are the results of the follow up ANCOVA's conducted to identify which of the nine protective subscales were contributing to differences between the treatment and control condition. The results of the post hoc analyses suggest students in the treatment group evidenced, in comparison to students in the control group, significantly higher scores in eight of the nine protective areas. Students participating in the TGFD&V program evidenced more positive scores in their: (a) attitudes towards non-drug use; (b) attitudes towards non-violence; (c) awareness of peer norms in substance and violence use; (d) perceptions of peers being less accepting of substance and violence use; (e) perceptions of emotional competence or efficacy; (f) perceptions of goal setting and decision making skills; (g) perceptions of social and peer resistance skills; and (h) perceptions of the harmful effects of substance use. Although the "Home Work-Outs" appeared to have a positive influence on parent-child interaction and discussions, these findings must be considered potentially spurious given adjustments for repeated hypothesis testing for Type 1 error.

Table 6. Multivariate Analysis of Covariance and Follow Up Univariate Analysis of Covariance on Protective Subscales by Treatment Condition

<i>Effects</i>	<i>Wilks'Λ</i>	<i>df</i>	<i>F</i>	<i>p</i>
Multivariate Effects				
Covariate (Pretest)	.546	9, 190	17.58	.0001
Treatment Group	.675	9, 190	10.18	.0001
Follow Up Univariate <i>F</i> tests Adjusted for Pretest by Treatment Condition				
Attitudes Towards Drugs		1, 198	39.31	.0001
Attitudes Towards Violence		1, 198	18.79	.0001
Perceived Peer Norms		1, 198	37.57	.0001
Peer Approval of Use		1, 198	20.59	.0001
Emotional Competence		1, 198	17.61	.0001
Social & Resistance Skills		1, 198	20.89	.0001
Goal Setting & Decision Making		1, 198	18.97	.0001
Perceived Harmful Effects		1, 198	28.39	.0001
Parental Expectations		1, 198	3.93	.0487 <sup>a</sup>

a = exceeds Bonferroni type adjustment for experimentwise Type 1 error

## Summary and Conclusions

In consideration of the fact that school-based prevention programs are a piece of the broad spectrum of prevention/intervention strategies--their usefulness or contribution to healthy growth and decision-making on the part of young people--is highly dependent on the integrity, potency and commitment in which it is delivered and maintained. Prevention research shows a direct relationship between the efficacy of program implementation and the program's potential to impact participants (Botvin, et al., 1990; Botvin, Dusenbury, James-Ortiz, Kerner, 1989). In this study, classroom teachers' responses to items on a survey questionnaire suggest the *TGFD&V* program was implemented as planned with a high degree of quality and fidelity to curriculum content and learning activities.

Prior to delivery of the *TGFD&V* program, students in the treatment and control groups indicated similar levels of intentions to use or not use tobacco, alcohol, marijuana or violence within the next 12 months. When the students in the pilot sample were asked prior to the delivery of the program how strongly they agreed or disagreed with statements about their intentions to use substances and violence: 75% agreed or strongly agreed that they did not plan to use tobacco; 41% indicated they did not plan to use alcohol; 69% indicated they did not intend to use marijuana; and 66% indicated they did not plan to engage in fighting or aggressive behavior.

Item responses for students who indicated that they were *not using or did not plan* to use substances or violence were reexamined following the delivery of the program. Student responses suggest the following:

- (a) After program delivery, smoking initiation, use or intention was reduced by 40% for students participating in the *TGFD&V* program in comparison to students in the control group.

- (b) After program delivery, drinking initiation, use or intention was reduced by 50% for students participating in the *TGFD&V* program in comparison to students in the control group.
- (c) After program delivery, marijuana initiation, use or intention was reduced by 45% for students participating in the *TGFD&V* program in comparison to students in the control group.
- (d) After program delivery, aggressive behavior use or intention was reduced by 45% for students participating in the *TGFD&V* program in comparison to students in the control group.

Prevention research has identified certain risk factors that increase the likelihood that a student will engage in risk behaviors and certain protective factors that decrease or buffer the impact of the risk factors (Hawkins, Catalano, and Miller, 1992; Werner and Smith, 1992; Benson, 1997). The *TGFD&V* program incorporates curriculum and instructional activities aimed at building protective factors. Student responses to survey items following the delivery of the prevention program suggest the following:

- (a) Students participating in the *TGFD&V* program had statistically significant higher scores or more appropriate attitudes regarding drug use in comparison to students in the control group.
- (b) Students participating in the *TGFD&V* program had statistically significant higher scores or more appropriate attitudes regarding aggressive or violent behaviors in comparison to students in the control group.
- (c) Students participating in the *TGFD&V* program had statistically significant higher scores or were more knowledgeable of actual rates of substance and



violence use among youth in their age group (peer norms) in comparison to students in the control group.

- (d) Students participating in the *TGFD&V* program had statistically significant higher scores or thought their peer group was less accepting of tobacco, alcohol, marijuana, or violence use in comparison to students in the control group.
- (e) Students participating in the *TGFD&V* program had statistically significant higher scores or higher levels of emotional competence/self efficacy in comparison to students in the control group.
- (f) Students participating in the *TGFD&V* program had statistically significant higher scores or more positive perceptions of their goal setting and decision making skills in comparison to students in the control group.
- (g) Students participating in the *TGFD&V* program had statistically higher scores or more positive perceptions of their social and peer resistance skills in comparison to students in the control group.
- (h) Students participating in the *TGFD&V* program had statistically significant higher scores or perceptions of the harmful effects of smoking, drinking and marijuana use in comparison to students in the control group.
- (i) Students participating in the *TGFD&V* program had higher scores or perceptions of parental disapproval of youth substance use in comparison to students in the control group.

In summary, the *TGFD&V* program evidenced positive effects on high school students' intentions to use tobacco, alcohol or

marijuana or to engage in aggressive behaviors. The program was also successful in impacting students' protective factors associated with strengthening young people's abilities to make positive, healthy decisions.

*TGFD&V* program's strengths as well as its challenges are mirrored in other "proven" program's research. Those challenges include, primarily, the tendency for some substance use behaviors and protective factors to degrade or lessen over time in combination with adolescents' maturational process including peer pressure and tolerance for risk taking behaviors (Murray, Davis-Hearn, Goldman, Pirie and Luepker, 1988; Flay, et al., 1989). It is a reminder to educators that prevention curriculum cannot be a one shot deal, but must be an ongoing process within and across school-years (Shope, et al., 1990; Sigelman, 1992; Botvin, et al., 1995). It is also a reminder that schools and educators cannot, in isolation, help young people with the challenges they face, but must collaborate and coordinate with the whole community of prevention and intervention efforts offered by other agencies, institutions, neighborhoods and families.

There are limitations that need to be considered when interpreting the results. Generalizing the findings to more academically and economically challenged school settings may be limited. No extended follow up testing was conducted to examine a long term effects of the program on students' intentions, attitudes and perceptions. Sample size was limited in the pilot, preventing reasonable exploration of potential differences in program impact due to grade-level, gender, ethnicity, high risk, exceptional needs, and economic status. Future research for examining the efficacy of this program should include larger samples representing a broad spectrum of student populations with program effects examined over time.

Another consideration in this study is the *TGFD&V* program being delivered by trained instructors rather than classroom teachers. However, research findings suggest that formal instructors,

classroom teachers and peer leaders, and other combinations of program delivery can facilitate similar positive results provided the curriculum is delivered as planned (Botvin, et al., 1990; Ellickson & Bell, 1990).

Also evidenced in this study, as in almost all other prevention studies, is the loss of participant information over time. Examination of student attrition from the time of the pretest to the posttest did not suggest any bias towards differential response rates for students that were more or less likely to be using tobacco, alcohol or marijuana. Differential rates of student attrition have, however, been noted in other studies, particularly with older youth where substance use is more prevalent.

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