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ORIGINAL ARTICLE

Common Elements of Adolescent Prevention Programs: Minimizing Burden While Maximizing Reach

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Abstract A growing number of evidence-based youth prevention programs are available, but challenges related to dissemination and implementation limit their reach and impact. The current review identifies common elements across evidence-based prevention programs focused on the promotion of health-related outcomes in adolescents. We reviewed and coded descriptions of the programs for common practice and instructional elements. Problem-solving emerged as the most common practice element, followed by communication skills, and insight building. Psychoeducation, modeling, and role play emerged as the most common instructional elements. In light of significant comorbidity in poor outcomes for youth, and corresponding overlap in their underlying skills deficits, we propose that synthesizing the prevention literature using a common elements approach has the potential to yield novel information and inform prevention programming to minimize burden and maximize reach and impact for youth.

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Introduction

Three decades of research show that prevention programs for adolescents can build resilience, improve academic performance, facilitate healthy choices and, in turn, minimize risks for violence, substance abuse, and risky sexual behavior (Durlak and Wells 1997, 1998; Durlak et al. 2011). Prevention programs can achieve positive outcomes whether delivered during (Durlak et al. 2011; Wilson et al. 2001) or after (Eccles et al. 2003; Eccles and Templeton 2002; National Research Council and Institute of Medicine 2002) school; with more pronounced benefits for economically disadvantaged youth (Durlak et al. 2010; Lauer et al. 2006). The current review is informed by recent efforts in children's mental health to organize and manage existing knowledge with a common elements approach to service delivery in community settings.

Challenges to Dissemination and Implementation

Significant challenges in transporting evidence-based programs to community settings have been documented extensively, most recently in the widely cited article by Kazdin and Blase (2011). Often, evidence-based programs developed under highly controlled conditions are neither feasible for community providers nor sustainable with community resources. These challenges are even more pronounced in communities of poverty, where the potential for impact is greatest and most urgent (Gager and Elias 1997). The majority of youth prevention programming has

been designed for schools (Durlak and Wells 1997; Lauer et al. 2006; Durlak et al. 2010; Durlak et al. 2011). However, time for training teachers or implementing "bulky" programs is limited (Weisz et al. 2005, p. 639), reflecting a decade of increasing demands on teachers to raise standardized test scores and priorities that emphasize basic skills and minimize social-emotional goals (e.g., Atkins et al. 2003; Lambert and McCarthy 2006; Rotheram-Borus et al. 2012). In impoverished communities where teachers operate under considerable stress and face conditions characterized by overcrowding, limited resources, and physical deterioration (Cappella et al. 2008; Shernoff et al. 2011), there are high rates of enrollment in special education and behavior problems among students (Coutinho et al. 2002; Wagner et al. 2005). Although these communities are most in need of prevention programs, they are least well positioned to adopt them. Moreover, schools that do invest time and resources into prevention implement programs with insufficient strength or fidelity to produce a measureable difference in desired outcomes (Gottfredson and Gottfredson 2002; Gottfredson et al. 2000).

In order to reach a larger proportion of at-risk youth, efforts are underway to transport prevention curricula beyond schools to other neighborhood settings (e.g., after school programs, primary care) and providers (e.g., youth care workers, paraprofessionals). However, familiar challenges related to program resources, staff training and turnover, and administrative support similarly interfere with implementation and sustainability (Lyon et al. 2011). Hence, youth have limited opportunities to learn and practice the social-emotional skills that facilitate healthy development, and in turn remain at high risk for mental health problems that necessitate more intensive and expensive services in the face of dwindling resources.

Competing Priorities

Given that most prevention programs appear highly specific (e.g., violence prevention, bullying prevention, pregnancy prevention, or suicide prevention) schools are left to choose among what appear to be competing priorities (with limited data on reach and impact to guide their selection) or else invest even more time and resources for training, materials, and implementation. Comorbidities among problem behaviors, however, suggest there may exist a common set of underlying predictors and in turn a common set of skills that can reduce risk, build resilience, minimize burden and maximize reach.

Indeed, risky behaviors among youth tend to co-occur, reflecting overlap among the empirical predictors of poor outcomes such as substance abuse, conduct problems and sexual risk-taking (e.g., Biglan et al. 2004; Carnegie Council on Adolescent Development 1995; Lindberg et al. 2000a, b). Accordingly, underlying skills deficits appear to be associated with a broad range of internalizing and externalizing problems. For instance, deficits in problem solving are associated with both depression (Spence et al. 2002) and conduct disorder (Lochman and Dodge 1994). Similarly, poor emotional regulation is associated with anxiety (Suveg and Zeman 2004) and depression (Chaplin et al. 2005; Cole et al. 2003; Forbes and Dahl 2005; Levin et al. 2007; Silk et al. 2003), as well as conduct problems (Caspi et al. 1995; Silk et al. 2003), antisocial behavior (Hinshaw 2002), substance abuse (Kuntsche et al. 2007; Tarter et al. 1999), and attention deficit hyperactivity disorder with aggression (Melnick and Hinshaw 2000). Finally, social skills deficits have been linked to depression (Segrin 2000) and social phobia (Spence et al. 1999), as well as to peer conflict (Hawkins et al. 1992), peer deviancy (Hawkins et al. 1992), conduct disorders (Gaffney and McFall 1981, Spence and Marzillier 1981), delinquency (Hawkins et al. 1992) and substance abuse (Hawkins et al. 1992). Given the overlap in skills deficits across domains and diagnoses, the present review examined overlap in program content across prevention programs to reveal a subset of evidence-based practice elements exhibiting potential for broadest relevance and greatest impact.

Borrowing from Children's Mental Health: A Common Elements Approach

Like school principals trying to prioritize competing prevention curriculum, growing literature highlighting the science-to-service gap has raised attention to comparable challenges in children's mental health services, where agency directors are faced with the challenge of selecting among highly specialized treatment manuals. Decades of systematic treatment development and examination in carefully controlled efficacy trials have produced an expansive array of evidence-based programs that has increased the cost and complexity of selecting and training providers in routine care settings, although notable efforts to seamlessly integrate existing programs exist (e.g. Domitrovich et al. 2010). Within children's mental health, meaningful efforts are underway to examine the common components across programs and integrate them within existing service systems (Becker and Stirman 2011; Chorpita et al. 2011). For example, Embry and Biglan (2008; http://promiseneighborhoods.org/kernels/) identified 52 treatment units of behavioral influence—"kernels"—that have been replicated with demonstrated efficacy in rigorous randomized controlled trials. Most of these kernels are simple, easy-to-implement and low-cost (e.g., time-out, praise, self-monitoring) and can be implemented across settings, situations, and age groups.

Similarly, Chorpita and colleagues applied a distillation and matching model (DMM; Chorpita and Daleiden 2009; Chorpita et al. 2005) to identify the most common elements of effective mental health treatments for children. *Common elements* refer to individual treatment practices (e.g., problem solving, communication skills) that comprise packaged interventions. The DMM involves a systematic review of evidence-based programs to *distill* the common components across programs and then *match*, or tailor, specific practices to youth characteristics. The DMM approach aggregates knowledge across interventions to identify practice elements that are the most frequent, and potentially the most potent,, hence reducing the influence of those that are less robust (Chorpita et al. 2011). This knowledge can be strategically applied to enhance services in the context of a modular approach to treatment.

In modular approaches, the content, sequencing, and duration of treatment are tailored to each child's needs (Chorpita et al. 2005; Weisz et al. 2012). Recent data from the first randomized clinical trial revealed promising results, with the modular approach outperforming both usual care and standard evidence-based treatment (Weisz et al. 2012). The modular approach provides an alternative paradigm for community mental health by providing a treatment manual that can work for multiple disorders (ADHD, depression, trauma, conduct problems; MATCH; Chorpita and Weisz 2005) and accompanying clinical dashboard (Weisz et al. 2012) to guide service delivery goals, priorities and activities in a way that maximizes efficiency, minimizes burden, and improves client outcomes in routine care settings (Barth et al. 2012; Chorpita et al. 2007).

Applying Common Elements to Prevention Research

These efforts to extract and apply what we know works for children's mental health *treatment* offer promising avenues for disseminating and implementing evidence-based *prevention* in a similarly efficient and widespread manner. Applying DMM to the prevention literature offers an important first step to identifying a subset of skills most likely to initiate a healthy trajectory for youth, in particular for youth living in communities of poverty where there is heightened risk for exposure to risky behaviors. Although DMM provides valuable information regarding time spent on various skill components, it cannot speak to the relative potency of those components or the extent to which they are associated directly with outcomes of interest, which represents a subsequent step for this program of research. Nevertheless, we believe DMM represents an important first step toward closing the science to service gap for prevention.

Current Study

There is theoretical convergence in the literature around a core set of skills considered important for healthy development including assertiveness, problem solving and decision-making (Dryfoos 1996; Eisen et al. 2000), cognitive coping and social support (Peters 1988). The goal of the present study was to identify empirically the practice and instructional elements most common across evidence-based prevention programs. We applied codes from the DMM (Chorpita and Daleiden 2009) to five categories of prevention programs: substance use, life skills, sexual health, depression and anxiety, and violence prevention. While this was an exploratory process, we predicted that a subset of practice elements would emerge as common across programs that may help to inform a more efficient and effective modular approach to prevention.

Method

Literature Search

We began with a systematic search to identify universal and indicated prevention programs for adolescents aged 12–18 years and targeting health-related outcomes (e.g. violence, drug use). We restricted our study to prevention programs in middle school and high school for two reasons. First, risk behaviors increase during adolescence (Eaton et al. 2008) and contribute to high school dropout (Lynskey and Hall 2000; Suh and Suh 2007). School health interventions (e.g., sexual health, violence prevention, substance use prevention) have been recommended previously for adolescents as part of a coordinated strategy to improve school completion rates and corresponding health outcomes (Freudenberg and Ruglis 2007). Second, most programs attend closely to developmental considerations by targeting select grade levels. We expect that while there may be overlap with programs designed for elementary schools, the volume of programs and studies for that age group coupled with important developmental differences in curriculum and risk behaviors warrant their own examination.

Three primary search strategies were used. First, we identified programs by searching the following online databases: National Registry of Evidence-based Programs and Practices (http://www.nrepp.samhsa.gov/) ($n = 30$), Office of Juvenile Justice and Delinquency Prevention Model Programs Guide (http://www.ojjdp.gov/mpg/) ($n = 6$), and Promising Practices Network ($n = 11$) (http://www.promisingpractices.net/). Second, we reviewed three meta-analyses (Durlak et al. 2010, 2011; Lauer et al. 2006) and identified relevant programs cited within them

($n = 38$). Further, we reviewed the reference sections from studies of these programs to identify additional programs ($n = 39$). Third, we searched ProQuest, PubMed, PsycInfo, and ERIC with a combination of key words including *prevention, mental health promotion, adolescent risk behavior, universal prevention, substance abuse prevention, violence prevention, STD prevention, pregnancy prevention, adolescents and school-based prevention,* which resulted in just two additional programs not previously identified by former efforts. These search strategies resulted in an initial list of 126 programs.

Inclusion and Exclusion Criteria

Studies of programs were eligible for coding if they met the following criteria for inclusion: (1) at least one published outcome study since December 31, 1987 ($n = 13$ programs excluded); (2) designed as a universal prevention program (i.e., classroom or school wide efforts, targeting all kids regardless of risk) ($n = 9$ excluded); (3) sample included youth ages 12–18 ($n = 15$ excluded); (4) included a control group ($n = 16$ excluded); (5) targeted youth outcomes ($n = 6$ excluded); and (6) reported a majority (more than half) of positive findings on targeted outcomes ($n = 9$ excluded). Our inclusion criteria are similar to those used in meta-analyses in the field (e.g.: Durlak et al. 2010, 2011), but less stringent than those recommended for standards of evidence such as Flay et al. 2005). For example, quasi-experimental studies were retained as long as they included a control group comparable to the treatment group, given the extensive challenges to randomization in school and community settings. In the case where the same program had multiple studies, we retained the program as long as all studies had a majority of positive outcomes and met the other inclusion criteria outlined previously. Hence, findings reveal practice and instructional elements common only to the most promising, evidence-based adolescent prevention programs. Of the original ($n = 126$) programs identified for possible inclusion, $n = 58$ (46 %) met inclusion criteria and were retained for coding.

Program Characteristics

The 58 prevention programs were categorized according to their primary outcome: substance use prevention ($n = 15$; 26 %); life skills ($n = 14$; 24 %), sexual and reproductive health ($n = 12$; 21 %), violence prevention ($n = 9$; 15 %), and anxiety and depression prevention ($n = 8$; 14 %). These categories were informed by initial coding procedures, and they map clonto health intervention categories recommended to improve school completion (Freudenberg and Ruglis 2007). Substance use programs focused on preventing tobacco, alcohol, and drug use. Life skills programs included social emotional learning curriculum that prioritized psychosocial development and academic achievement. Sexual and reproductive health programs examined outcomes related to pregnancy, STDs, and relationships. Depression and anxiety prevention programs targeted anxiety and stress management, depression and suicide prevention. Violence prevention programs examined bullying, exposure to community violence, and anger/aggression.

Programs were delivered primarily in schools ($n = 47$, 81 %), with the remainder offered in after-school or community settings ($n = 11$, 19 %). They have been examined in studies that included racially and ethnically diverse samples ($n = 23$, 38 %), minority-only (African American, Latino, Native American) youth ($n = 18$, 30 %), and white-only youth ($n = 8$, 13 %). Most studies included an equal number of males and females, except for a few gender-specific programs (e.g. sexual health programs $n = 4$, 7 %).

Coding Procedures

Coding System

Program content was synthesized from a combination of published outcome articles, related publications and freely available materials. The development of the coding system was based on the PracticeWise Clinical Coding System (PracticeWise 2009). Program content was categorized into "practice elements" or "instructional elements". Practice elements (e.g., problem solving) describe a specific skill or set of skills that youth learn as part of a program (Chorpita et al. 2005) whereas instructional elements (e.g., psychoeducation) are methods of information delivery used by the program facilitator. This distinction between practice and instructional elements has been made before, albeit with different labels (e.g., "treatment techniques" Accurso et al. (2011); "instructional strategies" Gottfredson and Gottfredson 2002). The PracticeWise codebook contains coding definitions for 72 practice and instructional elements. We excluded 15 parenting codes due to very low frequency of parent components in adolescent prevention programs (likely reflecting the fact that a majority of programs are delivered during school). In fact, only 15 programs that met criteria for inclusion had any parent component, most of which were limited to monthly newsletters, orientation night, pamphlets or homework assignments. Among the remaining 57 practice and instructional elements from PracticeWise, we excluded 31 that were completely absent from prevention programs (e.g., biofeedback, eye movement) and 13 more that were nearly absent (e.g., personal safety skills, present in 2 % of programs; behavioral

contracting, 2 %; motivational interviewing, 3 %; and peer pairing, 8 %). Following procedures set forth by Chorpita and Daleiden, we excluded these 13 codes given the sensitivity of the kappa statistic to base rate extremes. Therefore, 13 original codes from the PracticeWise codebook were applied to prevention programs in the present study.

In addition, four new codes were added reflecting content unique to prevention. Initially, these elements were coded as "other" but the frequency with which they emerged (three practice elements: self-efficacy, 25 %; civic responsibility, 11 %; and coping skills, 18 %; 1 instructional element: role play, 21 %) led the investigators to label and examine them. Table 1 provides a list of all practice and instructional elements and their definitions.

Coders, Procedures, and Training

Coders included four doctoral students and two post-doctoral fellows. Coders were provided with a database of articles (and other freely available materials (sample lessons, descriptions from developer or evidence-based database websites) describing the programs included for coding. An average of 2 scholarly journal articles were provided for each program (range of 1–6). Coders marked "present" or "absent" for practice and instructional elements, and they maintained careful notes accompanying each coding decision. Initially, the first author was trained in coding procedures by an expert rater (third author) who has significant experience using the PracticeWise coding materials. Then, the first author facilitated an initial 2-h training for coders that began with an introduction to the codebook and coding materials. Coders practiced coding two programs independently and reconvened with the first author to compare codes and identify discrepancies and ambiguities, which were resolved through discussion with the expert rater. Thereafter, coders met weekly for 1 h to control for coder drift and to discuss questions and problem-solve concerns. Doctoral students coded 13–14 programs each, while the post-doctoral fellows coded 4–5 programs each.

Reliability

Every program was coded independently by two raters. Low inter-rater agreements were addressed by meeting, clarifying, discussing, and re-establishing consensus on operational definitions followed by another round of independent coding. Final kappas for the original 13 PracticeWise codes averaged 0.86, with a range from 0.67 to 0.96. The expert rater resolved discrepancies by reviewing each coder's notes to determine whether the element was present or absent. We did not conduct a reliability analysis on the additional 4 codes because they emerged as a result of the coding process.

Table 1 Practice and instructional elements definitions abbreviated from PracticeWise (2009)

Practice elements (n = 14)	
Anger management	Exercises or techniques designed to promote the youth's ability to regulate or prevent anger or aggressive expression, and seek productive resolutions to conflict.
Assertiveness training	Exercises designed to promote the youth's ability to assert his or her needs appropriately with others
Civic responsibility*	Teaching youth civic engagement, respect for people and property, advocacy and volunteerism
Cognitive coping	Any techniques designed to alter interpretation of events through examination of the youth's reported thoughts
Communication skills	Training for youth in how to communicate more effectively with others
Coping skills*	Exercises or strategies designed to enhance ability to deal with stressful situations
Goal setting	The explicit selection of a therapeutic goal for the purpose of working toward achieving that goal.
Insight building	Activities specifically designed to help a youth achieve greater self-understanding.
Problem solving	Training in the use of techniques, discussions, or activities designed to bring about solutions to targeted problems
Relaxation	Techniques or exercises designed to induce physiological calming.
Self monitoring	The repeated measurement of a target index by the youth.
Self-efficacy*	Techniques and training to enhance self-confidence and improve self-efficacy
Social skills training	Providing constructive information, training, and feedback to improve interpersonal verbal or non-verbal functioning
Support networking	Strategies to explicitly identify, engage, develop, or otherwise increase the involvement or effectiveness of individuals in the client's social ecology.
Instructional elements (n = 3)	
Modeling	Demonstration to the youth of a desired behavior.
Psychoed child	The formal (usually didactic) review of information.
Role play[a]	Practicing of a desired behavior during session.

[a] Not found in practice wise codes, but identified while reviewing prevention literature

Data Analysis

Codes were summarized by frequency counts and presented in bar graphs to illustrate the most common

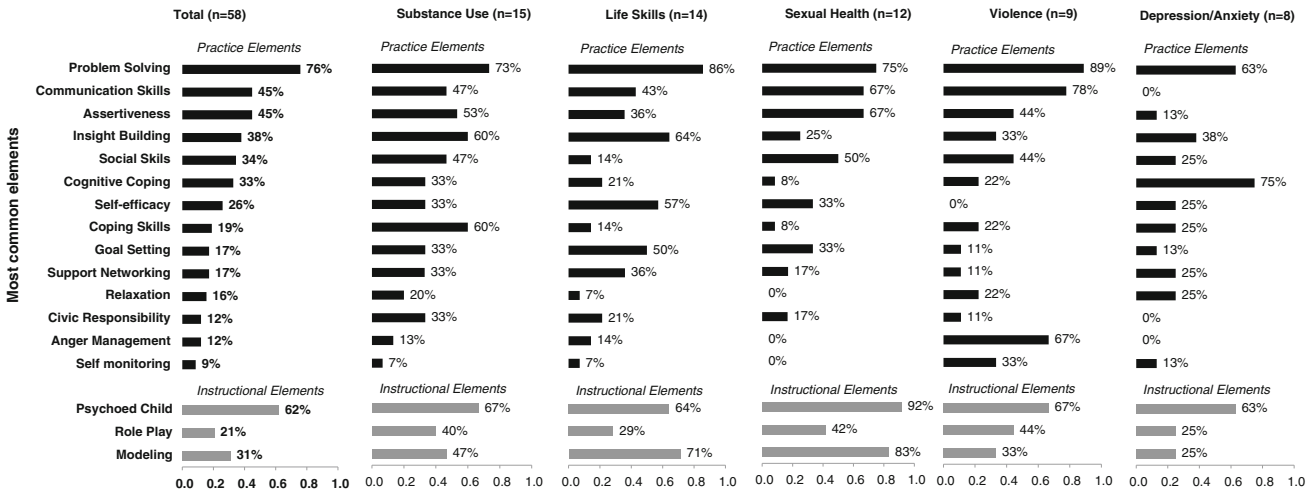

Fig. 1 Common elements by category

elements of evidence-based prevention programming for youth ages 12 through 18 according to their primary target outcome.

Results

Across all prevention programs in all program categories (life skills, substance abuse, violence prevention, sexual health, and mental health), *problem solving* (present in 76 % of all programs) emerged as the most common practice element, followed in order by *communication skills* (45 %) and *assertiveness training* (45 %) and *insight building* (38 %). In addition to these most common elements, the following practice elements were present in *all* program categories: *cognitive coping, social skills training, coping skills, goal setting, and support networking*. Among instructional elements, *psychoeducation* (62 %) emerged as most common, followed by *modeling* (31 %) and *role play* (21 %). Figure 1 illustrates the overlap in practice and instructional elements across program categories.

Practice Elements by Program Category

The frequencies of practice elements across program categories varied such that some were common to all programs and others were unique to certain categories. *Problem solving* was the most common practice element overall, emerging as most prevalent in all categories except for depression/anxiety programs where it came second after *cognitive coping*. *Insight building* (64 %) and *self-efficacy* (57 %) were common to life skills programs. *Cognitive coping* was present in 75 % of anxiety/depression programs. *Problem solving* (75 %), *communication skills* (67 %) and *assertiveness skills* (67 %) were common to sexual health programs. *Insight building* and *coping skills* (60 % each) were common to substance abuse programs. Finally, *communication skills* (78 %) and *anger management* (67 %) were common to violence prevention programs.

Certain elements were relatively unique to specific program categories. For example, *anger management* was frequent among violence prevention programs (67 %), but was absent in depression/anxiety prevention and sexual health programs and present in only a small number of life skills (14 %) and substance abuse (13 %) programs. *Cognitive coping*—though present in all of the program categories—was included in a majority of anxiety/depression programs (75 %) but was less common among other programs (range: 8–33 %). Relatedly, some practice elements were absent altogether from specific program categories. *Relaxation* was absent from sexual health programs, *self-efficacy* was absent from violence prevention programs, *civic responsibility* was absent from depression/anxiety prevention programs, *self-monitoring* was absent from sexual health programs, and *anger management* was absent from sexual health and depression/anxiety prevention programs. A detailed overview and breakdown by program category is provided in Fig. 1.

Discussion

Despite their distinct goals, prevention programs appear to emphasize overlapping practice elements. Frequency counts of practice elements across program categories revealed problem solving, communication skills, insight building, assertiveness training, and cognitive coping as the most common elements. This predicted overlap in program content likely reflects the corresponding overlap in

underlying skills deficits common to multiple risk trajectories among adolescents. The current findings lend initial support for this method of knowledge aggregation to identify a core set of skills designed to reduce common pathways to risk behaviors such as conduct problems and substance use—and to prepare youth for healthy trajectories characterized by successful relationships, prosocial behaviors, sexual health, and positive adjustment.

The common elements extracted from the prevention literature and presented here may enhance clinical decision-making and help to inform community providers, school principals, and after school program directors regarding prevention goals and priorities, and in turn their selection, integration, and implementation of specific content and curriculum. Toward this end, these data reveal a small subset of common skills that may offer community providers the *biggest bang for their buck* in prevention programming, beginning with problem solving. Although it was beyond the scope of the present study to examine directly the associations of specific common elements with positive youth outcomes, a rich and extensive literature provides support for problem solving as an effective tool for promoting healthy trajectories (Dubow and Tisak 1989; Dubow et al. 1991; D'Zurilla and Sheedy 1991; Goodman et al. 1995). Problem solving encompasses a sequential approach to solving social problems and resolving conflict that commonly includes some form of initial emotion regulation, problem identification and interpretation, solution generation, selection and evaluation. It is represented by a wide range of acronyms (e.g., SCIDDLE, Farrell et al. 2001; ADAPT, D'Zurilla and Nezu 2007; RIBEYE, Reinecke et al. 2006; FIG-TESPM, Elias and Tobias 1990), corresponding perhaps to the wide range of life problems for which it can be applied, including interpersonal conflict, sexual risk-taking, exposure to alcohol and drugs, and problems of daily life.

The comprehensive and inclusive nature of problem solving may designate it the skill with greatest potential for impact across prevention goals. A closer look at time spent on problem solving (31 programs provided session by session breakdown) revealed that programs in the present study dedicate an average of one-third of sessions ($M = 30$ %, range = 8–100 %) to problem solving materials, activities, and practice. Moreover, several more practice elements (e.g., cognitive coping, anger management, assertiveness training, goal setting) overlap with or reflect a specific application of problem-solving skills, lending further support to problem-solving as, perhaps, a "meta"-element that merits highest priority when time and resources are limited.

In addition to problem solving, insight building and communication skills also emerged as widespread across several categories. Insight building includes perspective taking, emotional exploration, and self-awareness. Communication skills involve negotiation, active listening, synthesizing and paraphrasing information, changing negative statements into positive ones, and using verbal and non-verbal cues. Problem solving, insight building and communication skills appear to have broad applicability and may together comprise a small subset of universal prevention elements appropriate for all youth.

In contrast, a few elements appeared relatively unique to certain prevention targets and might be introduced as indicated elements when certain risk factors are present. Anger management, for example, was unique to violence prevention. Perhaps this reflects empirical data that suggests intense anger and emotion dysregulation tend to precede violent behavior but tend not to accompany other poor outcomes such as sexual risk-taking, substance use, or depression and anxiety. When resources are limited, anger management might be reserved for settings where risk for violence is especially high, such as communities of concentrated urban poverty characterized by high rates of crime, domestic conflict, and neighborhood violence. Similarly, cognitive coping was prominent in depression/anxiety programs, and may be among the priorities for schools and settings where the perceived risks for internalizing problems are high, such as those attended by high numbers of immigrant, refugee, or military families facing frequent separations and reunifications. It is worth noting, however, the substantive overlap (Table 1) between anger management and problem solving (especially when problem solving includes conflict resolution), and between cognitive coping and problem solving—overlap that perhaps lends even further support for prioritizing problem solving when time and resources are scarce.

Regarding instructional elements, our data indicate that psychoeducation, role play, and modeling are most commonly used across all program categories. These data nicely mirror the most recent findings from the education literature that demonstrate students learn best via a combination of modeling, didactic instruction, and repeat opportunities for practice with performance feedback at their own instructional level (Rosenshine 2012). Taken together, then, our findings suggest that opportunities to model, discuss, and practice problem solving may maximize the reach and impact of prevention efforts for adolescents.

Weisz et al. (2005) recommend that we view prevention and treatment along a continuum. In fact, Chorpita and Daleiden (2009) reported similar findings in the youth psychosocial intervention literature, identifying 27 common elements for the treatment of anxiety, depression, trauma, and conduct disorders, among them the five elements reported here as most common to prevention programs. This overlap in common practice elements across

prevention and treatment literatures lends support to the vision for a continuum of care, reinforcing the notion that prevention can be a cost-effective and efficient way to reduce risk for problem behaviors, build resilience, and improve youth trajectories (Bringewatt and Gershoff 2010), and aligns with recent calls for a public health approach to mental health (Atkins and Frazier 2011; Kazdin and Blase 2011).

Limitations

Our analyses and findings are primarily descriptive thereby providing a platform for more substantive investigation. First and most notably, we cannot conclude that these particular practice elements that emerged as most common are necessarily the same ones responsible for positive outcomes. While we included only evidence-based programs in our review and systematically excluded programs that had negative or inconsistent findings, we do not have the dismantling data to examine associations between specific practice elements and outcomes, and indeed this represents an important next step for the work. A dismantling approach would involve rigorous and systematic examination, through a series of randomized controlled trials, of the unique and incremental contribution made by each individual practice element to children's healthy outcomes (Hamby and Grych 2013).

Second, although multiple articles and supporting materials were reviewed for each program and most included thorough descriptions of program content, lack of resources prevented us from reviewing full program manuals. Hence, it is possible that certain practice or instructional elements were overlooked. Nevertheless, one would expect that authors would include all essential elements in published descriptions of their programs.

Third, only programs designed for middle and high schools were included in the current sample, reflecting attention to risk behaviors that increase during this developmental period, contribute to school dropout, and predict poor health outcomes. Nevertheless, a companion study to code programs offered during elementary school is warranted to examine opportunities for continuity in skills training from childhood to adolescence.

Fourth, we excluded parenting elements due to their low frequency and limited scope (e.g., pamphlets and newsletters).

Future Directions and Conclusions

While it would be premature to conclude that a modular approach is a viable option for prevention, there does appear to be substantive overlap in program content corresponding to overlap in risk factors and skill deficits. Indeed, adolescents tend to engage in more than one risky behavior at a time. By identifying common elements across effective prevention programs, we can begin to identify theoretical and programmatic components that allow for greater synthesis of knowledge collected over decades of research (Rotheram-Borus et al. 2012). Although a set of common elements emerged, our data also revealed another set of practice elements that appear to be category-specific, perhaps reflecting a unique or targeted need. Nevertheless, the current data point to problem solving as the most common and comprehensive evidence-based practice element that may help to build resilience and protect youth from a broad range of negative outcomes. As a next step in our own research, we are examining the feasibility and impact of integrating problem solving into the recreational activities and natural routines of community-based after school programs. In turn, a modular approach to prevention may help to minimize burden on teachers and program providers and maximize reach to youth, while contributing to a public health effort to reduce the mental health burden facing our country (Atkins and Frazier 2011) with a simpler, more accessible and less expensive alternative that meets *most* needs (Rotheram-Borus et al. 2012).

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