

Resilience Research for Prevention Programs

Meta-Analyses Provide Decade of Evidence: Effective School-Based Drug Prevention Programs



By:
Bonnie Benard and
Kathy Marshall
National Resilience
Resource Center,
University of Minnesota
College of Continuing Education

Many promising and obviously effective substance-abuse prevention programs don't get the recognition and credit they deserve. These successful small programs face a dilemma. They are too small to support scientific research and spread too thin to generate the dollars required for expansion and study. In 1986, this problem was tackled by Nan Tobler, a scientist in the School of Social Welfare at the State University of New York (SUNY) at Albany.

It is no surprise to educators and prevention specialists that for more than two decades, the majority of evaluation studies of *individual* psychosocial prevention strategies not only in substance-abuse prevention but in all of social science research have failed to find sustained positive outcomes (Feldman, 1983; Kreft & Brown, 1998). Many explanations have been proffered: lack of program intensity (many prevention activities run one hour per week for eight to 16 weeks), methodological limitations (such as one-time measurements), lack of long-term follow-up, and the use of myriad data analysis approaches with conflicting results.

Furthermore, findings have been difficult to generalize from program to program. Small numbers, different program strategies, target populations, outcome measures, intensities, implementations, and research designs have been research obstacles (Tobler, 1986, p. 538). This has created confusion for prevention planners and policymakers who design and implement research-based programs. If evaluation and research are to be effective, systematic compilations of program effects are essential. For these reasons, Tobler conducted the first of three meta-analyses of alcohol, tobacco, and other drug-abuse prevention programs (hereafter referred to as drug prevention).

Center for the Application
of Prevention Technologies



Meta-analysis is a quantitative statistical procedure that synthesizes findings across many studies, overcoming the problems of small samples and diverse outcomes and programs. According to Tobler, The computation of the effect size is not dependent on statistically significant results which are seldom found in drug studies. Instead of discounting the studies whose results do not reach statistical significance, as would be the case in a literature review, The quantitative results of *each study* are converted into a common metric [effect size], thereby allowing comparison of results across studies (1996, p. 539).

Meta-analysis, then, can provide answers to the most important questions in program planning and prevention: What works? and How does it work? A meta-analysis assesses program strategies and the effects of various moderators and sources of variability in the program effects. The following will summarize three of Tobler's meta-analyses that focused, respectively, on program content; program content and process; and program content, process, and size. The first two have been published; the third study will appear in *The Journal of Primary Prevention*. All programs in the three meta-analyses met Tobler's selection criteria. They used quantitative measures of outcome indicators, a control group, subjects in grades six through 12, and had a primary prevention goal. Both school- and community-based programs were examined.

Meta-Analysis I

Tobler's first meta-analysis (1986), focusing on the *content* of drug prevention programs, was based on 98 studies published between 1972 and 1984 encompassing 143 program strategies (modalities). She categorized the 143 prevention program strategies into five types of *content*:

- *Knowledge-only*: Presentation by teacher of developmental effects of drug use and abuse
- *Affective-only*: Self-esteem building, self-awareness, feelings, values
- *Peer programs*: Emphasis on peer refusal, communication, and decision-making skills
- *Knowledge-plus-affective*
- *Alternatives*: Support groups, outdoor experience, mastery skills, community service, job skills

For each of these prevention programs, Tobler calculated the following effect sizes:

- *Knowledge gains*.
- *Attitudes* and values in general and toward substance use

- *Use of alcohol, tobacco, and other drugs*
- *Skills* relevant to drug use (affective, assertiveness, decision-making, and self-esteem)
- *Behavior* directly measured by actual drug use (principal, parent, and police incident reports; arrests; hospitalizations) and indirectly measured (school grades, attendance, and comprehensive tests)

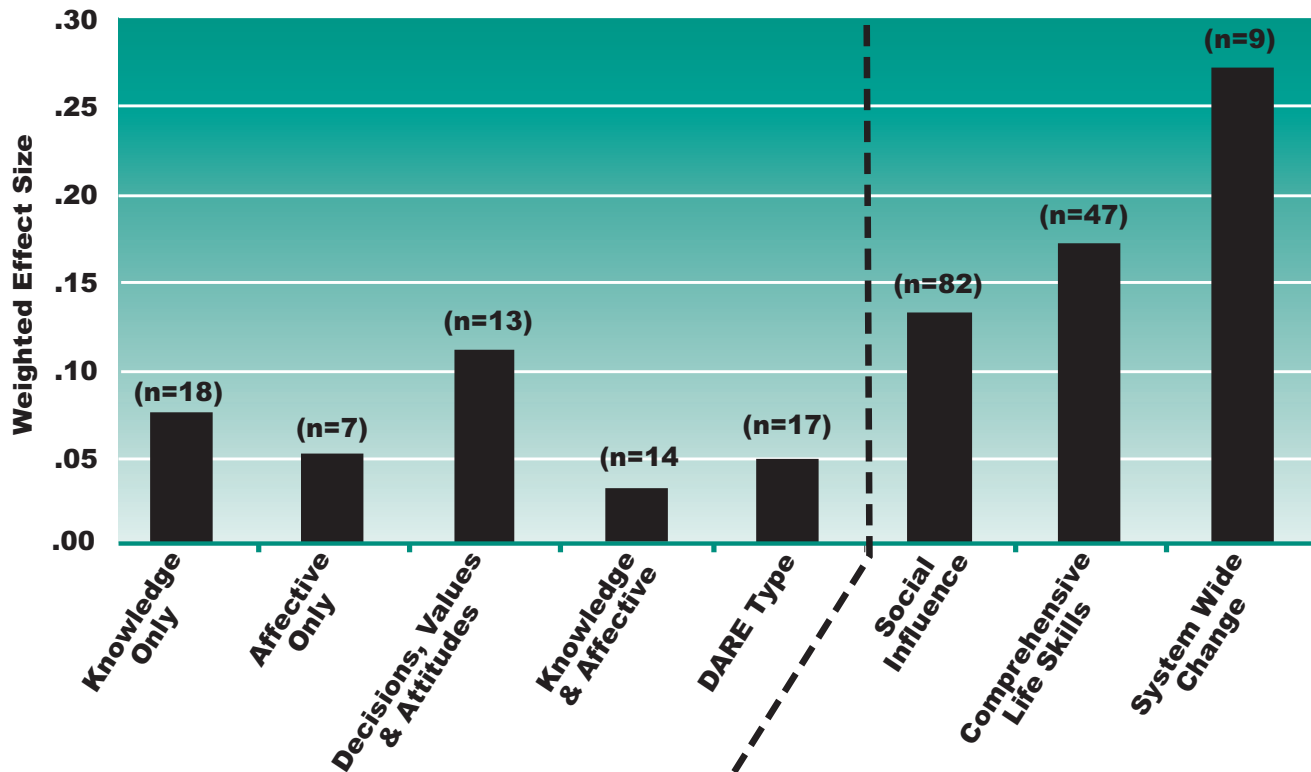
Meta-Analysis I Findings

Tobler's discoveries affirm some of the truths many youth prevention specialists have intuitively known. Her findings also inform us how to better refine and improve what we do. The first meta-analysis clearing indicates:

- Knowledge-only, affective-only, and knowledge-plus-affective programs are ineffective.
- For the average adolescent, *Peer programs* are dramatically more effective than all the other programs even at the lowest level of intensity hours spent in prevention programming. (Tobler, 1986, p. 555).
- For the high-risk adolescent, *Alternatives* showed an effect size for increasing skills and changing behavior in both direct drug use and indirect correlates of drug use equivalent to that obtained by peer programs for the average adolescent (Tobler, 1986, p. 561).

Meta-Analysis II

While Tobler's 1986 analysis looked only at program content, her 1993 analysis also included program process *how* the program was delivered. The data set for this meta-analysis (Tobler and Stratton, 1997) included 120 experimental or quasi-experimental *school*-based 5th to 12th grade drug prevention programs. Tobler examined 595 studies of adolescent prevention programs to identify 120 programs that passed the selection criteria. Program success was evaluated solely on self-reported drug use measures.

FIGURE 1.**Effect Size of Non-Interactive and Interactive School-Based Prevention Programs**

Printed with the permission of Nan Tobler and *Journal of Primary Prevention*.

The major drug prevention *content* strategies in this analysis included:

- **Knowledge:** Drug effects, media and social influences, actual drug use by peers (normative education).
- **Affective:** Self-esteem, feelings, personal insight and self-awareness, attitudes, beliefs, values.
- **Refusal skills:** Drug-related refusal skills, public commitment, cognitive behavioral skills, support networking with nondrug-using adolescents.
- **Generic skills:** Communication, assertiveness, decisions/problem-solving, coping, social, goal-setting, identifying alternatives.
- **Safety skills:** Protect self and peers in drug-related situation, drinking/driving safety.

- **Extracurricular activities:** Job/training, organized sports or cultural activities, non-drug leisure activities, volunteer work in community.
- **Other:** Peer helping, homework help, behavioral rewards, parent involvement and community-wide coordination/involvement.

*Note: These last two content areas were dropped because they occurred so infrequently.

Program processes the methods and techniques used to deliver the program content have been given little emphasis in the review literature (Tobler and Stratton, 1997, p. 75). In this meta-analysis, Tobler considered each program's processes and then ranked programs on a four-point continuum. Programs ranged from *interactive* (called peer programs in the 1986 study which did not examine the process of program delivery) to *non-interactive*. Interactive

programs rely on participatory group process and peer interaction and focus on interpersonal competence. In contrast, non-interactive strategies primarily use didactic presentations and focus on intrapersonal competence (see Figure 1). The interactive programs actively involve youth; use trained adult-led small groups; enable open, honest communication; use structured activities for younger youth; and are youth-centered, focusing on youths' perceptions, interests, and experience (Tobler, 1998).

Once ranked, the interactive program types, as Tobler called them, turned out to be studies that focused on social influences, comprehensive life skills, and system-wide programs involving a school or community, or studies that documented change affecting an entire school building. The non-interactive program types tended to be the knowledge-only, affective-only and knowledge-plus-affective program types.

Meta-Analysis II Findings

This meta-analysis indicates that interactive processes characterize successful drug prevention programs. These principles of effective substance prevention emerged:

- *Program process matters more than program content or type.* Looking at both content and process, Tobler found delivery method was more influential than the content (Tobler and Stratton, 1997, p. 91). However, The ideal group process cannot stand alone. Key content must be present to achieve positive drug abuse outcomes (Tobler and Stratton, 1997, p. 110).
- *Interactive drug prevention programs are far more effective than the non-interactive ones.* The superiority of the Interactive programs was both clinically and statistically significant to the Non-Interactive programs for tobacco, alcohol, marijuana and illicit drugs and for all adolescents including minority populations (Tobler & Stratton, 1997, p. 71). The Interactive Programs were equally successful with cigarettes, alcohol, marijuana and other illicit drugs (p. 116).

Furthermore, The Interactive Programs were slightly more effective in schools with predominantly minority populations p. 116). In an interview with *Youth Today*, Tobler stated, Interactive programs have a success rate of 10.6 percent. That means you should be able to reduce drug use in a school or school district by 10.6 percent by putting in a good interactive program. And you can get this with a program that offers only 10 hours of instruction (Vanneman, 1993, p. 32).

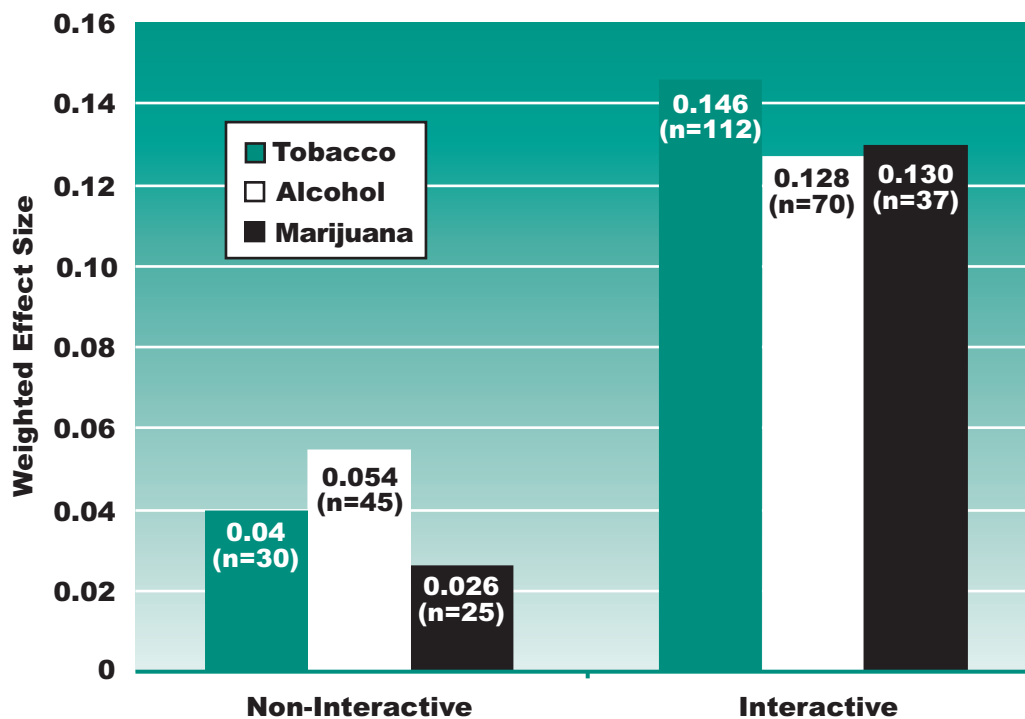
- *Interactive programs that are community-wide are even more effective.* This impact [10.6 percent for schools] is *doubled* when the school-based interactive program is incorporated into a community-wide effort.

Meta-Analysis III

Before Tobler's latest meta-analysis was officially published (Tobler, in press), she unveiled major findings in a keynote speech at the 12th annual National Peer Helpers Association Conference (Tobler, 1998). This 1998 meta-analysis examines not only content and process but also the effect of program size in deterring drug use. She categorized more than 200 prevention strategies into 20 major content areas and four kinds of process and delivery methods. These were ultimately combined into these eight program types:

- Knowledge-only
- Affective-only
- Decision, values, attitudes
- Knowledge + affective
- DARE type
- Social influences
- Comprehensive life skills
- System-wide changes
 - ¥ School-based with community, media, family
 - ¥ Entire school system change

FIGURE 2. Effects on Substance Use



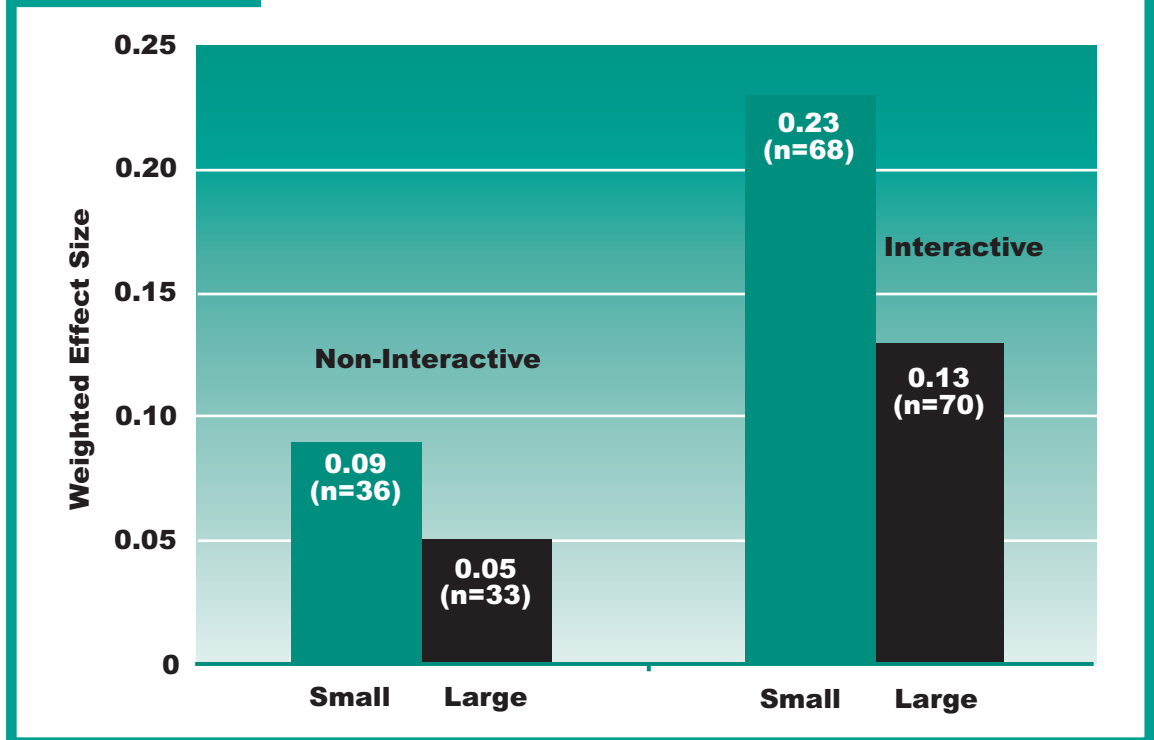
Printed with the permission of Nan Tobler and *Journal of Primary Prevention*.

Meta-Analysis III Findings

This latest research confirms Tobler's previous findings and points to deeper principles of effective prevention.

- ▶ As in the second meta-analysis, Tobler again found the power of interactive programs to reduce drug use (see Figure 2).
- ▶ A new and critical finding is that *smaller programs* delivered to fewer than 500 total students were more effective in reducing drug use (see Figure 3). For example, even in the interactive social influences and comprehensive life skills programs, as programs increased in size, effectiveness decreased.
- ▶ *System-wide change programs* (either school-community-family, or entire school system efforts, which are often called comprehensive, collaborative prevention) are far more effective than either the social influences or comprehensive life skills programs. For these, effectiveness does not decrease as program size increases.
- ▶ In the interactive programs regardless of size *clinician- and peer-leader-led groups were significantly more effective than teacher-led groups*. Differences in professional presentation styles may come into play.

FIGURE 3. Effects of Prevention Program Size



Printed with the permission of Nan Tobler and *Journal of Primary Prevention*.

Lessons Learned

This section might better be titled, *Lessons Not Learned Yet*. In spite of more than a decade of Nan Tobler's scientifically rigorous meta-analyses validating the power of peer participation and interactive approaches to reducing drug use, according to Tobler and her colleagues, *non-interactive* programs are used in 90 percent of school systems (Ennett, Tobler, Ringwalt, and Flewelling, 1994). Tobler's research and other resilience studies have documented the strong protective power of creating opportunities for young people to participate and contribute (Benard, 1991). The evidence is in for this critical principle of effectiveness: Meaningful participation is a protective factor against high-risk behaviors.

Once again, the rigor of scientific study is informing the prevention field that process matters more than program; that it's how we do what we do that counts.

The challenge is to spread the word about the power of peer and youth participation programs to policymakers. Most important, practitioners need to make these programs a top priority in their own plans.

Training drug educators in group process is essential to creating effective programs.

According to Tobler, The paramount question for school boards and administrators is whether they will provide the necessary money, class time, extra personnel, and aggressive teacher

training in the use of interactive group process skills. An interactive program must include participation by everyone, preferably in small groups (Tobler and Stratton, 1997, p.118). Without small groups, the adolescents can interact only a few times and the essential part of the interactive programs is missing — that of *active involvement*, exchange and validation of ideas with their peers, and enough time to practice and truly acquire interpersonal skills (p.118).

The shift from “problem prevention” to “youth development” still has a long way to go.

A footnote in Tobler's second meta-analysis informs the reader that the total number of prevention programs in the categories of other and extracurricular activities was so small, they had to be dropped from the content analysis. Those categories include peer helping, homework help, behavioral rewards, parent involvement, and community-wide coordination and involvement as well as job training, organized sports and cultural activities, drug-free leisure activities and volunteer work in the community. These programs are the categories identified in the first meta-analysis as the most effective drug prevention approaches for high-risk adolescents; such programs need support for appropriate future research or evaluation.

In fact, these are *youth development* strategies. Clearly, another challenge and lesson for preventionists who predominantly have had a school orientation is the need to form alliances with the community youth development workers. This means creating links between the school and youth development-oriented community-based organizations to strengthen prevention efforts. Such partnerships serve two purposes: (1) school personnel learn from the more developmentally-oriented, youth-driven programming that guides community youth-serving organizations; and (2) when schools cannot meet the needs of seriously challenged youth, staff members could connect youth to such community resources.

The power of system-wide change efforts is evident.

Efforts to reculture whole schools and school-communities (that is, to change systems at a deep and fundamental level so adults see the natural resilience and innate health of all youth) clearly pay off in drug use that is reduced by as much as 25 percent, according to Tobler. When empowering environments rich in protective factors surround youth, young people clearly respond in healthy ways (McLaughlin and Langman, 1994; Marshall, 1998; Resnick, et al., 1997).

Small is beautiful!

In smaller groups, individuals connect. They experience the protective process of participation and contribution and the power of caring relationships. The deep listening and respect that small groups invite can foster youth resilience (Mills, 1997).

Finally, prevention practitioners can learn the value of familiarizing themselves with current resilience and prevention research.

Tobler has spent more than a decade looking at school-based drug prevention programs to answer the burning question, What works in prevention? Without these meta-analyses and other critical research, most local school-based programs would have very little evidence to support and guide future endeavors. These results, along with resilience research findings, can empower the field of prevention! Tobler's meta-analyses make sense of overwhelmingly diverse prevention program outcomes and plot an evidence-based future course.

Think
About
It!

Is your prevention program like any of those mentioned in these meta-analyses? How can these studies support local prevention planning, policy development, and program evaluation?

References

- Benard, B. (1991, August). *Fostering Resiliency in Kids: Protective Factors in the Family, School, and Community*. Portland, OR: Northwest Regional Educational Laboratory.
- Ennett, S., Tobler, N., Ringwalt, C., & Flewelling, R. (1994). How effective is Drug Abuse Resistance Education? A Meta-analysis of Project DARE outcome evaluations. *American Journal of Public Health, 84*, 1394-1401.
- Feldman, R. (1983). *The St. Louis Conundrum: The Effective Treatment of Anti-Social Youth*. Englewood Cliffs, NJ: Prentice-Hall.
- Kreft, I. & Brown, J. (1998). Introduction to the special issue: Zero effects of drug prevention programs: Issues and solutions. *Evaluation Review, 22* (1), 15-45.
- McLaughlin, M., Irby, M., & Langman, J. (1994). *Urban Sanctuaries: Neighborhood Organizations in the Lives and Futures of Inner-City Youth*. San Francisco: Jossey-Bass.
- Mills, R. (1997) Tapping innate resilience in today's classrooms. *Research/Practice*, Spring, pp.15-27.
- Pittman, K. J. & Cahill, M. (1991). *A New Vision: Promoting Youth Development*. Washington, DC: Academy for Educational Development.
- Resnick, M.; Bearman, P.; Blum, R.; Bauman, K.; Harris, K.; Jones, J.; Tabor, J.; Beuhring, T.; Sieving, R.; Shew, M.; Ireland, M.; Bearinger, L.; & Udry, R. (1997). Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. *Journal of the American Medical Association, 278*, 823-832.
- Tobler, N. (1986). Meta-analysis of 143 adolescent drug prevention programs. *Journal of Drug Issues 16*, 537-567.
- Tobler, N. (1998). Principles of effectiveness of school-based drug prevention programs: The rationale for effective peer programs. *Peer Facilitator Quarterly, 15*, 109-115.
- Tobler, N. (1993). Updated meta-analysis of adolescent drug prevention programs. In C. Montoya, C. Ringwalt, B. Ryan, & R. Zimmerman (Eds), *Evaluating School-Linked Prevention Strategies: Alcohol, Tobacco, and Other Drugs*. San Diego, CA: UCSD Extension, University of California, 71-86.
- Tobler, N. & H. Stratton (1997). Effectiveness of school-based drug prevention programs: A meta-analysis of the research. *Journal of Primary Prevention 18* (1), 71-128.
- Vanneman, A. (1993, May/June). Just say no to DARE? Drug Prevention: Does anything work? *Youth Today, 2* (3), 32, 30.

NATIONAL RESILIENCE RESOURCE CENTER

The National Resilience Resource Center (NRRC) is located at the University of Minnesota. Executive Director Kathy Marshall and associate for program development Bonnie Benard guide long-term systems change initiatives in selected school and community sites. Resilience research-based systems change training and technical assistance services are available on a fee-for-service basis. For service related requests write National Resilience Resource Center, University of Minnesota, College of Continuing Education, 202A Wesbrook Hall, 77 Pleasant Street SE, Minneapolis, MN 55455 or contact NRRC@cce.umn.edu. The NRRC logo was created by John B. No Runner.

To enhance the application of prevention technologies, NRRC and the Central Center for the Application of Prevention Technologies have collaborated in disseminating this information.