Prevention of Eating Disorders and Substance Misuse in Adolescence: Toward a Developmental Contextual Perspective

10

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Abstract

This chapter reviews the conceptual and empirical foundations for efforts to prevent, simultaneously, substance misuse and eating disordered behavior in adolescents. The focus is universal and selective prevention in middle and high schools, although Stice's dissonance-based form of indicated prevention is also considered, particularly its potential for application to adolescents not already at high risk. Seven converging lessons from prevention research and reviews in each field are presented as guidelines for further investigations of the joint prevention of substance misuse and the spectrum of disordered eating. The potential value of these guidelines is illustrated by a review of the ATLAS and ATHENA programs, which constitute the only project to date that has demonstrated the ability to prevent, simultaneously, attitudes and behaviors related to body image, eating pathology, and substance misuse. It is argued that simultaneous prevention of substance misuse and disordered eating should incorporate Piran's critical social perspective and an ecological model, both of which can be usefully understood and applied within Lerner's theory of developmental contextualism.

Keywords

Comorbidity • Critical social perspective • Developmental contextualism • Disordered eating • Eating disorders • Media literacy • Positive youth development • Prevention • Substance misuse

Inspection of literature reviews addressing prevention of eating disorders (ED) (e.g., Levine & Smolak, 2006; Stice, Becker, & Yokum, 2013) and prevention of substance misuse (e.g., Botvin & Griffin, in press-a; Griffin & Botvin, 2010;

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Karki et al., 2013) reveals that only one project has demonstrated the ability to prevent, simultaneously, attitudes and behaviors related to body image, eating pathology, and substance misuse. Review of the ATLAS and ATHENA programs (Elliot & Goldberg, 2008) constitutes the third goal of this chapter; the first is providing a conceptual foundation for simultaneous prevention, while the second is distillation of empirical guidelines, based on overlapping lessons from each field.

This chapter focuses on universal-selective prevention in middle and high schools. Adolescence is one high-risk period for both ED and substance misuse (Griffin & Botvin, 2010; Levine & Smolak, 2006); and, according to the Rose Paradox in public health, in a large population the clear majority of new cases of a disorder come from those at low-to-moderate risk, *not* the relatively few people who are at high risk (Austin, 2001). The final goal is to use those guidelines to identify directions for further investigations of the joint prevention of substance misuse and the spectrum of disordered eating.

10.1 Conceptual Foundations: Defining the Problems to Be Addressed

10.1.1 Substance Misuse

Drawing on a publication from Ontario's Ministry of Health Promotion (2010), *substance misuse* is defined as self-administration (ultimately by choice) of psychoactive substances (e.g., nicotine, alcohol, amphetamine, marijuana, oxycodone) in a manner—and especially in a pattern—that (1) is de jure illegal, (2) departs from culturally approved developmental expectations, and (3) generates at least one of the following: (a) danger for self or others, (b) disability in fulfilling roles and developmental tasks, (c) suffering or misery for self or others, (d) alienation from others or from one's core values, and (e) increased probability of further substance use. As more of criteria (a)–(e) are met, the likelihood increases that use is misuse.

10.1.2 Eating Disorders and Disordered Eating

For prevention purposes, it is useful to conceptualize DSM-5 ED as extremes of six intertwined continua (Levine & Smolak, 2006): (1) negative body image; (2) unhealthy forms of weight management; (3) overvaluing the self in terms of perceived weight and shape in relation to unrealistic standards of beauty, fitness, and muscularity; (4) irrational fear and loathing of body fat and fat people, all feeding drives for thinness and leanness; (5) harsh self-surveillance and self-criticism, in a reciprocal relationship with shame, anxiety, depression, and difficulties in self-regulation; and (6) binge eating. People who have eating attitudes and behaviors that generate mild-to-moderate problems [see (a)–(e) above] and who have moderate-to-high levels of (1), plus (2) or (6), and at least one of (3)–(5) fall into the broad category of *disordered eating* (Levine & Smolak, 2006).

Each of these continua, while unhealthy, is ordinary to the point of being normative and culturally syntonic.

10.2 Conceptual Foundations

10.2.1 Symptom Comorbidity and Shared Etiology

Misuse of alcohol and other drugs is comorbid with ED that revolve around binge eating and purging (see Chaps. 11 and 12). Although it is surprising the Wolfe and Maisto's (2000) review of putative risk factors for the comorbidity of bulimic behaviors and substance abuse found very little evidence supporting shared etiology, substance misuse is significantly associated with the psychopathology often accompanying ED: anxiety disorders, trauma- and stressor-related disorders, depression, the personality dimension of neuroticism, and deficits in expressing negative affect and controlling impulses (Ferriter & Ray, 2011; O'Brien & Vincent, 2003; Chaps. 6, 16, and 17). In high school and college students, substance misuse is also correlated with some of the continua constituting the definition of disordered eating (see, e.g., Parkes, Saewyc, Cox, & MacKay, 2008; Wolfe & Maisto, 2000).

There is increasing evidence that negative body image, disordered eating and ED, substance misuse, and non-suicidal self-injury are elements in a larger spectrum of significant problems in self-care reflecting "disembodiment" (Piran & Teall, 2012) and "body disregard" (Muehlenkamp, 2012). Misuse of alcohol, marijuana, or oxycodone may serve many of the same purposes as binge eating and/or self-initiated dieting, including peer acceptance, experimentation with "adult" behaviors, and, most notably, escape from painful self-awareness and other forms of distress. Misuse of laxatives, diuretics, diet pills, caffeine, and other stimulants (e.g., nicotine, amphetamine) may be undertaken to control hunger and/or control and manage weight in those with significant weight and shape concerns. Both substance misuse and the continuum of disordered eating are comprehensible and functional in the context of adolescent development within a culture haunted, if not powered, by long-standing tensions between asceticism, delay of gratification, and self-control versus intolerance of discomfort, "cutting loose," and "just do it!" (Griffin & Botvin, 2010; Levine & Smolak, 2006).

10.2.2 The Nonspecific Vulnerability-Stressor Model

It has long been known that many different types of physical and mental disorders in adolescence and adulthood have overlapping risk factors. These include vulnerability to negative affect, the experience of cumulative life stress, behavioral incompetencies (e.g., in coping skills, self-management, goal setting, and problem solving), and the juxtaposition of poor social skills and lack of social support (Levine & Smolak, 2006). Consequently, according to a nonspecific vulnerability-stressor (NSVS) model, problems will be prevented and resilience

will be promoted when stakeholders in community health, including adolescents, collaborate to make multiple environments (e.g., school, the Internet, athletics, the family) more predictable, safer, more respectful, and more responsive while strengthening opportunities for adolescents to have multifaceted lives. Stressors to be minimized range from normative developmental challenges (e.g., issues of autonomy, relatedness, identity, competence at work, sexuality) to common threats (e.g., sexual harassment, family conflicts such as divorce) to major losses and trauma (Levine & Smolak, 2006).

10.3 Conceptual Foundations: Why Prevention and What Is It?

10.3.1 Why Prevention?

The prevalence of comorbid substance misuse and ED (or disordered eating) will not be substantially reduced, beyond minimization of behavioral "contagion," by applying a detect-and-treat approach (Levine & Smolak, 2006). Even if people were open about their problems and received strong support from family and friends who were impervious to the stigma of mental illness, there would still be many psychological, sociological, and economic barriers to identification, referral, and specialized, evidence-based treatment, including an imbalance between the large number of people suffering and the small number of professionals with proper training. The detect-and-treat approach, while humane and necessary in the necessarily limited ongoing efforts to curb the *prevalence* of disordered eating + substance misuse, will never reduce its *incidence* (i.e., the number of *new* instances of the comorbid condition in a given time period divided by the number of people in a population who could reasonably be considered at risk).

10.3.2 Definitions and Assumptions Related to Prevention

10.3.2.1 Prevention

To prevent a disorder is to understand and anticipate the conditions that foster the problem and trigger its onset and to intervene in systematic ways so as to forestall or delay the disorder. One way to accomplish this is to protect health and reinforce resilience and adaptive functioning, including the ability to cope effectively with developmental challenges and life's unpredictable but inevitable hardships (Committee on the Prevention of Mental Disorders, 2009; Guerra & Bradshaw, 2008; Levine & Smolak, 2006).

10.3.2.2 The Prevention Spectrum

This chapter applies the "mental health intervention spectrum" of prevention proposed by the National Research Council (NRC) and the Institute of Medicine (IOM), both of the USA's National Academy of Sciences (Committee on the Prevention of Mental Disorders, 2009). This is a continuum from general health

and resilience promotion → universal prevention → selective prevention → indicated or "targeted" prevention, the latter shading into treatment (case identification, then intervention, and then aftercare).

The spectrum begins with policies and programs intended to improve the health and hardiness of an entire population. *Universal prevention* programs transform and strengthen public policies, social institutions, and common cultural attitudes and practices in order to prevent designated conditions (e.g., substance misuse) from developing in circumscribed by extremely large groups of people, such as all youth ages 11 through 14 in California.

Selective prevention also involves changes in public policy and group practices, but the primary audience is a large group of people who do not yet have the condition of interest (i.e., they are asymptomatic) but who clearly are *at risk* for biological, psychological, or sociocultural reasons. For example, a selective prevention program seeking to reduce the incidence of comorbid disordered eating and substance misuse could focus on girls ages 10 through 14 who necessarily are dealing with pubertal development, who live in a society that defines women in terms of slenderness and passivity, *and* who have a parent or older sibling who suffers from one or more of the following: severe depression, substance abuse, anxiety disorder, and ED. The prototypical multi-lesson ED or substance misuse prevention *curriculum* for middle or high school girls would fall between universal and selective prevention on the mental health intervention continuum (Cox & Levine, in press).

Indicated/targeted prevention programs are designed for people who have been identified as being at high risk due to warning signs (e.g., mild symptoms) and/or clear precursors (e.g., high levels of weight/shape concern; experimentation with binge drinking). The "definitely at-risk" status, as determined by screening methods with well-documented sensitivity and specificity, "indicates" that an individual or group intervention tailored for them is warranted (Levine & Smolak, 2006).

10.3.3 Prevention and Developmental Contextualism

The theory of developmental contextualism, developed by Lerner and colleagues in the mid-1980s, acknowledges the interrelationship of correlated behaviors—both high risk/unhealthy and resilient/healthy—and addresses overlapping risk-resilience factors by "embed[ding] the study of children in the actual families, neighborhoods, and communities in which they live" (Lerner, Ostrom, & Freel, 1997, p. 504). The label "developmental contextual" emphasizes the dynamic, changing, malleable, and nonreductionist relationships between individuals and the multiple physical and social dimensions of their ecology (Lerner, Fisher, & Weinberg, 2000; Lerner et al., 1997; Schoon, 2012). Examples of influential contexts are family, school, neighborhood, religious community, mass media, and cultural values. These ecological contexts are "nested spheres of influence varying in proximity to the individual and ranging from the micro- to the macro-context" (Schoon, 2012, p. 146, based on Bronfenbrenner's classic developmental theory).

Over time these contexts not only shape, but they are shaped by, the "lived experience" of individuals (Piran, 2001), who, as they develop, tend to have a growing capacity for participation in self-environment co-regulation (Schoon, 2012).

There are three important implications of this perspective, along with the NSVS model. First, the developmental-ecological contexts of adolescents should be the focus of the planned changes—the policies (at the higher levels of organization) and programs and other interventions (at the lower levels)—that we call prevention (see Lesson 6 below). This emphasis magnifies a previous important point about universal and selective prevention: effective changes must not only be planned, they must be integrated and "*aimed at changing the developmental system in which people are embedded*, *rather than at changing individuals*" (Lerner et al., 1997, p. 507; italics in the original). Implementation and evaluation of prevention in these contexts is simultaneously outreach, organizing, and empowerment in order to identify, mobilize, and strengthen *community* assets via policies and programs for youth development. This leads to the second implication: because shared risk and lack of resilience are products of multiple stressors and vulnerabilities at multiple ecological levels, prevention is necessarily about political and social change in the direction of social justice (Albee, 1983).

Third, prevention needs to arrange for positive youth development in a variety of interlocking areas, such as resilience, prosocial and community involvement, and cognitive and behavioral competencies (Guerra & Bradshaw, 2008). Prevention specialists need to work with community stakeholders to encourage and guide the "6 *C*s" of positive youth development (Guerra & Bradshaw, 2008; Lerner et al., 2000): *C*ompetence (life skills), *C*onnection, *C*haracter, *C*onfidence and positive sense of self, *C*aring (compassion), and *C*ontribution to community and society. Prevention requires fostering and reinforcing the engagement of youth in a critical social perspective (CSP) (see Lesson 3 below) and in doing meaningful things for themselves and others, including joining or leading adults in working for beneficial social changes (Piran, 2001, 2010).

10.4 Lessons and Principles for the Prevention of Drug Use and Disordered Eating

It is difficult to extract convergent guidelines from one extremely large body of prevention literature (substance misuse) and another very different and rapidly expanding body of theory and studies (disordered eating). Therefore, I offer seven shared conclusions as lessons to guide further programming and research in the simultaneous prevention of substance misuse and disordered eating in adolescents. Lessons 3, 4, and 6 also describe ED prevention approaches worth consulting as models of that lesson.

10.4.1 Lesson 1: Prevention Can Work, But Effects Are Limited and Conclusions Complicated

10.4.1.1 Substance Misuse

Reviews (see, e.g., Botvin & Griffin, in press-a, in press-b; Hansen, 1992; Tobler et al., 2000) of studies (including randomized controlled trials) conducted between 1978 and 2010 demonstrate that, in general, multi-lesson school-based programs for young adolescents *can* prevent initiation of and increases in tobacco, alcohol, and other drug use. Many variables mitigate the impact of universal-selective prevention, so, with some notable exceptions (e.g., Botvin's Life Skills Training program; see Griffin & Botvin, 2010), effect sizes for psychosocial interventions tend to be small (+.10 to +.30; Tobler et al., 2000).

10.4.1.2 Disordered Eating

According to meta-analyses by Stice, Shaw, and Marti (2007) and by Fingeret, Warren, Cepeda-Benito, and Gleaves (2006), both universal-selective and indicated programs tend to have beneficial and statistically significant effects on measures of risk (including internalization of the thin ideal, body dissatisfaction, and negative affect) and of eating pathology. As is the case for prevention of substance misuse, effect sizes tend to be small (e.g., +.06 to +.09 for universal-selective prevention) to moderate (for indicated prevention, e.g., +.18 to +.22). The most effective prevention in terms of body dissatisfaction, dieting, and eating pathology is accomplished by multi-session, interactive (i.e., engaging) programs that promote body acceptance and challenge continued internalization of the slender beauty ideal by female participants ages 15 through 25 who already have body image issues and other weight concerns. Nevertheless, universal-selective programs and indicated programs tend to be equally effective in reducing thin-ideal internalization and negative affect (Stice et al., 2007). Finally, it appears that program implementation by prevention specialists, rather than school staff, increases the likelihood of reduction in risk factors (but not eating pathology).

10.4.2 Lesson 2: Information Dissemination and Other Nonbehavioral Approaches Have Limited and Riskier Effects

10.4.2.1 Substance Misuse

A variety of different approaches have some demonstrated success, and many failures are attributable to severe methodological shortcomings (Hansen, 1992; Tobler et al., 2000). Some programs seek to foster rational decision-making and/or foster fear of drugs by educating students about the negative consequences of drug use and the etiology of drug abuse. These information-based approaches are sometimes supplemented by activities that increase appreciation and respect for the self and others in areas of life antithetical to drug use.

Many people now consider it a truism that information dissemination and affective education are useless, antiquated, and potentially dangerous. Yet, while

it is the case that as a group their mean effect sizes approach zero (Tobler et al., 2000), nearly a third of the *behavioral* results from informational, affective, and values-based programs conducted during the 1980s were positive (Hansen, 1992). However, another 25–30 % of these programs had the undesirable effect of increasing either drug use or positive attitudes toward drug use. The perception that such programs *can* backfire (i.e., be iatrogenic) has validity (Hansen, 1992).

10.4.2.2 Disordered Eating

Provision of information, particularly in a didactic or moralizing fashion, is often ineffective in changing beliefs, attitudes, and behavior (Levine & Smolak, 2006; Stice et al., 2007). There is disagreement among experts as to whether such information is likely to be harmful (see, e.g., Stice et al., 2007, vs. O'Dea, 2002).

10.4.3 Lesson 3: Information Dissemination Is an Important Aspect of Developing a Critical Perspective for Resisting and Transforming Negative Social Influences

10.4.3.1 Substance Abuse

Although provision of information alone in the service of prevention tends to be ineffective or even risky, knowledge remains the foundation of a critical perspective for resisting negative social influences. Along with healthier peer norms, specific resistance skills, and improved life skills, this critical perspective is a key component of effective prevention of substance misuse by adolescents (Botvin & Griffin, in press-a; Griffin & Botvin, 2010).

10.4.3.2 Disordered Eating

A good deal of evidence supports Piran's contention that a CSP underlies many effective prevention programs (Levine & Smolak, 2006; Piran, 2001, 2010; Piran & Teall, 2012). A CSP emerges most readily from dialogue-based education, facilitated by a skilled adult, that encourages increased awareness of and critical thinking about dominant cultural values and practices (e.g., "fat talk," teasing, peer beauty norms, mass media) in relation to gender, power and privilege, eating, and body image. These dialogues promote personal and contextualized knowledge about the experience of embodiment versus disembodiment. Muehlenkamp (2012) defines embodiment in terms of body regard or "connection to, ownership of, and understanding of the body (e.g., body integrity)" (p. 332).

A number of effective prevention programs for older children and adolescents (reviewed in Levine & Smolak, 2006) use various teaching tools to educate students about the "clash" between physical development (e.g., weight and fat gain during puberty; the genetics of diversity in weight and shape) + psychosocial development (e.g., basic needs for self-expression, a sense of control, and connection to others) + political developments (e.g., increasing freedom and opportunities for girls and women) versus unhealthy sociocultural factors such as media glorification of slenderness and dieting, rigid gender roles, sexual objectification, and peer teasing

and intimidation about fat. These sociocultural factors often distort body regard into disembodiment by promoting self-objectification, body shame and appearance dissatisfaction, the tendency to act on impulse and thus act out, mistrust of hunger and satiety signals, calorie-restrictive dieting, and negative affect. And the more disembodied one feels, the more vulnerable one is to external messages about the body and to unhealthy uses of the body for expressing anger, helplessness, and resentment (Muehlenkamp, 2012; Piran & Teall, 2012). Thus, some successful ED prevention programs, like some successful drug prevention programs (Griffin & Botvin, 2010), help students understand and think critically about whether and how they might resist the seductive psychological dilemmas created by culture.

10.4.3.3 Model Program: Piran's Ballet School Study

Piran applied the CSP model in a multifaceted program for adolescents in an elite, highly competitive, and residential ballet school in Toronto. Given the participants and high-risk setting, this was a selective-indicated program. The design, implementation, and very positive outcomes of this intensive intervention have been documented in great detail (Piran, 1999, 2001, 2010). Ultimately, Piran was able to create opportunities for relational dialogues that generated a discourse and a subculture of analysis and resistance. This type of information and education enabled Piran and the students to transform the school environment (see Lesson 6), including peer norms (e.g., no teasing), school policies (e.g., defining and forbidding harassment), curriculum (e.g., safety training), staff training and hiring (e.g., selecting supportive staff), and the physical setting (e.g., changing rooms that allow more privacy). As predicted by developmental contextualism, in the process (i.e., in this context) adolescents reduced their levels of disordered eating and increased their experiences of embodiment, agency, and meaningful interconnection with others.

10.4.3.4 Model Program: The *Media Smart* Literacy Program

Unhealthy cultural messages are rampant, and thus easily detected, in mass media. "Media literacy" is a type of CSP in which people work together to become more aware of media influences in their lives; to understand, criticize, and appreciate media content and techniques more fully; and to use this knowledge to resist and protest negative media influences while supporting and creating more positive media messages (Levine & Smolak, 2006). Wilksch and Wade (2009) conducted a randomized controlled investigation of *Media Smart*, an 8-lesson media literacy program designed for Grade 8 (M age = ~13.5) Australian girls and boys. This universal-selective program is interactive and incorporates the key literacy concepts of awareness, analysis, activism, and advocacy (Levine & Smolak, 2006). Compared to the control condition, *Media Smart* resulted in fewer shape and weight concerns and less dieting at the 30-month follow-up for girls and at 6-month follow-up for boys.

10.4.4 Lesson 4: Resistance Skills Are an Important Part of Competence Enhancement

10.4.4.1 Substance Misuse

Resistance skills include *cognitive* competencies similar to those comprising a CSP, such as understanding the immediate negative consequences of drug misuse and recognizing, understanding, and critically appraising the content and persuasive techniques of prodrug messages from mass media and peers. Another particularly important cognitive skill is understanding that, with exception of alcohol consumption by older adolescents, most adolescents do *not* smoke cigarettes or use other drugs. The teaching of resistance skills also includes modeling, practicing, and reinforcing *behavioral* competencies for avoiding high-risk situations for drug use, particularly those involving peers, and for generating counterarguments that facilitate coping with unavoidable high-risk situations. These so-called social influence programs have a more robust (but overall small positive) effect on knowledge, attitudes, and behavior than do non-skill-based interventions (Hansen, 1992; Tobler et al., 2000).

10.4.4.2 Disordered Eating

Prevention programs produce stronger average effects when, instead of being didactic and psychoeducational, they are interactive and teach skills for resisting unhealthy sociocultural influences or for increasing body satisfaction (Stice et al., 2007).

10.4.4.3 Model Programs: Dissonance-Based Interventions

As a theory-based and sustained program of development, evaluation, refinement, and dissemination, Stice's cognitive dissonance-based intervention (DBI) has transformed the prevention field in significant ways. At present it is unquestionably the most rigorously evaluated, replicable, and powerful ED prevention program. Integrating a CSP, social psychological and motivational principles, and cognitive-behavioral therapy techniques, DBI is designed to reduce risk factors and milder ED symptoms by facilitating resistance skills in adolescent girls and young women who already have high levels of body image concerns or bulimic symptoms. Consequently, this program falls into the "indicated" range of the prevention spectrum. The development, nature, and very positive short- and long-term prevention outcomes of Stice's DBI (Stice, Rohde, & Shaw, 2013) have been extensively documented (see, e.g., Becker, 2012; Stice, Rohde, Shaw, & Gau, 2011; Stice, Shaw, Becker, & Rohde, 2009).

Stice's DBI has been adapted into a universal-selective body image program (BIP) for young undergraduate women living in sororities or participating in varsity intercollegiate sports (Becker, 2012; Becker, Stice, Shaw, & Woda, 2009). The BIP, which also produces moderate-to-large prevention effect sizes that are sustained over time, is much more ecological (see Lesson 6 below) in its approach than Stice's DBI. The BIP's emphasis on community relationship building, peer interactions, peer leadership in implementing the program, changes in peer norms,

advocacy, and activism (Becker, 2012; Becker et al., 2009; Marchand, Stice, Rohde, & Becker, 2011) is consistent with the CSP (see Lesson 3), the importance of specific resistance skills as well as general life skills (Lessons 4 and 5), an ecological perspective (see Lesson 6), and developmental contextualism.

10.4.5 Lesson 5: Multifaceted Competence Enhancement Is Important

10.4.5.1 Substance Abuse

In accordance with the NSVS model, there is evidence that some adolescents use tobacco, alcohol, and other drugs to manage the dysphoria attendant to low self-esteem, social anxiety, poor social skills, and the transactions between life stressors and ineffective coping skills (Botvin & Griffin, in press-b). Botvin's LifeSkills Training (LST) extends the resistance model (normative expectations, immediate negative physiological and social effects of drug use, resistance skills) by using brief lectures, guided group discussions, and cognitive-behavioral techniques to teach, practice, and reinforce personal and interpersonal "life skills" (e.g., problem-solving, stress management, active and empathic listening, assertion). Numerous long-term evaluations converge in demonstrating that LST produces fairly large and very durable prevention effects on tobacco, alcohol, and marijuana use by young adolescents (Griffin & Botvin, 2010; Botvin & Griffin, in press-a, in press-b). Other reviews agree that comprehensive competence enhancement produces more robust and durable prevention effects than does information-based programming or resistance skill training alone (Hansen, 1992; Tobler et al., 2000). Interestingly, both the cognitive lessons and the specific resistance skill training are crucial "life skills" as part of the LST program.

10.4.5.2 Disordered Eating

In eating disorders prevention, it does not appear that addition of life skills such as stress management or decision-making results in an improvement of resistance skills (Stice et al., 2007). However, the effectiveness of multifaceted media literacy programs such as *Media Smart*, of empowerment-relational applications of the CSP (see, e.g., Piran, 1999 and Levine & Smolak, 2006), and of Becker's BIP indicates that certain life skills are indeed relevant. More research is needed to test the complex hypothesis that raising awareness of and fostering resistance to specific ED risk factors appears to be facilitated by development of skills in listening to and working with others, being assertive and courageous despite anxious uncertainty, and expressing oneself alone and with others in noting injustice and taking steps to rectify it.

10.4.6 Lesson 6: Ecological Approaches Are Very Important

10.4.6.1 Substance Misuse

Many drug prevention programs over the years, including those featuring resistance skill training and competence enhancement, have demonstrated limited long-term effects, and even the most successful programs could be enhanced (Tobler et al., 2000; see also Karki et al., 2013). Consistent with the principles of the NSVS model, developmental contextualism, and the CSP, one successful response to limited effects has been integration of school-based programming with efforts to improve the broader ecology of adolescents. Ecological factors include the school environment; parenting skills and parent–child relationships; the attitudes and behaviors of teachers, coaches, and other influential adults; the community; and mass media.

Tobler's meta-analysis (2000) found a significant pattern of increased effectiveness as programs evolve from interactive resistance skills training alone → interactive resistance skills training + life skills training → system-based programs that feature comprehensive skills training while extending the focus of prevention to families, school policies, and community policies and practices. Ecological approaches to prevention work best if programs—and especially programs for minority groups—are developed (tailored), implemented, evaluated, and maintained in consultation with school personnel, with students, and with stakeholders in the broader community. This form of developmental contextualism motivates community members to participate in implementing, evaluating, and maintaining prevention programs in ways that are inherently localized and culturally sensitive.

10.4.6.2 Disordered Eating

With respect to universal-selective prevention, a pattern of small effect sizes and limited durability of effects is also apparent in this field (Levine & Smolak, 2006; Piran, 2010; Stice et al., 2007). This pattern, coupled with the fundamental definition of universal prevention (Committee on the Prevention of Mental Disorders, 2009) and with the success of Piran's participatory action research and Becker's BIP, also points to the desirability of an ecological, context-specific approach to prevention.

10.4.6.3 Model Program: *Planet Health*

This is a school-based, ecological, and interdisciplinary intervention originally intended to prevent obesity in early adolescence (Austin, Field, Wiecha, Peterson, & Gortmaker, 2005) by decreasing television viewing and consumption of high-fat foods while increasing (a) consumption of fruits and vegetables and (b) both moderate and vigorous physical activity. Middle schools (grades 6 through 8) participating in *Planet Health* received teacher-training workshops, lessons to be integrated in the state-mandated curricula for physical education and for a wide variety of subjects, wellness sessions, and fitness funds. Attempts were also made to

work with families to modify the home environment to support the school's programs.

The initial outcomes of a randomized controlled evaluation of *Planet Health* were fascinating (Austin et al., 2005). The program failed to lower the incidence of obesity, although obesity prevalence was reduced among female students. What *Planet Health* did do was very significantly reduce, over a 2-year period, initiation (i.e., the incidence) of two forms of disordered eating behavior in girls: purging and use of diet pills. This unexpected finding was replicated in a follow-up randomized controlled trial over 1,400 girls and boys in grades 6 and 7 in 16 Massachusetts middle schools (Austin et al., 2007).

10.4.6.4 Model Program: Healthy Schools-Healthy Kids

McVey, Tweed, and Blackmore (2007) in Toronto developed an 8-month intervention to mobilize various people to get involved in analyzing and changing the ecology of a middle school in order to reduce risk and increase resilience. *Healthy Schools-Healthy Kids* integrated, for example, student curricula for learning about and improving body image, training and curriculum guides for teachers, and coordinated workshops and newsletters for parents. Curricula which addressed specific resistance skills and life skills (including healthy eating and an active lifestyle) were coordinated with small and gender-segregated peer support groups, staff training, student-generated public service announcements (PSAs) within the school, and a school play.

The results of this comprehensive school-based approach were very promising. At 6-month follow-up, girls and boys in the 7th grade who participated in the program reported less body dissatisfaction than a comparison sample, while girls attending the intervention schools also reported less commitment to the slender beauty ideal and fewer skipped meals. These risk factor reductions and the collaborative processes by which *Healthy Schools-Healthy Kids* was developed have generated, under McVey's leadership, further systemic developments, such as a web-based educational tool (matched to curriculum expectations of the Ontario and Nova Scotia Ministries of Education) designed for teachers and public health professionals who work with youth ages 9–12 years (Levine & McVey, 2012).

10.4.7 Lesson 7: Programs Should Be Engaging and Interactive for All Concerned

10.4.7.1 Substance Abuse and Disordered Eating

It appears that the commitment of key personnel to the prevention process and to the intervention itself is very important. Whether those who "deliver" and "facilitate" the program are regular classroom teachers, same-age or older peers, graduate students, or health professionals, they need to be committed to prevention in general and to faithful implementation of the program. Program fidelity will be increased when leaders are enthusiastic, willing to serve as positive role models, and provided with teaching manuals, student workbooks, and effective training and supervision.

From the perspective of participants, *active*, *interactive*, and *engaging* lessons will be significantly more effective than didactic, noninteractive interventions relying on lectures and films (Stice et al., 2007; Tobler et al., 2000).

10.5 Model Project for Preventing Comorbidity at the Universal-Selective Level

Only one prevention project has been systematically designed and evaluated with the goal of preventing problems located in the intersection between negative body image, disordered eating, and substance misuse. ATLAS and ATHENA, companion programs developed by Linn Goldberg and Diane Elliot (see, e.g., Elliot & Goldberg, 2008) at the Oregon Health Sciences University, are gender-specific interventions that integrate features of psychoeducation and positive norm development (Lesson 3 above), media literacy (Lessons 3 and 4), drug resistance and life skills (Lessons 4 and 5), use of engaging lessons (Lesson 7), and other well-established practices in designing (Lessons 1, 2, and 7) and evaluating drug prevention programs. Another important aspect of ATLAS and ATHENA is that they are explicitly ecological (Lessons 6 and 7). The setting is the team context, and the program is implemented during team practices in classroom meetings and in the weight room. Moreover, the program emphasizes training of, leadership by, and constant support from coaches and captains, all of whom are on "on the same page" as far as program themes and goals.

10.5.1 ATLAS

Adolescents Training and Learning to Avoid Steroids is an award-winning selective intervention to prevent misuse of anabolic steroids and food supplements by high school football players (Goldberg et al., 2000). In addition to providing education about developmental physiology and nutrition, ATLAS uses various teaching methods to encourage male athletes to think critically about the impact of powerful masculine norms and mass media on body image, eating, exercising, and substance misuse. The athletes get hands-on instruction and practice in resisting pressures for use of steroids and food supplements. This is complemented by direct instruction in safe, effective techniques for developing strength and managing weight (e.g., "getting larger"). As part of media literacy training, small groups of athletes work together to generate simulated media (e.g., PSAs, posters, video, theatrical performances) that promote healthier models and forms of strength and fitness.

Goldberg et al. (2000) found that, at 1-year follow-up, boys participating in the ATLAS program increased their knowledge (e.g., about exercise, alcohol, and anabolic steroids) and were more skeptical both about the value of anabolic steroids for bulking up and about promotion of supplements and steroids via positive images and messages in strength and fitness magazines. Athletes receiving the ATLAS program also reported great self-efficacy in healthy strength training while

perceiving their coaches as more intolerant of steroid and supplement use. Most important, not only did program participants report less intent to use, at follow-up they were less likely to initiate use of anabolic steroids, "athletic" supplements, other performance-enhancing drugs, alcohol, or other drugs (Goldberg et al., 2000).

10.5.2 ATHENA

The success of ATLAS spurred development of a parallel selective program for high school girls called *Athletes Targeting Healthy Exercise and Nutrition Alternatives*. ATHENA's overarching goal is to prevent eating problems and *unhealthy* forms of weight/shape management and of performance enhancement, including use of diet pills, nicotine, cocaine, "nutritional" supplements, and anabolic-androgenic steroids. ATHENA does not teach about ED, body weight, and weight management by calorie counting, although these topics tend to emerge during team discussions or in the students' creation of PSAs.

"Athletes" are defined as girls participating in varsity sports, as well as cheerleaders, flag twirlers, and members of the dance/drill teams performing at athletic events (Elliot et al., 2006). ATHENA is a gender-specific adaptation of the ATLAS program in that most young female performers want to be leaner and lighter, not bigger, more muscular, and much stronger. ATHENA follows the structure of ATLAS, and there are eight 45-min classroom sessions and three 30-min weight room sessions.

A large-scale randomized controlled trial revealed that, at the conclusion of the program, girls ages 14–16 who had participated in ATHENA were significantly less likely to (a) initiate use of diet pills, amphetamines, anabolic steroids, and muscle-building supplement and (b) express intentions to diet for weight loss and to control their weight through self-induced vomiting and use of drugs. Girls in the ATHENA program also reported healthier eating, better mood, and fewer injuries. In addition, across three cohorts of adolescent female athletes, there were increases in the proposed mediating protective factors: knowledge of the negative effects of steroids and diet pills, media literacy, drug resistance skills, and self-efficacy for healthy eating and for controlling mood. As important, there were also increases in the perception that coaches are opposed to, and that few peers use, body-shaping drugs and unhealthy weight management practices. Of course, there is still room for substantial improvements in this type of program. ATHENA did not produce a between-group difference in body image. Moreover, as is often the case in prevention programs (see Lesson 6), many positive effects seen in the short-term dissipated over the 1–3-year follow-up period (Elliot et al., 2008).

10.6 Conclusions and Future Directions

There are clear empirical and conceptual reasons for understanding substance misuse and disordered eating in adolescent girls as related within a spectrum of disembodiment and body disregard. Similarly, comparison of prevention studies and reviews in the fields of substance misuse and ED strongly suggests there are also conceptual and practical reasons for pursuing simultaneous prevention. The overlapping lessons from prevention work in both fields, embodied in the very promising ATLAS and ATHENA programs, are important implications for further program development and research.

One important challenge illuminated by the seven lessons is the need to combine a more ecological approach for adolescents with the more specific elements of the CSP, the teaching of skills to analyze and resist the slender beauty ideal and the objectification of girls and women, and the development of life skills. Adaptation of Piran's participatory action approach in the ballet school and/or Becker's BIP for work with adolescent athletes, dancers, actors, scouts, etc., would be a good first step in this regard. Both of these approaches extend the application of cultural literacy, as seen in the ATLAS/ATHENA project and in other successful programs (e.g., Stice's DBI; Wilksch and Wade's *Media Smart* intervention) to transformative social action such as establishment of new peer norms, development of healthier media, and other forms of in vivo activism and advocacy. These actions, particularly when they are developed and undertaken in collaboration with various community stakeholders, increase the potential for more sustained and universal preventive effects.

This type of work, though necessary, will certainly not be easy. Apart from the promising ATLAS and Media Smart programs, very little is known about the prevention of body image, eating problems, and muscle dysmorphia in boys and young men (Levine & Smolak, 2006). And honest and open critical analysis of the nature of and risk factors for substance misuse and disordered eating will need to address emotionally charged issues such as gender, race/ethnicity, social class, personal and political power, fairness and justice, and commercial interests. Another challenge is the coordination of universal, selective, and indicated prevention (Levine & McVey, 2012). Readers are referred to a recent chapter by Cox and Levine (in press) which used the model of the United States Air Force's approach to multidimensional, integrated suicide prevention to propose a similar spectrum approach to simultaneous prevention of disordered eating and non-suicidal self-injury.

A fourth and no less significant challenge is that, although schools are a logical and evidence-based site for effective prevention, "the schools" (i.e., board members, administrators, teachers, and staff) are under considerable pressure to do many important things, ranging from teaching basic subjects to creating the attitudinal and behavioral components of citizenship and leadership. Thus, future prevention programming will likely be under pressure to incorporate topics that are of as much if not more concern than disordered eating and substance abuse. Notable among these are violence and obesity. Two important findings that need to be

addressed in the simultaneous prevention of substance use and disordered eating are (1) the many shared risk factors for obesity and disordered eating patterns (Haines & Neumark-Sztainer, 2006), and (2) obesity/overweight as a risk factor for substance use in adolescent girls only and for whether older adolescent boys carry a weapon (Farhat, Iannotti, & Simons-Morton, 2010). These findings return us to the web of interrelationships, emphasized by the NSVS model and by developmental contextualism, between various risk factors and between various unhealthy, negative outcomes. In the present cultural contexts, obesity and overweight are risk factors for many negative outcomes and practices, just as being a victim of violence in many forms is a risk factor for ED, SUD, obesity, depression, and so forth.

Meeting each of these challenges is a daunting task. Nevertheless, the theory of developmental contextualism (Lerner et al., 2000) provides an excellent framework for envisioning social transformation and for judging the potential value and outcomes of more omnibus prevention programming. We need to keep asking: does the process of program development, implementation, evaluation, and dissemination enable adolescents to form meaningful, caring relationships with other adolescents and with adults in order to develop the confidence and new skills necessary to do meaningful things and be a meaningful, positive presence in their community? An affirmative answer means there is an excellent chance this process will contribute to prevention of various problem behaviors. Moreover, in many countries there are now many people with compassion, resources, and power who have a stake in working together to promote, at the population level, (1) a positive body image; (2) more active, less sedentary lifestyles; (3) better eating habits (e.g., more fruits and vegetables, less saturated fats, fewer soft drinks); (4) reduced misuse of drugs; (5) greater safety and respect for its citizens, regardless of weight, shape, race, etc.; and (6) more involvement of adolescents and other people of all ages in improving society.

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