
Disease Prevention in Adolescence

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Prevention in Adolescent Health Psychology: A Historical Perspective on Adolescent Prevention Programs

Prevention efforts with adolescents are not a new endeavor and actually have a long history within the scientific literature. Catalano and colleagues (2002) have provided a nice review of the history of prevention efforts for children and adolescents. Specifically, they have noted how early in the 1950s increases in juvenile crime prompted prevention efforts with federal funding initiatives and later with the development of settlement houses for character development geared at troubled youth. Later the emphasis became focused on supporting families, schools, and communities before problem behaviors emerged in children and circumstances of children's lives thought to be responsible for producing problem behaviors became the focus.

Many early prevention programs were not based on theory or outcome or process research (Catalano et al., 2002), and results from earlier outcome studies suggested questionable efficacy of prevention programs geared at reducing problem behaviors such as drug use, pregnancy, sexually transmitted disease, dropping out of school,

or engaging in violent or delinquent behavior (Ennett, Tobler, Ringwalt, & Flewelling, 1994; Kirby, Harvey, Claussenius, & Novar, 1989; Snow, Gilchrist, & Schinke, 1985; Thomas et al., 1992). Fortunately prevention strategies have since evolved (although the effect sizes for outcome studies remain small) and the emphasis on a single factor being the cause of problem behavior has shifted to an emphasis on interrupting the processes that lead to problem behaviors; the identification of proximal (i.e., the more closely related) predictors (e.g., peer influence to engage in problem behaviors) of problem behaviors; the co-occurrence of problem behaviors within a single child; addressing environmental predictors and individual-environmental interactions in seeking to change behavior; and promoting healthy development (Catalano et al., 2002). The result of this shift has been a focus on two paradigms consisting of positive youth development and prevention science (emphasis on reducing risk factors and enhancing protective factors). Prevention efforts are typically discussed in the context of primary, secondary, and tertiary prevention (Constantine, 2012—see Table 1 for definitions and examples).

Do Behavioral Health Prevention Efforts Parallel Medical Ones?

Historically speaking (prior to socially based prevention efforts) the medical field has long since focused on prevention. As early as the 1800s

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Table 1 Defining prevention

Type of prevention	Definition (Constantine, 2012)	Example
Primary prevention	Focused on avoiding the development of new health problems (e.g., positive health promotion, healthy development interventions)	Attempts to prevent or reduce health risk behaviors, for example, tobacco use, unsafe sex, or sedentariness
Secondary prevention	Provide early identification and treatment of existing health problems or established harmful health behaviors	Routine screening for sexually transmitted infections and partner notification where necessary
Tertiary prevention	Focuses on the management and treatment of chronic diseases and conditions, and of diseases with long-lasting consequences	Diet management for individuals diagnosed with diabetes to prevent the development of other diseases that can result from diabetes (e.g., high blood pressure, nephropathy)

vaccination efforts began with the use of the smallpox vaccine and in 1905 the United States Supreme Court ruled that the state could enact compulsory laws to protect the public in the event of a communicable disease (Albert, Ostheimer, & Breman, 2001). As is implied by the Supreme Court's ruling, at the outset of the use of vaccines was much controversy and disagreement regarding their use (Wolfe & Sharpe, 2002). Nonetheless, vaccinations have been described as one of the top ten achievements of public health in the twentieth century (CDC, 1999), and the efficacy of vaccines has been duly noted via a dramatic decrease in disease rates (e.g., polio: CDC, 2005) as well as via controlled research studies (e.g., Belshe et al., 2001; Vu, Farish, Jenkins, & Kelly, 2002).

Therefore, from a medical perspective prevention can be good if follow-through exists and the causal mechanisms are well understood. Certainly with vaccinations behavioral components are minimal, as this type of prevention only requires that the patient presents himself or herself at a medical center to receive the vaccination. Nonetheless, behavioral-type interventions have been used in conjunction with such efforts via the administration of educational brochures, videos, and even in-person presentations (e.g., in the hospital after a baby is born, during a routine medical exam, in specialized programs such as WIC [woman-infant-child]). More recently large-scale media campaigns have also been used to promote vaccinations and to deliver information to potential consumers about their benefits (e.g., the HPV vaccine which prevents the acquisition of a specific type of genital wart virus

believed to cause cervical cancer). Furthermore, behavioral interventions often play a large role in other typically thought of as medical prevention efforts (e.g., prevention of diabetes often involves behavioral components related to healthy eating and exercise).

Prevention Aims for Adolescents

Certainly the number of prevention domains is vast as one could focus on the prevention of just about anything, particularly with regard to adolescents. In this chapter we will review those prevention domains that have received the largest focus. A review of hits in Google using the terms "prevention" and "adolescent" revealed a large focus on prevention for specific domains. These include sexual risk, substance use, obesity, suicide, and severe behavioral problems. A discussion of programs related to these domains follows.

Sexual Risk

In terms of prevention, using a broad perspective to reduce high-risk sexual behavior including the reduction of STIs is one of CDC's top six priorities and because it is a "winnable battle" such prevention is of paramount importance to health and quality of life for youth (CDC, 2013). Vaccines are currently available for the prevention of hepatitis B and the human papilloma virus and vaccines for other sexually transmitted infections are in development (Mast et al., 2005;

Stanberry et al., 2002) and can be used as a primary prevention strategy. Secondary prevention efforts can also be useful in terms of sexually transmitted infections and two means of accomplishing this are via routine screening and partner notification (Auslander, Catalozzi, & Rosenthal, 2012) so that early treatment for infection can be obtained. In terms of the efficacy of vaccinations as a primary prevention strategy, a meta-analysis conducted by Lu, Kumar, Castellsague, and Giuliano (2011) revealed that prophylactic HPV vaccines are safe, well tolerated, and highly efficacious in preventing persistent infections and cervical diseases associated with vaccine-HPV types among young females. The authors did note that research on the long-term efficacy and safety does need to be addressed.

Beyond vaccinations and the secondary prevention strategies mentioned above, a large number of prevention efforts have been made in the sexual risk domain. In the chapter of this text on sexually transmitted infections, Auslander et al. (2012) discuss extensively strategies to reduce adolescent exposure to and acquisition of sexually transmitted infections. They review the literature on routine screening and partner notification, interventions to delay sexual initiation and promote condom use in those choosing to have intercourse, and uptake of other biomedical strategies, including vaccines and microbicides.

Results from an extant review of the literature indicate that the most effective programs address social influences; are grounded within social learning theory (Kirby, 1992); and provide information about STIs, motivational training, and behavior skills for negotiation of abstinence and condoms (Johnson, Scott-Sheldon, Huedo-Medina, & Carey, 2011). Such programs tend to be carried out in community or school settings over multiple sessions in a group-format (Underhill, Operario, & Montgomery, 2007b). Despite that these ingredients appear to be key in achieving higher success, the effect sizes remain small.

Relevant to this discussion is the debate on comprehensive vs. abstinence-only sex education programs. Critics of comprehensive sex education programs have suggested that such programs

will increase sexual behavior (Kirby, Laris, & Rolleri, 2007; Underhill et al., 2007b) although research has clearly demonstrated that sex education about abstinence and birth control is associated with healthier sexual behaviors and outcomes. In fact, research on comprehensive sex education programs has indicated that they are successful at delaying sexual initiation, increasing condom use, and reducing unprotected intercourse (Auslander et al., 2012). Conversely, abstinence-only programs (that teach abstinence until marriage) have not been shown to be effective at reducing adolescents' sexual risk behaviors (Trenholm et al., 2007; Underhill, Operario, & Montgomery, 2007a) as while certainly abstaining from sex certainly reduces exposure and acquisition of sexually transmitted infections, such methods have very high failure rates (Fortenberry, 2005).

In sum, with regard to the prevention of sexually transmitted infections in adolescence there are medical interventions (i.e., vaccinations) that can act well as a primary prevention strategy at least in the short term (longitudinal research examining efficacy is lacking). From a behavioral/medical perspective the use of condoms can also be helpful in preventing the acquisition of sexually transmitted infections. To some extent both of these efforts require prevention strategies that are behavioral in nature and research on sex education programs has indicated relatively small effect sizes for abstinence-only programs (Silva, 2002) with superior outcomes for comprehensive sex education programs (Auslander et al., 2012; DiCenso, Guyatt, Willan, & Griffith, 2002).

Pregnancy

Alongside sexual risk for sexually transmitted diseases is unintended pregnancy among adolescents. Aruda and Burke (2012) outline statistics for pregnancy among teenagers noting that the birthrate for teenagers aged 15–17 has fallen since 1991; in 2009 was the lowest it has ever been in nearly 70 years; three in ten girls become pregnant at least once by age 20; one in five pregnancies is to a teen mother; 82 % of pregnancies

among 15–19-year-olds are unplanned; and large disparities persist in race and ethnicity. These statistics indicate that even though teenage pregnancy rates have decreased teenage pregnancy remains to be a societal problem.

In terms of prevention, one of the CDC's top six priorities is teen pregnancy prevention (CDC, 2013). Aruda and Burke (2012) discuss how in the early to mid twentieth century there was a eugenics movement (based on the belief that the wrong people were having children and being unmarried constituted being a "wrong" person) and sexually active young women were seen as unfit. This prompted the introduction of prevention as it relates to teenage pregnancy with the aim being to ensure that poverty and delinquency were not passed from one generation to another. During the post-World War I era there was a focus on "unwed mothers" and "illegitimate children" (with less emphasis placed on age) and during this time, unmarried teenagers who became pregnant were considered to be delinquents or to have emotional or psychological problems. Despite the above, because prior to the 1960s, most teenage pregnancies led to marriage, teenage pregnancy was a societal nonissue (Aruda & Burke, 2012). In the past four decades we have seen even more historical shifts with the availability of birth control and abortion as an option for teenagers. Nonetheless, the teen parent has been portrayed as a "perpetrator of poverty" (Furstenberg, 2003) and teen pregnancy has been established to be a social problem that does carry stigma despite the media's attempts to glamorize the pregnant teenager (Aruda & Burke, 2012).

Currently the most commonly employed pregnancy prevention programs are educational in nature and are often referred to as family life education and include components of sexuality, reproduction, decision-making, and sexual relationship issues (Nitz, 1999). Kirby (1992, 1999) has established that prevention approaches can be divided into five groups:

1. Programs that increase knowledge and emphasize the risks and consequences of pregnancy
2. Programs that clarify values and provide skills, especially decision-making and communication skills

3. Abstinence-only curricula
4. HIV/AIDS education
5. Theoretically based programs building on the successes and failures of previous programs, with more rigorous evaluation

Of importance is the large political debate that has ensued over the use of abstinence-only vs. abstinence-plus (aka comprehensive sex education) curricula. While a discussion on such programs was provided above with regard to sexually transmitted infections there is a separate body of literature that examines the impact of such programs on teenage pregnancy.

Approximately 10 years ago a research article on the outcome of interventions to reduce unintended pregnancies among adolescents (DiCenso et al., 2002) indicated that interventions did not delay initiation of sexual intercourse in women or men, they did not improve birth control use by either women or men, and they did not reduce pregnancy rates in women (although there were significantly fewer pregnancies in women who received multifaceted program). This publication prompted a media heyday and subsequently experts in the field pointed to some of the flaws in the study that may account for the poor findings (McKay, Fisher, Maticka-Tyndale, & Barrett, 2001).

More recently Bennett and Nassim (2005) systematically reviewed school-based teenage prevention programs and found that the majority of abstinence-plus programs increase rates of contraceptive use in teens for up to 30 months. Hoyt and Broom (2002) discuss that programs that share the most improvements in teen pregnancy rates share the following nine characteristics:

1. They focus on reducing sexual behaviors that lead to unintended pregnancy or STD.
2. They include behavioral goals, teaching methods, and materials that are age and culturally appropriate so that the problem is always seen through the eyes of the students whom the programs seek to serve.
3. They are based on theoretical approaches, such as social learning theories, which have been demonstrated to be effective in influencing health-related risky behaviors.
4. They are of appropriate length to allow participants to complete important activities.

For example, a program does not merely consist of an assembly, but includes multiple components with sufficient time for follow-up.

5. They provide accurate and basic information about the risks of unprotected sex and methods of avoiding unprotected sex.
6. They use teaching methods that are designed to actively involve the participants so as to personalize the information
7. They include activities that address social pressures related to sex.
8. They provide models of and practice in communication, negotiation, and refusal skills.
9. They provide training and practice sessions to teacher or peer program leaders who are selected because they believe in the program.

While a large number of prevention programs have been created and tested (for a detailed review of school-based programs please see Hoyt and Broom, 2002, and for a detailed review of general interventions and programs see Nitz, 1999) the consensus seems to be that while lowering teenage pregnancy rates has been somewhat successful there is still a lack of well-established prevention programs with good outcome (as is the case with programs aimed at preventing exposure to and acquisition of sexually transmitted diseases). Most recently, the Teen Pregnancy Prevention Initiative (TPPI) funded by the CDC for 2010–2015 has targeted nine communities nationally with high teen pregnancy rates and is looking for a 10 % decrease through four key components: implementation of evidence-based programs, quality community linkages, education, and sustainability (CDC, 2013).

Sexual and Intimate Partner Violence

Chu, Sundermann, and DePrince (2012) have covered quite extensively the scientific literature on prevention of sexual and intimate partner violence and readers are encouraged to see the relevant chapter of this text for a more detailed overview. In sum the literature (see Whitaker et al., 2006) has indicated superior efficacy for two programs titled Safe Dates (Foshee et al., 1998, 2004) and Youth Relationships Project

(Wolfe et al., 2003, 2009). Safe Dates consists of school and community components and activities are geared at changing norms of dating violence and improving prosocial skills. Alternatively the Youth Relationships Project is designed to be carried out in community agencies and targets high-risk adolescents.

Smoking

Prevention of adolescent smoking programs is similar to those programs used to prevent other adolescent substance use. Many programs have been developed and tested and meta-analyses have been conducted to compare the efficacy rates of such programs. For example, Rooney and Murray (1996) conducted a meta-analysis in which they examined 90 studies with 131 interventions that used school-based, peer-led, and social influence programs aimed at the prevention of tobacco use. Results from this meta-analysis indicated a small effect size for such programs at posttest (1 year out). Effect sizes were larger for programs targeting sixth graders, programs that were concentrated in a short period or that offered booster sessions, and programs that included a trained teacher and an untrained same-age peer leader.

Readers are encouraged to see the chapter of this text on smoking (Brook, Pahl, Brook, & Brown, 2012) for an elaborate review of the various prevention programs for smoking that exist. Suffice to say, prevention interventions at the individual level should focus on general problem-solving and coping skills, social competence, behavioral self-management, life skills, and specific cigarette refusal skills (Dierker, Merikangas, & Essau, 1997). At the contextual level (1) adolescents should be provided with the opportunity to engage in alternative activities; (2) aims should be made for organizational changes in schools; and (3) community leaders should be trained to organize smoking and drug use prevention task forces (Dierker et al., 1997). A comprehensive approach focusing on different sources of social influence, as well as individual-level factors, seems the most promising (Brook et al., 2012).

Alcohol and Other Substance Use

It is no secret that substance use among adolescents is a continual problem. In fact research has indicated that an astounding near 50 % of teenagers in the United States have used an illicit drug by the 8th grade (Johnston, O'Malley, Bachman, & Schulenberg, 2010). Generally speaking scientific research has indicated that school-based drug prevention programs have the *potential* to reduce drug use in adolescents (Tobler et al., 2000) although unfortunately most drug prevention programs are not effective (White & Pitts, 1998). These findings have prompted efforts to determine what specifically must be included in such prevention efforts to achieve efficacy.

Results from an extensively well-conducted meta-analysis on school-based prevention programs (Tobler et al., 2000) included 144 studies of 207 school-based drug prevention programs indicated that certain programs did reduce substance use whereas others did not. Programs that reduced substance use employed *interactive* methods (these programs provide contact and communication opportunities for the exchange of ideas among participants; encourage the learning of drug refusal skills; are focused on social influence approach to drug prevention; and include generic skills training, e.g., assertiveness, coping, communication), while the less effective programs used *noninteractive* methods (these programs focus only on knowledge of substances, helping the adolescent develop insight into personal feelings and behaviors and on the adolescent's problem-solving skills regarding personal drug use).

Cuijpers (2002) has attempted to identify "effective ingredients" of school-based drug prevention programs by conducting a systematic review of the literature (he reviewed meta-analyses, studies examining mediating variables of interventions, and studies directly comparing prevention programs with or without specific characteristics). This review resulted in the identification of seven evidence-based quality criteria that programs should incorporate:

1. Proven effects: the effects of a program should have been proven using well-designed scientific research procedures.

2. Interactive delivery methods are superior.
3. The "social influence model" is the best we have.
4. Focus should be on norms (social prevalence knowledge, social acceptability knowledge, normative expectations, friends' reactions to drug use), commitment of students to not use substances, and intentions not to use.
5. Adding community interventions (e.g., family interventions, mass media campaigns, and community mobilizing committees) increases effects.
6. The use of peer leaders may strengthen the short-term effects of prevention program and programs should peer leaders either in lieu of or in conjunction with adult leaders.
7. Adding life-skills training to social influence programs may strengthen the effects of prevention programs.

More recently Lemstra et al. (2010) conducted a systematic review of the literature to determine if school-based marijuana and alcohol prevention programs were effective in preventing marijuana and alcohol use in adolescents between the ages of 10 and 15 years. Results from this extensive review indicated that the most effective primary prevention programs for reducing marijuana and alcohol use among adolescents in the long term were comprehensive programs that included antidrug information combined with refusal skills, self-management skills, and social skills training.

Obesity and Related Conditions

The World Health Organization (2013) has asserted that obesity is an escalating global epidemic. Because childhood and adolescent obesity are strong predictors of adult obesity and there is a host of problems that develop as a result of obesity (e.g., type 2 diabetes insulin resistance, hypertension: Spruikt-Metz, 2011) prevention efforts are an absolute must. Despite the strong interest and dedication of resources to prevention efforts childhood and adolescent obesity remain high. In fact, the CDC (Ogden & Carroll, 2010) has indicated that in 2007–2008 19.3 % of male

adolescents and 16.8 % of female adolescents aged 12–19 were obese.

The *Handbook of Pediatric and Adolescent Obesity Treatment* (O'Donohue, Moore, & Scott, 2008) offers an extensive overview of etiological, diagnostic, and sociocultural considerations; relevant process variables; treatment approaches (with an emphasis on stepped care); and nutritional approaches with regard to obesity in children and adolescents. Prevention efforts with regard to obesity can come in many forms including the prevention of further weight gain; the prevention of health conditions associated with obesity; or alternatively prevention of obesity in the first place (i.e., preventing normal weight or overweight children and adolescents from becoming obese). Within this handbook a specific discussion on prevention is provided (Story & Kaphinger, 2008) and will be reviewed here, as will be other relevant literature.

Because more than 95 % of children and adolescents (aged 5–17) are enrolled in school, school-based interventions make sense given the magnitude of continuous and intensive contact that academic institutions have with school-aged children and adolescents (Story & Kaphinger, 2008). That being said, school-based interventions have been demonstrated to improve obesity-related behaviors and reduce obesity (Gortmaker et al., 1999) although with limited success (Dobbins, De Corby, Robeson, Husson, & Tirilis, 2009). Recently, Stice, Shaw, and Marti (2006) conducted a meta-analysis to review obesity prevention programs. Their study included 64 prevention programs that aimed to produce weight gain prevention efforts. Of these programs 21 % produced significant prevention effects but these were typically pre-to-post effects (programs that have succeeded at preventing weight gain tend not to have long-term staying power: Spruikt-Metz, 2011). Effects were greatest for programs targeting children and adolescents (as opposed to preadolescents) and females. Programs that were relatively brief, programs solely targeting weight control vs. other health behaviors (e.g., smoking), programs evaluated in pilot trials, and programs wherein participants must self-select into the intervention had the greatest effects and factors

such as mandated improvements in diet and exercise, sedentary behavior reduction, delivery by trained interventionists, and parental involvement were not associated with significantly larger effects (Stice et al., 2006).

With further regard to school-based prevention efforts and future directions, Story and Kaphingst (2008) discuss how school-based interventions appear to hold promise but future research is needed with a focus on strengthening physical activity and healthy eating. They also discuss how programs should target different levels such as the school environment, behavioral curricula, and parent involvement. Finally, they discuss the need for the field to establish whether certain types of interventions are more successful with children of different ages, gender/sex, and/or ethnic background. Furthermore, Spruikt-Metz (2011) discusses the need for multifactorial theoretical approaches that consider the impact of system, environment, and organizational issues; the need for programs that address individual as well as group behavior change; and the necessity of stakeholders (families, schools, policy-makers) being included in the decision-making process about intervention strategies to be implemented (Summerbell et al., 2005).

Suicide

Three terms are often used in the literature that focuses on suicide: suicidal ideation (defined as thoughts of killing oneself without regard to intention to act on the thoughts); suicide attempt (a self-inflicted, potentially injurious behavior with a nonfatal outcome where there was intent to die); and death by suicide (a self-inflicted death) (Silverman et al., 2007). Such behaviors are often referred to as suicide-related behaviors (O'Mara, Lee, & King, 2012). Suicide is the third leading cause of death among adolescents and young adults in the United States and prevalence rate for suicide deaths in the United States among adolescents (13–19 years old) was 6.03 per 100,000 (Center for Disease Control, 2010a) from 2000 to 2007. Rates for suicide-related behaviors in adolescents are substantially higher

and 13.8 % of high school students report seriously having considered attempting suicide in the past year, 10.9 % made a plan for how they would attempt suicide, 6.3 % attempted suicide, and 1.9 % made a suicide attempt that required medical attention (Center for Disease Control, 2010b). Unfortunately, experts have noted that there is a paucity of studies demonstrating empirical effectiveness of suicide prevention programs (Cooper, Clements, & Holt, 2011).

High school-based suicide prevention programs can be separated into four general categories: enhancing protective factors, curriculum-based programs, gatekeepers, and screening programs (Cooper et al., 2011). A recent review of suicide prevention programs has indicated that such programs have demonstrated post-improvements in knowledge, attitudes, and help-seeking behavior. Specifically, in a systemic review of the literature on the effectiveness of middle and high school-based suicide prevention programs for adolescents, Cusimano and Sameem (2011) reviewed 36 relevant studies. Of these 36 studies, eight studies were identified as being well-performed, controlled, and assigned intervention and control strategies to students in middle school or high schools and five of these studies demonstrated significant improvements in knowledge (these studies were as follows: Portzky & van Heeringen, 2006; Aseltine & DeMartino, 2004; Aseltine et al., 2007; Kalafat & Elias, 1994).

Beyond school-based programs other interventions can help to reduce suicide behavior and ultimately prevent suicide. Tarrier, Taylor, and Gooding (2008) conducted a systematic review and meta-analysis of cognitive-behavioral interventions to reduce suicide behavior. Ultimately their work included a review of 28 studies and results from this work indicated a highly significant effect for cognitive-behavioral therapies (CBTs) for reducing suicide behavior. However, of these 28 studies, seven utilized adolescents as participants and stratified results indicated that CBT appears effective with adult populations but not with adolescents.

A methodological problem in the study of suicide prevention programs is the lack of longi-

tudinal research. Such studies are necessary as are comparisons between groups who have received prevention efforts and those who have not with the aim being to determine whether or not suicide-related behaviors are present to a lesser extent among those adolescents who have partaken in a suicide prevention program. Research as described above is necessary to truly determine the efficacy of suicide prevention programs. The majority of outcome research on suicide prevention programs focuses on the acquisition of knowledge and follow-up assessment is typically short term.

Severe Behavioral Problems

The literature on adolescent health is replete with discussions on how adolescence is a time of experimentation, risk, and opportunity (Schwartz et al., 2010) of which delinquency can result. Delinquency is most common in adolescence beginning in early adolescence (age 11–13) and peaking at age 17 (Li et al., 2011) and research has indicated that delinquency in early adolescence is predictive of poor outcome in life (e.g., engagement in serious antisocial behavior: Loeber & Le Blanc, 1990).

Research on prevention efforts with regard to delinquent behavior is plenty. For example, research has indicated that higher degrees of behavioral and emotional school engagement predict a significantly lower risk of involvement in delinquency (Li et al., 2011). Furthermore, research on the effects of therapeutic foster care on violent outcomes among juveniles indicates >70 % reduction for felony assaults during the first year after completion of the program (Hahn et al., 2005). Research has also focused on recidivism in terms of delinquent behavior. For example, Genovés, Morales, and Sánchez-Meca (2006) reviewed the outcomes of best available empirical research regarding the effectiveness of treatment programs implemented in secure corrections to prevent the recidivism of serious (violent and chronic) juvenile offenders (from 12 to 21 years old). Results from this review indicated that a relatively low effective size ($r=0.07$) with cognitive-

behavioral methods of treatment was the most effective in decreasing recidivism.

A Fiscal Perspective

In this chapter thus far, we have reviewed the literature on prevention of sexual risk, substance use, obesity, suicide, and severe behavioral problems. While certainly from a theoretical perspective prevention efforts make fiscal sense (if you can prevent any of the above in adolescents there are many potential financial gains, e.g., if an adolescent does not engage in risky sexual behavior he/she has a low chance of catching an STD which can require treatment), our review of the literature has elucidated that the efficacy of most prevention programs is limited. Some experts have written on this very topic exploring the cost-effectiveness of prevention programs and many have cited difficulties in terms of the assessment of cost-effectiveness due to methodological differences in research studies, i.e., making programs and outcome difficult to compare (Kilian et al., 2011). Nonetheless, as indicated above the fairly limited levels of efficacy achieved via the prevention programs described within this chapter make prevention efforts a hard sell from a money-saving perspective. Despite this, a large number of experts have attempted to outline why promotion and prevention makes fiscal sense.

Proponents of fiscal savings from prevention programs have illustrated the high cost of mental health diagnosis like depression (due to missed days of work, premature retirement, and long-term unemployment) and schizophrenia (McDaid, 2011), both due to the disorders themselves and also because people with poor mental health have a higher probability of being physically unhealthy compared to those without mental health problems (Harris & Barraclough, 1998). Furthermore, researchers have demonstrated the astronomical savings that can occur for the prevention of even one case of conduct disorder (\$3,481,433) (Foster & Jones, 2005) and on a smaller scale research has indicated that the cost-effectiveness per unit of change on the Child Behavior Checklist is

\$337 over a 3-month period (DePanilis & Zlotnik, 2008). Nonetheless, even proponents of prevention as a cost-saver have noted that there is a huge research gap in terms of the costs and cost-effectiveness of mental disorder prevention or mental health promotion programs and the types of treatment for mental disorder that provides the greatest social benefit for the invested money in children and adolescents (Kilian, Losert, Park, McDaid, & Knapp, 2010). In sum, the verdict is still out in terms of whether or not prevention programs actually have us money (given the very small effect sizes observed in the outcome research) and if they do to what extent.

Summary, Conclusions, and Next Steps

In this chapter we have provided a historical perspective on adolescent prevention programs and we discussed the parallel between medical prevention efforts and behavioral health prevention efforts. With regard to the specific literature on prevention efforts employed in adolescence we provided a review of the literature on prevention programs aimed at reducing sexual risk, substance use, obesity, suicide, and severe behavioral problems. We concluded with a discussion on the fiscal aspects of prevention programs.

In the behavioral health literature, Gordon Paul's question, "What treatment, by whom, is most effective for this individual with that specific problem, under which set of circumstances?" (Paul, 1967, p. 111) is often cited. Certainly this question illustrates the complexities involved in selecting and administering an intervention. prevention interventions are not exempt from such complexities and as illustrated by our review of the literature, we do not know the answer to the question posed by Paul. In fact, experts have indicated that we do not have a specific list of effective ingredients when it comes to prevention and the less-than-desirable effect sizes for prevention programs demonstrate that as a field we are not experts in terms of designing and implementing prevention programs that are highly

effective. Clearly, across the board research demonstrating large effect sizes for prevention programs is lacking. This has prompted a discussion on whether or not prevention programs make fiscal sense and the verdict is still out in terms of whether or not prevention programs save money and if so how much (after all the design and implementation of prevention programs are hardly free).

Nonetheless, we can at least attempt to answer a portion of Paul's question. In terms of the "whom" our literature review has indicated that the delivery of prevention should be conducted by both experts and peers as at least some research has demonstrated superior effect sizes when peers are involved as leaders. The individuals we have discussed in this chapter have of course been adolescents although the literature has indicated that some programs seem to work better with specific age groups and at times effects have been demonstrated to be greater among females. In terms of "specific problems," there are seemingly endless things to prevent and we didn't attempt to address them all (we didn't discuss depression, school dropout, etc.) and instead we focused on those that seemed to be the greater focus of our field.

The last portion of Paul's question "under what circumstances" is quite difficult to address. To a large extent it seems that school is where the majority of prevention efforts take place. Perhaps this is in part the problem and if such efforts were more profuse (e.g., there was a home-based component, a web component) the effect sizes for these programs would be larger. There also seems to be a lack of research in terms of what dosage is needed. Clearly in the medical field, it is possible to determine the precise dose necessary to achieve the desired result, e.g., in the case of vaccination for some vaccinations a single dose is all that is needed whereas for others booster follow-ups are necessary. In the behavioral health arena it does not appear that we have adequately studied the extent to which each component of prevention programs contributes to the overall effect and we have also not examined the amount necessary (i.e., a single administration vs. a yearly administration vs. a monthly administration) to achieve the desired results. Lastly, it seems that nobody has

focused on a complete curriculum and instead across the board it appears that everyone simply focuses on a small portion of a much larger landscape (e.g., instead of having a pregnancy prevention program why not simply have a program that addresses pregnancy prevention, sexual risk, suicide risk, substance use, etc.).

In terms of directions the field should go with regard to adolescent health prevention efforts, it seems that more research is needed to determine what exactly works with regard to prevention from a behavioral health perspective. Most notably an examination perhaps via regression analysis to determine which components seem to carry the biggest impact and certainly an examination of "dosing" need to be carried out. To some extent research supports that using social learning theory to guide the development of programs may prove fruitful. Other components that seem to be at least somewhat effective include the use of interactive methods to delivery information and the incorporation of skills training (e.g., social skills) into prevention programs.

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