

# Project Towards No Drug Abuse: A Review of the Findings and Future Directions

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**Objective:** To provide a review of the evidence from 3 experimental trials of Project Towards No Drug Abuse (TND), a senior-high-school-based drug abuse prevention program. **Methods:** Theoretical concepts, subjects, designs, hypotheses, findings, and conclusions of these trials are presented. A total of 2,468 high school youth from 42 schools in southern California were sur-

veyed. **Results:** The Project TND curriculum shows reductions in the use of cigarettes, alcohol, marijuana, hard drugs, weapon carrying, and victimization. Most of these results were replicated across the 3 trials. **Conclusion:** Project TND is an effective drug and violence prevention program for older teens, at least for one-year follow-up.

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Very few effective drug abuse prevention programs that target senior-high-school-aged youth have been developed.<sup>1</sup> For young teens, comprehensive social-influences drug abuse prevention programs have been found to be most effective.<sup>2-3</sup> These programs rely on an assumption that a small minority of youth is experimenting with drug use, and activities are developed specifically for young teens (ie, late elementary or middle school-level) to reinforce non-drug use norms. However, for older teens, comprehensive social influences programming may be less relevant.<sup>4-6</sup> A relatively greater percentage of older, senior-high-school-aged youth have experimented

with drug use. A relatively greater percentage of older teens are using drugs for intra-personal reasons. Also, many older youths find some comprehensive social influences activities such as refusal assertion training unacceptable or silly.<sup>5-8</sup>

Project Towards No Drug Abuse (TND) is an ongoing drug abuse prevention project designed to develop and test school-based prevention strategies specifically for senior-high-school-aged youth. This paper provides a succinct summary of the 3 experimental field trials conducted to date, the lessons learned, and future directions of the project.

## Theoretical Background

The theoretical background for Project TND is a motivation-skills-decision-making (MSD) model.<sup>6</sup> The MSD model is described in detail elsewhere.<sup>6</sup> This model posits that problem behaviors such as drug use are related to deficits in 3 classes of variables. First, motivation variables consist of one's attitudes, beliefs, and desires regarding the target behavior. If one does not believe that drug use is wrong,<sup>9</sup> if one holds myths regarding the

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effects of drug use,<sup>9-10</sup> and if one desires to use drugs,<sup>11</sup> then drug use is more likely. This view of motivation is compatible with the self-regulation motivation perspective of Levanthal and colleagues<sup>11</sup> and the motivational enhancement perspective of Miller and colleagues.<sup>12</sup> This perspective and other major psychosocial theories of motivation are reviewed elsewhere.<sup>13</sup> Second, if one lacks general social conversation skills or self-control skills that facilitate bonding to lower risk groups, one is more likely to use drugs.<sup>5,14-18</sup> This perspective is compatible with the social-network development model of Eggert and colleagues.<sup>16</sup> Finally, if one does not have the cognitive processing skills necessary to make a rational decision, above and beyond motivation information and social skills, then one is more likely to use drugs.<sup>16</sup> Correcting deficits in this triad of variables is the goal of TND prevention programming.

### **Project TND Curriculum**

At the core of Project TND is a set of in-class sessions that provide motivation-skills-decision-making material targeting the use of cigarettes, alcohol, marijuana, hard drug and violence-related behavior such as weapon carrying. These sessions were developed through an iterative empirical curriculum development process in which session concepts, activities, format, and impact were repeatedly evaluated with input from the target population (high school students).<sup>6</sup>

The current version of the Project TND curriculum contains twelve 40-minute interactive sessions. These sessions are summarized in the Appendix. Session 1 has the goal to teach youth how to communicate effectively and listen to material with an open mind (motivation and skills material). Session 2 has the goal of making high-risk youth aware that they may make themselves more "at risk" for substance abuse by giving in to a self-fulfilling prophecy, and that they can rebel against negative stereotyping by not abusing drugs.<sup>19</sup> Prevalence data regarding high school drug use also is provided, to demonstrate the tendency to overestimate use among peers (motivation material). Session 3 has the goal of confronting myths that facilitate drug use (eg, people get "used" to a drug). In addition, this session confronts "denial" regarding drug use (ie, tendency to blame others, deny

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injury, deny effects on others, reinterpret effects), to minimize the perceptions of positive functions of drug use (motivation and decision-making material).<sup>9-10</sup> Session 4 has the goal of providing information about the course of negative consequences associated with chemical dependency-Trial use, Recreational use, Abuse, "Pinned" down (addicted), or TRAP.<sup>20</sup> In addition, this session discusses the family/social contexts of drug abuse (family roles, enabling) and the availability of assistance to those affected by the drug abuser (motivation material).<sup>21</sup>

Session 5 has the goal of providing students with an empathetic and cognitive understanding of the negative consequences of drug abuse, through use of a "talk show" activity. This session also permits active review of prior information (eg, applies TRAP sequence to marijuana use, specifically), and teaches perspective taking regarding drug abuse effects (motivation and decision-making material).<sup>5-6</sup> Session 6 has the goal of teaching students the consequences of marijuana use through use of a group panel activity, involving an ex-user, a boy/girlfriend of a marijuana user, a parent of a marijuana user, and a scientist (motivation material).<sup>22-23</sup> Session 7 has the goal of providing smoking cessation information through playing a "tobacco basketball" question game and by reading a brief quit manual (eg, how to withdraw from nicotine; motivation and skills material).<sup>7</sup>

Session 8 has the goal of emphasizing the importance of health as a value for a happy life in the long run and ties youths' current values to health.<sup>24</sup> In addition, it provides coping alternatives to drug abuse to help people proactively or reactively deal with stress (eg, consider healthy alternatives, others' social support seeking, problem solving, and esteem building, or COPE; motivation and skills material).<sup>25-26</sup> Session 9 has the goal of teach-

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ing youth to be aware of different social contexts and match social behavior to the context. This session also teaches youth not to act in ways that alienate others (eg, self-control, assertiveness) to improve chances of making social bonds and achieve personal goals (skills material).<sup>6,16,18</sup> Session 10 has the goal of showing how positive thinking, choices, and behavior or negative thinking, choices, and behavior are tied together as process "loops" (motivation and decision-making material). In addition, reasons that people get in violent situations and methods to avoid violence (eg, fogging) are presented (skills material).<sup>27</sup> Session 11 considers that most people hold general self-statements as being moderates (as opposed to radicals or conservatives). Then, by examining their specific attitudes toward drug use in the context of their general self-statements, a more conservative, antidrug abuse perspective may be elicited (motivation and decision-making material).<sup>6</sup> Session 12 has the goal to motivate youth to think through the pros and cons of drug use and make a commitment to themselves regarding whether or not they desire to avoid drug abuse, or engage in other antidrug use behaviors (decision-making material).<sup>7</sup>

**Methodological Designs of 3 Experimental Field Trials**

To date, Project TND has conducted 3 sequential experimental field trials that tested the motivation-skills decision-making-based curriculum. Each experimental field trial took place in public high schools in southern California. The first experimental field trial, *Towards No Drug Abuse-First Curriculum Version-Continuation High School Trial (TND-1 CHS)*, was conducted from 1994 to 1995 and took place in 21 continuation (alternative) high schools.<sup>28</sup> A randomized block design was

used to assign these schools to 1 of 3 conditions: a standard care control condition, a 9-session classroom program, or a 9-session classroom program plus the addition of a school-as-community component. There were 7 schools per condition. In one program condition, students at the schools received a 9-session version of the TND curriculum, delivered by project staff health educators, while in class. In the second program condition, schools offered a set of 6 extra-curricular antidrug focused activities, coordinated by school staff and students, in addition to project staff presenting the 9-lesson in-class TND curriculum. Students at schools in the control condition completed the pretest and follow-up surveys only.

The purpose of this trial was to test the impact of the TND classroom curriculum, as delivered alone or in combination with a set of student organized antidrug activities outside the classroom. It was hypothesized that the classroom program would provide a reduction in problem behavior rates, compared to rates observed in the control schools. It was also hypothesized that the addition of extra-curricular activities to the program would provide an even greater reduction than would the classroom program alone.

*Towards No Drug Abuse-First Curriculum Version-Regular High School Trial (TND-1 RHS)* was the second experimental field trial, conducted from 1995 to 1996. This trial took place at 3 regular (comprehensive/traditional) high schools. This trial involved a 2-group experimental design. Within each school approximately 8 classrooms were randomly assigned to 2 conditions. Specifically, a randomized block design was used to assign 26 classrooms to 1 of 2 conditions: the 9-session classroom program or a standard care control condition. There were 13 classrooms per condition. The program condition consisted of the 9-session TND-1 curriculum, delivered by project staff health educators, to students while in class. Control condition classes completed the pretest and follow-up surveys only.

The purpose of this trial was to test whether or not the TND classroom curriculum would generalize to the regular high school context.<sup>29</sup> It was hypothesized that the classroom program would provide a reduction in problem behavior rates one year later, relative to the controls.

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**TABLE 1**  
**Study Designs and Conclusions of the 3 TND Trials**

|                    | TND-I CHS   | TND-I RHS  | TND-II CHS                                       |
|--------------------|---|--|--|
| # Groups           | 3-Experimental  | 2-Experimental   | 3-Experimental                                   |
| Unit of Assignment | School (N=21)   | Classroom (N=26); 9 <sup>th</sup> , 10 <sup>th</sup> , & 11 <sup>th</sup> grades | School (N=18)                                    |
| Hypothesis         | School-activities with classroom (SAC) > classroom only > control | Classroom only > control   | Health educator led > self-instruction > control |
| Results            | SAC= classroom only > control                                     | Classroom only > control   | Health educator led > self-instruction = control |

*Curriculum Version-Continuation High School Trial (TND-2 CHS)* was the third experimental field trial, and it was implemented from 1997 to 1998. Three sessions were added to create a revised curriculum. The 12-session version of the curriculum, described above, contained the same motivation-skills-decision-making material as those of the TND-1 trials, with the addition of 3 new sessions that provided more information about tobacco and marijuana use and violence prevention. These new sessions are indicated above as Sessions 6, 7, and 10. This experimental field trial involved 18 continuation high schools. A randomized block design was used to assign these schools to 1 of 3 conditions: standard care control condition, a 12-session classroom program, or a 12-session self-instructional version of the program. There were 6 continuation high schools in each condition. In one program condition, students at the schools received the 12-session version of the TND curriculum (TND-2), delivered by project staff health educators, in class. In the second program condition, students completed a self-instruction version of the 12-session TND-2 curriculum. The self-instruction version contained the same material and concepts as the health-educator-led version, but each student completed the lessons on their own, while in class.<sup>30</sup> Self-instructional programming is the major means of imparting academic material in continuation high schools. Students at schools in the control condition completed the pretest and

follow-up surveys only.

The purpose of this experimental field trial was to examine the relative effectiveness of a health-educator-led or a self-instruction version of the TND curriculum. It was hypothesized that the TND-2 curriculum, in either format, would provide a reduction in problem behavior rate one-year later, relative to the control condition. It was further hypothesized that, consistent with a recent review of drug abuse prevention programming,<sup>31</sup> the students in the interactive, health-educator led condition would exhibit a greater reduction in prevalence rates than would students in the self-instruction condition (the latter condition involves provision of feedback but no classroom interaction).

Below we summarize briefly the subject population characteristics, measures, and results from each experimental field trial. Subject sample demographics and baseline behavior rates across the 3 experimental field trials are shown in Table 3. The methodological designs, hypotheses and results of these 3 experimental field trials are summarized in Tables 1 and 2.

### Subjects

Two of the experimental field trials (TND-1 CHS and TND-2 CHS) involved continuation high schools (CHS). Continuation high schools serve youth who are unable to remain in the traditional public high school setting due to functional problems such as difficulties in attendance, achieving academic credits

**TABLE 2**  
**Percent Relative Reductions in Prevalence of Problem Behaviors Across the 3 Experimental TND Trials**

|                              | TND-I CHS       | TND-I RHS       | TND-II CHS        |
|------------------------------|-----------------|-----------------|-------------------|
| Hard Drug Use                | 25              | 25              | 26                |
| Alcohol Use <sup>a</sup>     | 7               | 12              | 9                 |
| Marijuana Use                | 2 <sup>NS</sup> | 1 <sup>NS</sup> | 22                |
| Cigarette Use                | 1 <sup>NS</sup> | 2 <sup>NS</sup> | 27                |
| Victimization <sup>b</sup>   | 23              | 17              | 6                 |
| Weapon Carrying <sup>b</sup> | 21              | 19              | 0 <sup>NS,c</sup> |

NS Not significant, otherwise values are significant at  $p < .05$ .

a Baseline users only

b Males only

c There is an effect for baseline non-weapon carriers only, both males and females, 37% relative reduction.

Drug use refers to any use in the last 30 days.

Violence-related measures refer to behavior in the last 12 months.

or drug use. Continuation high schools provide a higher teacher-student ratio than that of the regular high schools (15:1 versus 30:1) and typically utilize an adult instruction model in which youth use self-instruction materials, with teacher assistance, and complete course credit packages at their own pace.<sup>6,8</sup> CHS students are not typically assigned a discrete grade level, but are generally 15-16 years old, ie, equivalent in age and years of schooling to students in 10<sup>th</sup> or 11<sup>th</sup> grade. Each public high school district in California with more than 100 high school students is required to have a continuation high school, and similar types of schools exist nationally.

As shown in Table 3, percent male, percent Latino, percent drug use in the last 30 days and percent weapon carrying and victimization in the last year are much higher among continuation high school youth compared to regular (traditional) high school youth. For example, 30-day cigarette, alcohol, and marijuana use are approximately twice as high in the CHS sample as compared to the RHS sample. Hard drug use is approximately 4 times as high in the CHS sample as compared to the RHS sample. The regular high school behavior rates seen in our study sample are similar to those observed in the Monitoring the Future National survey of regular high school youth

at the same time point.<sup>32</sup> The continuation high school behavior rates observed in our samples are also typical of those seen in national surveys of alternative high school youth at these time points,<sup>33</sup> indicating comparability of our study samples problem behavior rates to those seen nationally.

#### Main Outcome Measures

Each TND experimental field trial used the same set of outcome measures. To assess current drug-use behavior, subjects were asked a common stem: "How many times in the last month (30 days) have you used..." for each of 8 different drug categories. The specific drug category wordings were (a) "cigarettes," (b) "alcohol," (c) "marijuana," (d) "cocaine (crack)," (e) "hallucinogens (LSD, acid, mushrooms)," (f) "stimulants (ice, speed, amphetamines)," (g) "inhalants (rush, nitrous)," and (h) "other drugs (depressants, PCP, steroids, heroin, etc)." For each drug use category, 11 response choices were provided to indicate frequency of use: the first choice was "0," with the other 10 choices listed in increasing intervals of 10 (eg, "1-10 times," "11-20 times"), up to the last category of "91-100+ times." Responses for cigarette, alcohol, and marijuana use were used in analysis as separate outcome measures. The responses to the remaining 5 drug-use items were

**TABLE 3**  
**Demographic and Baseline Behavioral Characteristics of**  
**Subjects in the 3 TND Experimental Trials**

|                       | TND-I CHS            |                      | TND-I RHS |          | TND-II CHS |          |
|-----------------------|----------------------|----------------------|-----------|----------|------------|----------|
| <b>Demographics</b>   |                      |                      |           |          |            |          |
| % Male                | 62                   |                      | 47        |          | 54         |          |
| % Anglo               | 37                   |                      | 34        |          | 45         |          |
| % Latino              | 46                   |                      | 38        |          | 42         |          |
| % Black               | 8                    |                      | 26        |          | 5          |          |
| % Asian               | 4                    |                      | 1         |          | 7          |          |
| % Other               | 5                    |                      | 1         |          | 1          |          |
| <b>Drug Use</b>       |                      |                      |           |          |            |          |
| % Using Cigarettes    | 57                   |                      | 24        |          | 57         |          |
| % Using Alcohol       | 64                   |                      | 36        |          | 63         |          |
| % Using Marijuana     | 55                   |                      | 22        |          | 54         |          |
| % Using Hard Drugs    | 29                   |                      | 7         |          | 30         |          |
| % Using Stimulants    | 21                   |                      | 2         |          | 17         |          |
| % Using Hallucinogens | 13                   |                      | 2         |          | 14         |          |
| % Using Cocaine       | 8                    |                      | 1         |          | 9          |          |
| <b>Violence</b>       |                      |                      |           |          |            |          |
|                       | <b>M<sup>a</sup></b> | <b>F<sup>b</sup></b> | <b>M</b>  | <b>F</b> | <b>M</b>   | <b>F</b> |
| % Weapon Carrying     | 60                   | 22                   | 34        | 15       | 53         | 18       |
| % Victimization       | 68                   | 40                   | 37        | 28       | 60         | 50       |
| N                     | 1,074                |                      | 679       |          | 715        |          |

**a Males**

**b Females**

**Drug use % = Pertains to any use in last 30 days.**

**Violence-related % = Pertains to any such behavior in the last 12 months.**

summed to form a hard-drug-use index (Cronbach's alpha ranges from .82 to .83 across trials). The items and response categories for these drug-use outcome measures are derived from the national Monitoring the Future survey, and their reliability and validity have been extensively documented.<sup>32</sup>

The violence victimization outcome measure was an index derived from the 1981 Monitoring the Future survey, form 2, and consisted of the averaged response to three 6-point items: "In the last 12 months, how many times...", "...has someone injured you with a weapon (like a knife, gun, or club)", "...has someone threatened you with a weapon, but not actually injured you", and "...has someone injured you on purpose without using a weapon?" (Cronbach's alpha ranges from .81 to .83 across trials).<sup>34</sup> The 6-point response scale to indicate frequency for each item ranged from *never* to *5 or more*

in increments of one.

Students also were provided with a "list of things that some people do to protect themselves" and asked to indicate how often they engaged in each behavior in the past 12 months. "Carry a knife" and "carry a gun" were included in the list. These 2 items also carried a 6-point response scale to indicate the frequency, and ranged from *never* to *5 or more* in increments of one. These 2 items were summed to form the weapon-carrying outcome measure ( $r=.51$ ).

For primary analysis, each of the above frequency category responses was transformed to a binary indicator by dichotomizing at zero (*never*) and one or more times to allow formation of simple behavior indicator prevalence outcomes (ie, percent of respondents exhibiting the behavior).

#### **Data Collection**

In all 3 experimental field trials, the

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same data-collection protocol was used. Prior to the pretest survey administration, students were asked to have their parents sign and return a human subject committee-approved consent form providing written permission or refusal for participation in the program testing. For students who did not return a signed form, attempts were made a few days prior to testing by project staff to contact the parent by telephone to obtain verbal permission or refusal. Students for whom parental response could not be obtained after at least 3 attempts were surveyed anonymously at pretest, but were not targeted for long-term follow-up. The parent consent response rates for each of the 2 CHS studies were approximately 85%, with a 5% refusal rate. For the RHS study, parent consent return rates were 91%, with a 1% refusal rate.

The pretest data collection involved the collection of paper-and-pencil questionnaires. Data collection was conducted solely by project staff who were not responsible for instruction of that particular set of students. Pretest measures were collected during single classroom sessions during regular school hours. The curricula were delivered at 3 sessions per week in all trials (Tuesday, Wednesday, and Thursday of each week). Thus, it took 3 weeks to deliver the 9-session version of the program and 4 weeks to deliver the 12-session version.

In each experimental field trial, the one-year follow-up survey was administered in one of 2 ways. If a targeted student was still enrolled at the high school one year later (approximately 25% of those in the CHS studies, 80% in the RHS study), project staff (previously unknown to the student) went to the school and surveyed them in class using a paper-and-pencil questionnaire. If a student was no longer at the high school, the

follow-up surveys were administered by telephone using an interview format. Project staff (previously unknown to the student) contacted the subjects at home by telephone, read the questionnaire items to them, and recorded their responses on a survey form. Survey items and response categories were identical to the in-school questionnaire format and subject responses consisted of innocuous words such as numbers, letters, agree-disagree, or true-false.

All collection efforts were stopped after 4 months of attempting to follow-up subjects from a given school. An average of 65% of the baseline sample was followed-up at one-year post implementation across all 3 experimental field trials, 67% and 69% in the two CHS trials and 63% in the RHS trial. These are typical of rates obtained with public school samples at one-year follow-up in the majority of published drug prevention trials, as documented in a review by Hansen, Tobler and Graham.<sup>35</sup> Auxiliary analysis of the TND experimental field trial data have indicated that the set of youth that were successfully followed-up did not differ significantly from the full baseline sample on subject demographics or baseline levels of the outcome variables in each of the experimental field trials.<sup>28</sup>

#### **Data Analysis**

All 3 experimental field trials used the same statistical model and analytic strategy for testing for program effectiveness. Formally, that model is the generalized mixed linear model, parameterized as the more familiar analysis of covariance (ANCOVA). In this statistical model (PROC MIXED and PROC GLIMMIX), experimental conditions are treated as fixed effect model parameters, and subjects, schools, and classrooms are parameterized as random coefficients.<sup>36-37</sup> This statistical model controls for random nested design factors (subjects within schools within conditions; intra-class correlations), random nuisance effects factors (here, mode of collection at one-year follow-up as a nuisance factor - telephone or in-class), while examining fixed effect contrasts between experimental conditions. Statistical tests are standard F-ratios, with degrees of freedom based on the number of randomly assigned units (schools or classrooms). Baseline prevalence rates and subject demographic factors such as race, age,

and gender were included as covariates in the models. Interactions between program conditions and baseline use rates, and program conditions and subject demographic factors also were examined in each trial.

Auxiliary analyses were completed in all 3 experimental field trials. Condition comparability comparisons at baseline were calculated as a check on random assignment. Comparisons of the targeted longitudinal samples to the general populations from which they were drawn were calculated as a check on potential selection biases due to parental consenting requirements. Comparisons of those followed and not followed were calculated as a check on potential attrition biases. Also, follow-up collection method-by-condition interaction effects were calculated as a check on reporting biases. In each case, the auxiliary analysis revealed no evidence of biases in the experiments due to these factors. The statistical model and analysis strategy used in the TND experimental field trials represent the state-of-the-art recommended approach to analysis of school-based drug abuse prevention data.<sup>36</sup>

The primary indicator of program impact used in the summary presented here is the percent reduction in prevalence, relative to controls, of each of the outcome measures. Percent reduction is calculated as the difference between the program condition and control condition prevalence rates at one-year follow-up, standardized (divided) by the prevalence rate of the controls at that time-point. This measure allows comparison of treatment effect sizes across a range of expected rates of behavior prevalence and is a common measure of treatment impact in the evidence review literature.<sup>37</sup>

## RESULTS

In all 3 trials, statistical power was adequate to test the study hypotheses (power greater than 0.8). In addition, intra-class correlation issues were appropriately addressed. Also, all results presented below are statistically significant at a  $p < .05$ , one-tailed.

### TND-1 CHS

The results at one-year follow-up revealed that students from schools in either program condition exhibited a 25% reduction in hard drug use prevalence

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## ***In all 3 trials, statistical power was adequate to test the study hypotheses (power greater than 0.8).***

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rates, relative to students from the control schools.<sup>28</sup> In addition, a 7% reduction in alcohol use prevalence was observed for students in either program condition, relative to controls, but only among those who were using alcohol at baseline (64% of the sample). Prevalence reduction effects were also found for the 2 program conditions, relative to controls, on weapon carrying (21% relative reduction) and victimization (23% relative reduction) among males.<sup>34</sup> No reduction effects, relative to controls, were found on the prevalence of cigarette smoking or marijuana use in either program condition. Also, despite the fact that the school-led extra-curricular activities component appeared to be successfully carried out,<sup>38</sup> there appeared to be no incremental effect of those activities on problem behaviors above and beyond the presentation of the classroom curriculum.<sup>28</sup>

### TND-1 RHS

As hypothesized, the program condition did reduce the prevalence of problem behaviors at one-year follow-up.<sup>29</sup> The pattern of results replicated those found in the TND-1 CHS trial: reduction effects on prevalence of hard drug use (25%), alcohol use (12%) among baseline users; and weapon carrying (19%) and victimization (17%) among males. Also, as in TND-1 CHS, no evidence for reduction was found in the prevalence of cigarette smoking or marijuana use in this trial.

### TND-2 CHS

The results indicated that only the health educator led condition provided a reduction in problem behavior rates, relative to each of the other conditions; the self-instruction and control-condition observed rates of problem behavior did not differ significantly from each other at one-year follow-up. Reductions in prevalence were found in the health educator led condition for hard drug use (26% rela-

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**Several lessons were learned across these 3 trials.**

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tive reduction), alcohol use (9% relative reduction) among baseline users; and victimization (6%) among males. Reduction in prevalence of weapons carrying was found in supplemental analyses, among baseline non-weapon carriers (males and females, together; 37% relative reduction), but no other weapons carrying subgroup analyses were significant. In addition, prevalence reduction in cigarette smoking (27% relative reduction) and marijuana use (22% relative reduction) were observed for the health educator-led condition students.

**CONCLUSIONS**

Several lessons were learned across these 3 trials. First, a curriculum based on a motivation-skills-decision-making model appears to be an effective way to reduce prevalence of problem behaviors in high school youth. The evidence for the impact of the TND curriculum was very consistent across all 3 trials. Although one cannot totally rule out the effects of special attention received by students in the TND program relative to the standard-care control condition,<sup>39</sup> a recent review paper suggests to us that there is not likely to be a difference in drug use behavior between use of a mere placebo versus no treatment.<sup>40</sup>

Second, in TND-1 CHS, we failed to find an incremental effect of extra curricular antidrug events above and beyond the classroom-based TND curriculum at continuation high schools. The TND-1 CHS trial involved weekly anti-drug abuse planning meetings and 6 school events, as organized by students and a teacher facilitator.<sup>38</sup> Possibly, an enriched school environment program that would involve a majority of the student population over a sustained and substantial period of time would exert incremental effects. Also, there is no test of this component alone, or with RHS students. Possibly, the anti-drug school events could have provided a means for reducing prevalence in the

absence of the classroom curriculum or in a regular high school setting. In addition, we note that the evidence for lack of impact of these particular antidrug events is based on the single TND-1 CHS trial, and does not constitute a body of evidence. Future studies should continue to examine extra-curricular events as a means of programming.<sup>16</sup>

Third, the evidence suggests that, to be successful, the TND program should be health educator led. The self-instruction version of TND-2 CHS provided no apparent impact on problem behaviors. Besides the obvious absence of a dynamic or persuasive individual health educator to lead the students through the TND program material, no student-student and little teacher-student interaction was involved in the self-instruction modality. It is possible that an interactive classroom process *per se* is a *sine qua non* of effective drug abuse programming.<sup>30</sup> We note again that the evidence for this conclusion is based on the single TND-2 CHS trial, and does not constitute a body of evidence. Further investigation as to the utility of the self-instruction format is warranted.

Finally, the effectiveness of the TND curriculum, and the MSD model used as an approach to reducing problem behaviors, seems to generalize to both continuation and traditional high school youth. The effects of the 12-session program have yet to be tested in traditional high schools. However, given the good replication of the 9-session version to these youth, the expectation is that it too will be effective. Still, it is not yet known if the 12-session version will have effects on cigarette smoking and marijuana use in this context.

Much future work is planned or underway on Project TND. Longer-term follow-up results (2-5 years post-program) are forthcoming for the TND-1 CHS and TND-2 CHS trials. Also, the TND curriculum will be decomposed into cognitive misperception and behavioral skills components. These components will be experimentally tested as stand-alone programs in both continuation and traditional high school settings by a newly funded research grant (TND-3) to begin to examine the truly 'active ingredients' of the program. Also experimentally examined in more detail in this new study will be the provider (health educator versus

regular classroom teacher) and recipient (CHS versus RHS student) characteristics as they relate to TND program impact.

Also, TND will need to consider more the ecological context in which the curriculum operates. The MSD model essentially takes a behavioral change and lifestyle modification approach to changing behavior.<sup>41</sup> In other words, the model does not directly consider the influences of such variables as availability of drug products and social structures and drug use.<sup>42</sup> However, one may conjecture that the continuation high school context is much more conducive to continued drug use than might be regular high school context, both in terms of drug availability and wider use. Work in TND-3 will more carefully consider CHS-RHS differences, which may facilitate a revision to the current theoretical perspective.

In the future, we will also need to examine the effects of the program not just on levels of drug use, but also on problem drug use (drug abuse). Although TND shows effects on drug use, and one may speculate how it may apply to problem drug use, it is not yet clear whether or not the program decreases the consequences of drug use. Even if the program affects problem drug use, it is still not known whether or not effects are likely to be maintained over several years post-program.

The TND curriculum is now considered a model or effective program by the Center for Substance Abuse Prevention (CSAP), Sociometrics Inc., National Institute on Drug Abuse (NIDA's upcoming "red book"), and Health Canada. It is now also considered a model program by the US Department of Education. Hopefully, future wide scale implementations of the TND curriculum will take place, and continued systematic evaluation of the program will be utilized to examine a wider range of where and under what conditions the program is effective.

Project TND has shown that it is possible to engage both alternative and regular high school youth in effective drug abuse programming. In addition, reductions in drug use and violence-related variables have been found across 3 experimental trials at a one-year follow-up. These cross-experimental field trial replications suggest a promising future for the TND drug abuse prevention program

and for both general and at-risk senior high school level youth. ■

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### Appendix: Project Towards No Drug Abuse (TND) Session Preview

| Session  | Title | Description   |
|--|-------|---|
| 1. Active Listening                                  |       | Students are introduced to Project TND and discuss the importance of being active listeners. They also learn listening and communication skills.  |
| 2. Stereotyping                                      |       | Students learn that believing stereotypes can lead to self-fulfilling prophecies and can put one at risk for drug abuse. They also learn corrective drug use prevalence information.                        |
| 3. Myths and Denials                                 |       | Students learn to identify myths associated with drug use, how to distinguish facts from myths, and how people use various beliefs to deny or justify their drug abuse.                                     |
| 4. Chemical Dependency                               |       | Students learn about the course of negative consequences associated with chemical dependency. They also learn effects of drug abuse on family and friends.  |
| 5. Talk Show   |       | Students role-play a talk show whose guests are affected by drug abuse. They learn about many physical, emotional and social consequences of drug abuse.  |
| 6. Marijuana Panel                                   |       | Students learn about the consequences of marijuana use through use of a group "panel" activity. Students also role-play those affected by marijuana use and abuse.  |
| 7. Tobacco Use Cessation                             |       | Students play a "tobacco basketball" question game and learn about tobacco use consequences and cessation. They are also introduced to a brief quit-tobacco manual.   |
| 8. Stress, Health & Goals                            |       | Students learn various ways to cope with stress and the importance of health as a life value to accomplish life goals.  |
| 9. Self-control                                      |       | Students learn to examine their own level of self-control, how to match their behavior to different social contexts, and the importance of being assertive.   |
| 10. Positive and Negative Thought and Behavior Loops |       | Students learn how positive thinking, choices and behavior, or negative thinking, choices and behavior are tied together as process "loops". Also they are provided with violence prevention material.      |
| 11. Perspectives                                     |       | Students present differing views on such topics as public smoking laws and drug use and find out that most people have moderate views regarding drug use. Alignment of attitudes and behavior is suggested. |
| 12. Decision-making & Commitment                     |       | Students realize they have many choices and can make different decisions regarding drug use and abuse. They think through different options and make a commitment to themselves regarding drug use.         |