Project STAR

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Project STAR, also known as the Midwestern Prevention Project, is a multi-component, community-based drug prevention program. Project STAR is initiated during the transition year to middle or junior high school. It is initiated with a school program and is followed by media coverage and programming, parent education and organization, community organization, and policy change. The primary emphasis of the program is on the prevention of alcohol, tobacco, and marijuana use, which are considered “gateway” drugs (in other words, experimentation with these drugs usually precedes use of other illicit drugs). Project STAR has been proven effective in reducing gateway drug use among adolescents and in reducing illicit drug use in young adulthood. There have also been positive effects of the program on other problem behaviors such as dropping out of school, single pregnancy, being fired from work, and needing treatment for alcohol and drug abuse.

This chapter will begin with a brief introduction to terms relevant to our discussion, continue with a detailed description of the Project STAR components, the theoretical rationale for the program, and the research that supports the effectiveness of Project STAR in preventing drug abuse, and finish with recommendations for moving from research to practice.

Introduction of Terms

Prevention

In the field of drug prevention research, it is first important to define what we mean by prevention. For our purposes, prevention refers to (1) total deterrence of drug use, (2) delaying onset of drug use, (3) halting the progression from experimental use to regular use or abuse, (4) delaying the progression from experimental use to regular use or abuse, (5) reducing the number of users, or (6) reducing consumption (through reduced frequency and/or reduced amounts). A strict definition of prevention would be the total deterrence of any drug use, but since this is a difficult standard to achieve, a more inclusive definition of prevention, such as that provided above, has been adopted.

Level of prevention

Prevention programs are referred to as universal (or primary), selective, or indicated. Universal prevention refers to targeting a whole population, such as all 6th grade students in a particular school or district, without respect to an individual’s risk or behavior. Examples of universal prevention are school health programs and mass media campaigns. Selective prevention targets individuals who are believed to be at high-risk. Student assistance programs are an example of selective prevention. Indicated prevention targets high-risk individuals who have already begun to exhibit problem behavior (e.g., truancy, drug use). Indicated prevention can include outpatient or inpatient treatment, counseling, and support groups. Project STAR is a universal prevention program that targets whole populations of adolescents during the transition year to middle or junior high school. However, participation in Project STAR may encourage families of high-risk youth to seek additional intervention.
**Risk and Protective Factors**

Research studies on drug prevention primarily focus on manipulating risk and protective factors associated with problem behavior. Broadly speaking, risk factors are factors that put an individual at risk for problem behaviors. For drug use, risk factors include experimenting with substances earlier than other peers, believing that drug use is positive and normal among peers, having family and friends who use drugs, perceiving that drug use has few or harmless consequences, and having ready access to drugs. Protective factors are factors that increase youth competency and resilience against risk factors. For drug use, protective factors include perceiving that drug use has negative consequences, being attached to or bonded to non-users, having a close bond to school, experiencing positive communication with parents, and having access to prevention resources. Project STAR impacts both risk and protective factors.

**Norms**

Norms, or normative expectations, are a key focus of Project STAR and other successful drug prevention programs. Norms refer to the perceived level of use among one’s peer group or larger community. For example, if an adolescent thinks that most kids their age use drugs, they are said to have pro-drug use norms, or an expectation that drug use is normative behavior. In fact, most adolescents do not use drugs, so a key component of Project STAR is to correct these normative expectations and foster a non-drug use norm (the belief that only a minority of kids their age use drugs).

**Program focus**

Some prevention programs focus on direct skills training, which includes enhancing students’ ability to resist drug offers and to avoid pro-drug environments. Other programs indirectly address drug use by focusing on risk or protective factors believed to precede drug use and other problem behaviors. This indirect focus can include enhancing social and academic competence, bonding to school, communication skills, or general life skills. Project STAR emphasizes direct skills training, but also includes indirect skills training.

**Drug use**

When we speak of drug use, we will be referring to the prevalence, which is the proportion of a population that uses a specific drug. The prevalence is often given for different levels of use. For example, we may speak of “any use,” which can be defined as having ever used a particular drug in one’s lifetime. Alternatively, we can speak of “heavy use,” which, for adolescent populations, usually refers to daily smoking (i.e., the proportion of the population who reports smoking cigarettes on a daily basis), monthly drunkenness (i.e., the proportion of the population who reports getting drunk in the previous month), or weekly marijuana use (i.e., the proportion of the population who reports using marijuana two or more times each week). These definitions of level of use are commonly used for adolescent and young adult populations (e.g., Johnston et al., 1997).

**Project STAR Program Description**

Project STAR (Students Taught Awareness and Resistance) is a universal prevention program that combines direct and indirect skills training in an effort to decrease drug use prevalence among adolescents, their parents, and other community residents. The program consists of five components that are implemented at different times across a 3- to 5-year period. The components are: media, school curriculum, parent organization and skills training, community leader, and policy change. The school program begins first, followed by
the parent program, then community, and finally policy change. The media component continues across all years. Collectively, these five components aim to prevent drug abuse through improving adolescents' skills to resist drug use, promoting conservative norms about drug use, increasing understanding of the consequences of drug use (especially short-term and social consequences), decreasing modeling of drug use behavior, and limiting youth access to drugs. The figure below illustrates the sequencing of the Project STAR program components over a five year period.

![Project STAR Program Components](image)

The five Project STAR components are all considered necessary to achieve the positive changes in drug use behavior that were attained during the research phase. Nevertheless, Project STAR is a dynamic program which is designed to adapt to meet the needs of the community. For example, if a community has no local television or radio programs, the media component may only consist of print media. As another example, if the community has an existing service organization that has broad support from the community and a history of engaging in diverse activities to meet the community needs, the service organization may serve the role of the community coalition. Project STAR is also designed to be adaptable to any population (e.g., rural, urban, any ethnicity), since participants themselves generate situations that are relevant in which to practice the skills being taught.

Each program component is described below. A video portraying all five Project STAR components is available through the National Institute of Drug Abuse (the video is entitled “Prevention Works!”).

**Media**

Media have a profound influence on everyone, including adolescents. The images and messages broadcast by the media can promote healthy lifestyle choices or can glamorize dangerous behaviors. Media also have the power to inadvertently put adolescents at increased risk by focusing on negative behaviors and their consequences. If adolescents repeatedly hear the message that “everyone is using drugs” or “there is a drug epidemic among youth” they are reinforced in thinking that drug use is the normative behavior, thereby making it more likely that they will use themselves.

The media component of Project STAR enlists local media outlets as partners in the drug prevention effort. Media representatives are provided with press kits describing Project STAR and are asked to provide coverage that introduces, reinforces, and then extends the
prevention messages being taught in the other program components. Media coverage begins with the school program in the first year and then continues to cover each new program component as it is added. The media coverage can be achieved through a combination of television, radio, and print broadcasting, and take the form of talk shows, public service announcements, human interest stories, commercials, and coverage of press conferences about Project STAR.

**School**
The school program consists of a 10-13 session curriculum in the transition year to middle or junior high school (Part I), and a 5-7 session curriculum the following year (Part II). The curriculum teaches skills to resist pressures to use drugs and to recognize and resist pro-drug appeals found in the media. Further, the school curriculum serves to correct students beliefs about the frequency of drug use among their peers (perceived norms). Little focus is given to knowledge about drugs and their effects on the body. Research indicates that programs that dwell on this type of information are either ineffective or counterproductive. Nevertheless, it is important that students have their questions answered, and this is provided for within the school curriculum.

The curriculum is very active, with little didactic instruction from the teacher. Peer leaders are used extensively to act as role models and demonstrate the skills to the class. The teacher takes on the role of facilitator, helping students master the skills and evaluate their own attitudes about drug use. There is an intensive two-day training for teachers prior to teaching Part I of the curriculum, and a one-day training for Part II. Teachers are provided with everything they will need to make Project STAR a success in their classroom. Homework assignments are completed jointly between a student and his or her parent or guardian. This fosters parent-child communication about family rules and expectations.

**Parent**
The parent program begins in the second year of the school curriculum and continues for two years (through the end of middle or junior high school). It includes the creation of a committee at each school, made up of the school principal, five or six parents, and two student peer leaders. The committee is responsible for planning and delivering a two-night parent skills program twice each year for all parents; reviewing and, where necessary, changing school policy to respond more effectively to drug infractions; refining school policy to institutionalize prevention programming; and monitoring the school and surrounding neighborhoods.

The parent committee receives training to assist them in fulfilling their role. The committee then meets several times throughout the latter two years of middle or junior high school. Their overall goal is to extend the non-drug use norm into the family and neighborhoods and to gain support for drug abuse prevention programming. Through the parent skills program, parents gain important skills to improve parent-child communication and to support prevention behaviors in their child.

**Community**
The community program begins six months to one year after the introduction of the parent program. Representatives from various segments of the community (e.g., business, government, civic, media, education, health services) are recruited to serve on a community coalition. They are trained to identify gaps in drug abuse prevention services, plan and implement services to fill the gaps, access funds and other resources to support drug abuse
prevention programming, and implement activities that complement the other program components.

The coalition is structured to be governed by a steering committee, with several working groups or subcommittees focusing on a specific function (e.g., media, treatment services, youth activities, policy). The steering committee should reflect the community that is being served. If, for example, there is a cohesive community with a local “champion” of the program, the steering committee may be a small group headed by the champion. Another model would be to have representatives from each school district, such as the Superintendents, form the steering committee. If the community being served views itself as several smaller communities, such as by geographic area, the steering committee should include representatives from each of the smaller communities being served. Coalition members are asked to give a two year commitment and activities are structured so that they can be achieved within this period.

**Policy**

Policy change is the last component to be implemented, and is achieved by a subcommittee of the community coalition. The goal of this component is to affect both supply and demand by initiating policy change at the school, city, county, and state levels. Examples of policy change that would serve this goal are restricting cigarette smoking in public places, restricting access to cigarette vending machines, increasing alcohol and cigarettes taxes, decreasing the number of cigarette and alcohol outlets (e.g., instituting stricter limits on the number of liquor licenses that can be granted within a given neighborhood), coordinating drug-free zones, and increasing monitoring of adolescent drug use by law enforcement personnel. Additionally, policy change is sought to gain institutionalization of prevention programming (i.e., generating financial support for prevention programming and fostering the expectation that prevention services should be given at least as high of a priority as treatment services and punitive action).

**Theoretical Rationale**

An overarching theoretical model was developed to guide the interaction among the various components of Project STAR. This model proposes that an individual’s behavior results from an interaction of person, situation, and environment level factors (Pentz, 1999). This type of theory, which states that these three levels of factors interact to determine a person’s risk, is referred to as Integrative Transactional Theory (ITT); programs based on transactional models have been shown to provide more sustained program effects than programs based on other types of models (Tobler, 1992).

Person-centered variables are based on prior research about individual behavior change. They include one’s own prior drug use, one’s intentions to use, skills at refusing drug offers or avoiding drug use situations, and attitudes about drug use. The skills taught in the school component are primarily targeted at affecting person level variables.

Situation level variables are based on prior research about interpersonal and group behavior change. Peer influences, skills practice within a peer group, family influences, social support, exposure to drug use or drug offers, and transitional periods are all examples of situation level variables that affect an individual’s drug use behavior. The role plays in the school program, the parent-child communication skills taught in the parent program, the function of the parent committee in reviewing school policy and monitoring drug use behavior at and near schools, and the aspects of the community component are all targeted at affecting situation level variables.
Environmental level variables are based on research on organizational development, communication, and systems change theory. These variables are things such as media influences, availability of prevention resources at school and in the community, community norms, demographic characteristics, financial resources, and school and community policy. Project STAR’s media component, community organization, and policy change are designed to affect the environment level variables. These components focus on increasing prevention resources or awareness of existing resources, fostering a non-drug use norm across multiple segments of the community, institutionalizing prevention programming, and changing policy that affects drug abuse.

The advantage of the person-situation-environment theoretical perspective is that it integrates both demand and supply reduction strategies. Most prevention programs are focused on demand reduction, meaning that they aim to teach individuals to resist drug use and thereby reduce the demand for drugs. Government entities, on the other hand, usually focus on supply reduction through such acts as instituting policies that restrict access to drugs. By involving media, school, parent, community, and policy change components, Project STAR is able to address drug abuse prevention by demand and supply reduction strategies. This should serve to provide sustained effects across a wider segment of the community.

Several existing theories also influenced the development of the Project STAR program components. A few of these are briefly described. Problem Behavior Theory (Jessor & Jessor, 1977) proposes that transition periods are times of increased vulnerability and risk. Thus, Project STAR was designed to be introduced during the transition year to middle or junior high school. This transition is especially relevant to the prevention of drug abuse. Very little use occurs in the elementary schools, but when adolescents start middle or junior high school, they are faced with the need to compete with older adolescents who may be experimenting with drugs. At this time of increased vulnerability, youth often feel that they have no choice than to go along with what the older kids are doing in order to fit in and gain acceptance. Promoting a non-use norm allows adolescents to fit in by not using drugs.

Social learning theory (Bandura, 1977) states that we learn by observing others. Seeing which behaviors are rewarded and which are punished is a strong motivator for our own behavior. Furthermore, we are most likely to imitate behavior displayed by someone we view as a role model. Based on this, the Project STAR school curriculum utilizes respected students as peer leaders. The peer leaders model skills being taught in Project STAR (e.g., techniques to say “no” to drugs) and students then emulate these behaviors. The involvement of parents, community leaders, and ultimately policy change all contribute to positively affect the behavior that adolescents see modeled in their daily life.

Research Base

Research Design

Project STAR was initially introduced as a research program funded by the National Institute of Drug Abuse (NIDA). The program components were implemented in Kansas City (Kansas and Missouri) between 1984 and 1990, with the school program introduced in 1984, followed one year later by the parent program and a booster school program, followed another year later by community leader training. Policy change was introduced in the fourth year, and media programming occurred throughout all years. Project STAR was replicated in Indianapolis beginning in 1987. Program components were introduced in the same order, but over a shorter period of about 3 years.

As part of the research program, schools were assigned to either a program or control condition. The program schools taught the Project STAR school curriculum beginning in the
first year of program delivery. The control schools did not teach the school curriculum the first year, but rather delayed implementation for one full school year. This provided a group of students (e.g., all transition year students in Kansas City middle or junior high schools in 1984) wherein approximately half of them received the school curriculum and half of them did not.

Only program students were exposed to the parent program as well. Because the other components—media, community, and policy—occurred at the community level, both program and control students were exposed to these components. However, as expected, the control students were less aware of these other components than were program students: only 4% of control students were aware of and accessed media and community components of the program, compared to 89% of the program group (Flay et al., 1987).

Students in program and control schools were surveyed prior to any program implementation; this is referred to as a pre-test, or baseline, measurement. Initially, approximately 20,000 students in Kansas City and Indianapolis were measured each year until 1990. Smaller samples of students (N=1607 in Kansas City; N=2400 in Indianapolis) were then surveyed at the end of the first year of program implementation, and every year thereafter through the end of high school. Following high school graduation, sub-groups of these participants (N=1002 in Kansas City; N=1206 in Indianapolis) were selected randomly for continued participation to evaluate the long-term effects of Project STAR. At the time of this writing, we are still following up the original program and control groups 15 years after the start of the program. Comparing responses between the program and control students with regard to drug use and other problem behaviors informs us as to the effects of Project STAR.

**Program Effects**

As described earlier, the goal of the Project STAR drug abuse prevention program is to reduce the number of new drug users and to reduce the frequency or amount of drug use for current users. Realizing that drug use increases over time (as adolescents get older, a higher proportion of them use drugs), we know that use is likely to increase in both the program and control group between measurements. Positive program effects are thus measured by a smaller increase in drug use prevalence among program students as compared with control students. Accordingly, while use increased over the year for both groups, students in the program group reported significantly less use of cigarettes, alcohol, and marijuana than did students in the control group after one year (Pentz, Dwyer, MacKinnon, Flay, Hansen, Wang, & Johnson, 1989). These effects were maintained after two years, with nine percent fewer program students reporting any use of cigarettes in the past month, two percent fewer program students reporting any use of alcohol in the past month, and three percent fewer program students reporting any use of marijuana in the past month (Dwyer, MacKinnon, Pentz, Flay, Hansen, Wang, & Johnson, 1989). At three year follow-up (when students were in 9th or 10th grade), there was still significantly less monthly cigarette and marijuana use by program students; the effect on monthly alcohol use (i.e., any use of alcohol within the past 30 days) was not significant at this follow-up (Johnson, Pentz, Weber, Dwyer, Baer, MacKinnon, & Hansen, 1990). However, at three year follow-up, strong effects on heavy use emerged. There was a lower prevalence of daily cigarette use, monthly drunkenness, and heavy marijuana use among program students than among control students. Following high school, effects emerged on the use of methamphetamines and cocaine (Pentz, 1998).
Site=Kansas city, N= 8 schools, N=1002 individuals.
Means are adjusted for grade, race, and socioeconomic status.

Site=Indianapolis, N=57 schools, N=1206 individuals.
Means are adjusted for grade, race, socio-economic status, and school type.
Using the data from the Indianapolis study, the secondary prevention effects of Project STAR were examined (Chou, Montgomery, Pentz, Rohrbach, Johnson, Flay, & MacKinnon, 1998). Specifically, the sample was limited to those students who had used cigarettes, alcohol, or marijuana in the previous month, as reported on the pre-test student survey. The goal was to see if Project STAR was effective in decreasing use among this high-risk group. Results across the first 3.5 years of follow-up showed that Project STAR was effective in decreasing drug use among high-risk youth. In Indianapolis (in the figure below), program students were significantly less likely to be heavy users of gateway drug use throughout the period 1990-1994 (when the students were about ages 15-19).

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A cost-analysis of Project STAR was conducted by calculating the costs of program delivery and the cost-savings of preventing drug use (Pentz, 1998). These analyses revealed that there were substantial cost savings in the program group relative to the control group. For example, it was estimated that for each dollar spent on Project STAR to prevent daily cigarette smoking, there was $67 saved in health and social costs.

Conclusions
Most drug prevention programs involve only a school curriculum. Very few school-only programs have shown significant and lasting effects. Multi-component programs have several advantages over school-only programs or any other single component program (e.g., a stand-alone parent program): they can target multiple influences such as school, parents, and the larger community; they can support a non-use norm across domains (e.g., school, home, neighborhood, public places); and they can provide more program exposure than can typically be achieved in a school-only program. As a result, multi-component programs have the potential to produce larger and more lasting effects than single-component programs.

Project STAR is a research-proven multi-component program. Across several years of research, it has been shown to reduce drug use prevalence and the occurrence of other problem behaviors. Furthermore, Project STAR has been demonstrated to be a cost-effective method of achieving these effects.

From Research to Practice
Project STAR is a very large, multi-component drug abuse prevention program. As such, it is implementation is an intensive undertaking. Communities wishing to implement Project STAR should first conduct a needs assessment to gain consensus among the community about how community resources should be expended. The needs assessment begins the process of identifying community leaders and gaining support of the schools for a comprehensive drug abuse prevention program. A community-based program can only be successful when the majority of the community agree that there is a need for the program and resources and key people are committed to its success.

Once consensus is reached, logistics of implementation need to be carefully reviewed. Most of the program components rely on existing personnel. For example, school teachers are trained to deliver the school curriculum, media representatives deliver the media component, community leaders are asked to volunteer their time on the community coalition, and parents
are asked to volunteer their time to the parent component. However, a small Project STAR staff may be needed to coordinate these efforts. Communities will also need to secure office space and technical support. Incentives are very useful in obtaining high levels of implementation. These resources may be donated or a community may need to access financial support through grants or fund-raising to acquire them.

With the need for drug abuse prevention widely recognized and the access to resources needed for successful implementation, Project STAR can be applied to other communities. Multi-component programs, such as Project STAR, have several advantages over single-component programs. Among these, multiple influences on adolescent drug use are addressed, including peers, teacher, parents, community, and media. Variables at all three levels of person, situation, and environment can be addressed. Individuals are exposed to a consistent, sustained drug prevention message. Resources for, and the expectation of, ongoing prevention programming can be achieved within the implementation of the program.

There are a few disadvantages to these programs. The primary disadvantage is the cost of the program relative to a single component program. For example, a school-only program may cost on the order of $7 per student per year. Implementation of Project STAR may cost ten times this amount for the first few years of implementation, with costs going down dramatically after all components have been implemented. Despite this higher cost, Project STAR is cost-effective in that the cost-savings to society by the lower drug use rates greatly outweigh the costs of the program. Another disadvantage is that involving so many members of the community often leads to several diverse and strong opinions about how to do things differently. Community coalitions need to recognize which aspects of a research-proven program are intended to be adapted to the individual community and which aspects need to be preserved in order to achieve the positive effects found under the research conditions.

The effectiveness of Project STAR in a variety of settings and with diverse populations is not yet established. To date, Project STAR has only been evaluated in the metropolitan areas of Kansas City and Indianapolis. However, Project STAR was designed to be relevant to any population in that (1) skills practice for the school curriculum are directed by situations relevant and meaningful to the participating students, and (2) the community component draws on leaders within the target community and focuses on the needs of that community. Because of these factors, it should also be relevant to communities of different ethnic backgrounds (in the research sites, the student population was primarily White, though a substantial proportion was African American; there was little representation of other ethnic groups). We would encourage communities that differ from the research sites in urbanicity, socio-economic status, ethnicity, or other significant factors to evaluate the effectiveness of Project STAR in their community, but we are optimistic that the program will be effective in these diverse environments.

**Recommendations**

Communities wishing to seriously impact drug abuse need to be willing to provide the resources to adopt research-proven programs. The drug prevention programs taught in most schools, such as DARE or lessons as part of a standard health curriculum, have no known effects on adolescent drug use behavior. These programs, despite their low cost, should be considered too expensive given the class time they take up and their inability to protect our children from drug abuse. Very few school-only programs have demonstrated strong and sustained effects, and there is reason to believe that greater success can be achieved with multi-component programs.
References


