



Common Elements of Childhood Universal Mental Health Programming

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Abstract

Despite the availability of multiple mental health prevention and promotion programs for children, challenges related to their dissemination limit their reach and impact. This review identifies the most common practice elements of effective childhood universal mental health programming for children ages 3–11, based on a structured interpretation and coding of program manuals and descriptions in peer-reviewed articles. Across a range of program goals and targeted outcomes, psychoeducation and problem solving emerged as the most common practice elements, followed by social skills training, insight building, and communication skills. These skills were largely taught via role-plays and modeling. Synthesizing what we know from the universal mental health programming literature has potential to facilitate dissemination of information to inform the development, adaptation or adoption of programs for children.

Keywords Prevention · Mental health promotion · Common elements · Practice elements · Behavioral health · School-based prevention · Social-emotional learning · Universal programming

By the time they reach high school, 30% of youth are involved in risky behaviors that could have a long-term negative impact on their lives (Dryfoos 1997; Eaton et al. 2008; Kann et al. 2014). Children who struggle with social and emotional difficulties are more vulnerable to academic failure and are at higher risk of developing mental health problems (Cole et al. 2005; Colman et al. 2009; Fergusson et al. 2005), including substance abuse, delinquency, and poor employment outcomes (Fergusson et al. 2005; Rudasill

et al. 2010). On the other hand, children with high social and emotional competency are more likely to succeed, both academically and interpersonally (Eisenberg 2006; Guerra and Bradshaw 2008; Masten and Coatsworth 1998; Weissberg and Greenberg 1998). Fortunately, the last three decades have witnessed significant investment in mental health universal program development and evaluation (Sklad et al. 2012), leading to the creation of hundreds of programs to improve children’s social and emotional competency. These programs, which we will refer to as “universal mental health programs”, are also referred to as social and emotional learning, mental health prevention, character education, life skills (Weare 2010), mental health promotion (Frazier et al. 2007), resilience interventions (Dray et al. 2017). They aim to reduce children’s risk-taking and increase their capacity for handling social and emotional difficulties, thereby reducing risk for clinically elevated symptoms and referrals to costly or intensive mental health care (Frazier et al. 2013; Hahn et al. 2007).

There are currently many prevention programs available, with varying degrees of evidence, diverse foci, and target age groups (Weare and Nind 2011). Most programs teach diverse skills to target specific outcomes, for specific age groups, with varying levels of intensity or involvement. For

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example, programs for elementary school-aged children tend to revolve around classroom behavior problems, violence prevention, and bullying prevention, while programs for middle and high school aged youth have a stronger focus on sexual health and substance use prevention (Inman et al. 2011).

As evidence continues to accumulate for effective programs, challenges to adoption and implementation remain (Atkins et al. 2016; Reinke et al. 2011). In schools, for example, a number of barriers may impact the implementation of universal mental health programming, including districts not being organized to provide mental health services (Forman et al. 2009); teachers not being trained to deliver such interventions (Kratowchwill and Shernoff 2003); and uncertainty about program availability, aims, content, training requirements, available support, etc. (Ringeisen et al. 2003). Ultimately, with so many programs to choose from and variables to consider, child development stakeholders such as school principals and after-school program leaders are left with the daunting task of evaluating the quality and relevance of competing programs, and prioritizing certain outcomes over others in the context of limited time and resources for training and program delivery. Stakeholders may not know how to identify or select the best program for their unique needs or how to prioritize criteria by which to evaluate them (e.g., cost of training; duration of program; complexity of implementation; availability of consultation; opportunity to evaluate outcomes; perceived enthusiasm among teachers, parents, and students; and compatibility within a specific setting). A potential solution is to synthesize the knowledge accumulated over decades of research, in a way that helps stakeholders understand program content in order to facilitate informed decision-making.

Synthesizing the Content of Universal Mental Health Programming

Given the large number of universal programs available, summaries or syntheses can help us better understand the available evidence and bridge the research to practice gap. Meta-analyses are helpful in understanding the overall impact of programs on mental health and youth trajectories (e.g., Durlak et al. 2010, 2011; Sklad et al. 2012). However, meta-analyses do not provide information about overlapping or distinct content of various programs, and thus may be more likely to inform subsequent research than they are to influence community practice. Databases of evidenced-based practices and programs such as Blueprints for healthy youth development, <https://www.blueprintsprograms.org/programs> provide summaries of program content and the associated research for each program, in user-friendly and publicly accessible formats. However, these databases

summarize the content of one program at a time, and thus does not afford an aggregation of program content, which is the strength of meta-analyses.

An alternative to synthesizing the literature by identifying effective programs is to synthesize the literature at the level of the clinical procedures included in effective programs. For example, the Distillation and Matching Model (DMM; Chorpita and Daleiden 2009; Chorpita et al. 2005) synthesizes existing evidence by extracting discrete skills (i.e., practice elements) that are common or overlapping across programs—taking the strength of both aggregation from meta-analysis and practice composition from registries. Through their distillation, Chorpita and Daleiden (2009) reviewed the descriptions of 615 treatment protocols described in 322 randomized clinical trials and boiled them down to a set of 41 practice elements. These elements vary in how common they are depending on the problem area. For instance, exposure is a common practice element present in several anxiety treatment protocols. Although it may be delivered in slightly different ways across protocols (e.g., using different worksheets or activities), exposure is essentially the same procedure. The distillation approach thus allows for aggregating features across programs, by minimizing their details and focusing on their coarse functional processes.

Since the introduction of this methodology to the youth mental health intervention literature (Chorpita et al. 2005), distillation and related procedures have been applied widely to other areas such as treatment engagement (Becker et al. 2015, 2018; Lindsey et al. 2014), parenting programs (Barth and Liggett-Creel 2014; Kaminski et al. 2008), home-based family therapies (Macchi and O'Connor 2010), online smoking cessation programs (Park and Drake 2015), home visitation programs for prevention of child maltreatment (Kaye et al. 2018), social-emotional learning programs (Lawson et al. 2019), and HIV prevention programs (Ingram et al. 2008; Rotheram-Borus et al. 2009). Our team has previously reviewed the universal prevention literature on adolescent mental health programming (Boustani et al. 2015), relying on procedures used by Chorpita and Daleiden (2009). Through that review, we found that problem-solving, communication skills, and insight building were the most common practice elements across different problem areas. Other teams have focused specifically on the Social-Emotional Learning (SEL) literature. For instance, McLeod et al. (2017) identified the most common practice elements used with young children who exhibit problem behaviors. Through an iterative process, they identified 24 practice elements that were common in existing interventions, and that were rated as “essential” (vs “useful” or “not necessary” by at least 75% of four expert raters). The most common practice elements they identified were praise, tangible reinforcement, rehearsal, emotion regulation, problem solving

and social skills. Similarly, Lawson et al. (2019) identified the core components of evidence-based SEL programs in elementary schools. The most common practice elements were social skills, identifying others' feelings, identifying one's own feelings, and behavioral coping skills/relaxation.

By revealing practice elements that are both common among effective programs in general, and common for particular populations or contexts (e.g., problem, age, setting), the DMM aggregates knowledge in a unique way that may enhance relevance for community practice. This approach allows stakeholders to incrementally build on existing platforms or approaches already in place. For example, rather than having multiple treatments for multiple age groups and multiple problem areas, stakeholders can instead identify their prevention needs and adapt existing programming in their setting, or create their own prevention programming relying on synthesized knowledge that illustrates candidate strategies used in scores of effective programs. Therefore, if an existing program includes many of the elements targeting specific relevant competencies, but is missing one identified by this type of analysis, a stakeholder could consider adding that focal piece to fill out their array of offerings rather than decommissioning a program with a potential gap and looking for a fully integrated replacement with all the desired elements.

It is important to note, however, the DMM does *not* provide information on the influence or potency of each practice element, only information about how *common* they are across interventions that have demonstrated effectiveness in clinical trials (Chorpita et al. 2007). Without studies to demonstrate their effectiveness as a stand-alone intervention we cannot claim that a practice element is necessary or sufficient to produce a positive outcome, even when it is present in almost all program (e.g., psychoeducation). Rather, the DMM approach is meant to encourage personalization of programming to meet local needs and to provide a starting point for program facilitators and stakeholders to think about what we know about the evidence-base, and how we can leverage it to enhance programming.

Unanswered Questions

We know that early and middle childhood are important times for laying the foundation of social-emotional skills (Schaps and Battistich 1991) and that social and emotional learning programs are effective in both school and after-school settings (Payton et al. 2008; Durlak and Wells 1997, 1998; Durlak et al. 2010, 2011). We also know that schools – where the majority of these programs are implemented—have less time and resources for social-emotional health programming, as academic outcomes are prioritized (Rotheram-Borus et al. 2012). Common elements

approaches to understanding and synthesizing the literature have gained traction in mental health treatment settings (e.g., Chorpita and Daleiden 2009); and have begun to gain traction in the prevention literature (e.g., Boustani et al. 2015; Kaye et al. 2018).

However, we still have much to learn about the most common practice elements in universal prevention programming. For instance, we do not know what the common elements of universal childhood prevention programming are, nor how these elements might be similar or different across development. It is also unclear whether the targeted outcomes of these programs are different across development (e.g., it is unlikely that sexual health programming is delivered in preschool settings); and how these elements vary based on their targeted outcome (e.g., substance abuse prevention vs social skills training). It is important to gain a more thorough understanding of the prevention programming literature for children, as this may inform the choices that stakeholders make regarding programming in their particular settings. Hence, the present study synthesizes the content of childhood universal programming to distill their most common practice elements to inform their adoption or adaptation in community settings.

Present Study

By synthesizing the content of universal mental health programming for children, we can begin to understand what elements overlap across programs and what elements are unique to programs that target specific outcomes or age groups. This information may be valuable to stakeholders interested in selecting, adapting, or developing universal mental health programs that will meet the unique needs of their setting and population. Thus, the current study used a distillation approach (Chorpita and Daleiden 2009; Chorpita et al. 2005) to synthesize knowledge of universal mental health programming for children ages 3–11, to capture continuity in programming from preschool to elementary school. Specifically, we sought to identify the practice elements common to universal mental health programming that outperform a comparison condition on a mental health outcome.

Method

We coded evidence-based universal mental health programs for preschool and elementary school-age children to distill their common practice elements, extending a prior review of universal programs for adolescents (see Boustani et al. 2015).

Literature Search

The first author conducted a systematic search to identify universal programs delivered in any setting, for children ages 3–11, targeting social outcomes (e.g., communication skills), emotional outcomes (e.g., emotion regulation), or behavioral/mental health outcomes (e.g., relaxation skills to prevent anxiety). To be included in the review, a program had to have at least one associated peer-reviewed article reporting at least one positive social, emotional, behavioral, or mental health outcome against an active comparison group. Inclusion criteria are similar to those used in meta-analyses in the field (i.e., Durlak et al. 2010, 2011), but less stringent than those recommended for standards of evidence (i.e., Flay et al. 2005). Due to the nature of universal programming in community settings, randomized assignment can be challenging. For this reason, we retained quasi-experimental studies.

We began our search on the NREPP (<https://www.nrepp.samhsa.gov/>) database (before it was discontinued in 2018; $n=27$ programs identified). Next, we reviewed all programs listed in the following additional online registries: the Promising Practices Network (<https://www.promisingpractices.net/>); Blueprints for Healthy Youth Development (<https://www.blueprintsprograms.com/>); and the 2013 CASEL review of effective preschool and elementary social and emotional learning programs (<https://casel.org/wp-content/uploads/2016/01/2013-casel-guide-1.pdf>) to identify additional programs not previously identified by NREPP searches ($n=8$ programs identified). Next, we checked for programs included in recently published meta-analyses and systematic reviews ($n=20$ programs identified) (e.g., Boustani et al. 2015; Durlak et al. 2011; McLeod et al. 2017; Sabey et al. 2017; Tofi and Farrington 2009, 2011). We also searched multiple databases (i.e., PsycInfo, PubMed, and ERIC) with the following search terms: [(prevention OR preventative) and (child OR children OR youth) and (RCT OR trial "between group" OR "within group" OR "pre-post")] AND [(prevention OR preventative)] to find any articles describing a program that had not yet been identified ($n=12$ programs identified). Finally, we reviewed the references of all manuscripts retained from the aforementioned search to search for any relevant articles describing or testing universal mental health programs ($n=11$ programs identified). In total, 78 programs, with at minimum one corresponding outcome article, were identified for inclusion in the review.

In order to conduct a thorough review and coding of program content, we requested written protocols or manuals from program developers and/or authors on corresponding publications. Twenty developers sent complete manuals via mail or electronically. Another 11 developers directed us to publicly available publications or supplementary materials (e.g., website, sample lessons, etc.).

Most developers ($n=47$; 60%) did not respond to requests for materials. In the absence of written manuals and protocols, we aggregated all data from available sources at the program level (i.e., by program brand name such as “Incredible Years”), including research articles, book chapters, websites, sample lessons, and other published articles.

Program Characteristics

We categorized the 78 programs according to their primary targeted outcome. Programs fell into one of five categories targeting social, emotional or behavioral/mental health outcomes of interest: (1) social and emotional competence ($n=34$; 44%); (2) externalizing problems ($n=20$; 26%); (3) bullying ($n=12$; 15%); (4) substance abuse ($n=6$; 8%); and (5) internalizing problems ($n=6$; 8%). Social and emotional competence programs focused broadly on promoting healthy trajectories, such as academic achievement, family relationships, and social functioning. Programs targeting externalizing problems aimed to mitigate risk for disruptive behaviors, including physical and relational aggression. Bullying prevention programs focused mostly on assertiveness training, how to be an active bystander, safety, and sometimes included an intervention for the perpetrator. Substance abuse prevention programs provided psychoeducation about drugs and alcohol and skills to assertively refuse them. Programs focused on internalizing problems aimed at preventing anxiety, depression, and increasing coping skills.

According to the most recent outcome articles describing these programs, they were primarily delivered in schools ($n=68$; 87%), community settings such as home-based, after-school or counseling centers ($n=5$; 6%), or a combination of the two settings ($n=5$; 6%). Seven programs (9%) targeted preschool-aged children only, 38 programs (49%) targeted elementary-aged children only, and 33 programs (42%) targeted both preschool and elementary-aged populations. Programs that targeted both age groups typically had overlapping but distinct versions for different age groups. Although we restricted our search to articles in English, 33.3% of the programs coded were developed and/or tested outside the United States. Children participating in studies of these 78 programs ranged in age from 3 to 14 ($M=7.87$), and were about half male (50.9%). Race and ethnicity were reported for participating children in 73.3% of articles; of these, 59.17% reported that samples included children of color ($M=60\%$; range 12.5–100%). Socio-economic status was reported for participating children in 53.3% of articles; of these, 55.6% reported that samples included children from low-income groups (i.e., children who received free or reduced school lunch; $M=56\%$; range 3.6–100%).

Program Content

Coding System

Program content was synthesized from a combination of available manuals ($n = 20$; 26% of programs); published outcome and related articles ($n = 314$ articles reviewed), and freely available supporting materials ($n = 35$ websites, sample lessons, table of contents). The coding system was based on the PracticeWise Clinical Coding System (PracticeWise 2017) under a research agreement, with adaptations made to best reflect the universal mental health programming literature (Boustani et al. 2015). The original PracticeWise codebook contains coding definitions for 73 practice elements. Coding in the present review revealed that 37 of these 73 practice elements were either absent (e.g., discrete trial training, eye movement tapping; $n = 25$) or present in fewer than 5% of universal mental health programs (e.g., time-out, family therapy; $n = 11$). Following procedures set forth by Chorpita and Daleiden (2009), we subsequently excluded these codes from results given the sensitivity of the kappa statistic to base rate extremes. Accessibility promotion (any strategy to make treatment more convenient) was also excluded, as this descriptor applies mostly to clinic-based treatment. All programs were delivered in the child's natural environment (mostly schools) and were therefore highly accessible. Role-playing and modeling were added as separate codes to describe methods used by program facilitators to deliver information or teach skills, rather than describe practice elements. This distinction helped organize content

and differentiate between what researchers have coined “treatment techniques” (Accurso et al. 2011) and “instructional strategies” (Gottfredson and Gottfredson 2002). Finally, we added two new codes (self-efficacy training and self-esteem training) that were present in the prevention literature reviewed, but absent from the original PracticeWise Clinical Coding System. Definitions of each code are available in Table 1.

Coding Procedures

Five students (two post-undergraduates, three graduates) were trained by the first-author to code content, based on the PracticeWise codebook (PracticeWise 2017). During training, codes for which inter-rater agreement was low were addressed by meeting, clarifying, discussing, and re-establishing consensus on operational definitions. Coders marked “present” or “absent” for practice elements and instructional strategies, and maintained careful notes accompanying each coding decision. Although some elements tended to overlap in their content (e.g., social skills and communication skills), we relied on the definitions from our codebook and the descriptions of the elements provided by the developers to identify the element that best captured what the program was delivering. All coders met weekly to review coding of one program per week to control for coder drift, clarify questions about coding procedures, and achieve coding reliability. The first author double-coded all programs and another author (K.D.B.) with significant PracticeWise coding experience resolved discrepancies between the original coding and the

Table 1 Practice elements definitions abbreviated from PracticeWise (2017)

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 their needs appropriately with others
Cognitive coping	Any techniques designed to alter interpretations of events through examinations of the youth's reported thoughts
Communication skills	Training for youth in how to communicate more effectively with others
Family engagement	The use of skills and strategies to facilitate the family's positive interest and participation in programming
Insight building	Activities specifically designed to help a youth achieve greater self-understanding, including emotion regulation
Maintenance	Exercises and training designed to consolidate skills already developed to minimize the chance that gains will be lost in the future
Praise	Training of parents, teachers, or others involved in the social ecology of the youth in the administration of social rewards to promote desired behavior
Problem solving	Training in the use of techniques, discussions, or activities designed to bring about solutions to targeted problems
Psychoed child	The formal (usually didactic) review of information with youth
Psychoed parent	The formal review of information with youth's caretaker
Relaxation	Techniques or exercises designed to induce physiological calming
Social skills training	Providing constructive information, training, and feedback to improve interpersonal verbal or non-verbal functioning
Tangible rewards	Training of parents, teachers, or others involved in the social ecology of the youth in the contingent administration of tangible rewards to promote desired behaviors
Modeling	Demonstrations to the youth of a desired behavior
Role play	Practicing a desired behavior during session

double coding by reviewing each coder’s notes and referring to original content to determine whether each code was present or absent. Final kappas averaged 0.78 (SD=0.11) and ranged from 0.49 to .97, indicating good to excellent reliability (McHugh 2012). Only three kappas were below 0.60 (*Personal Safety Skills, Mentoring, and Civic Responsibility—all low frequency elements*). Still, all kappas were above published standards (Fleiss 1981) and comparable to kappas in other studies using DMM methodology (e.g., Becker et al. 2018; Rith-Najarian et al. 2019).

Data Analysis

Codes were summarized by frequency counts and presented in bar graphs (see Fig. 1) to illustrate the most common practice elements and instructional strategies of universal evidence-based mental health programming for children ages 3–11, according to their primary outcome.

Results

Across all 78 universal programs (social-emotional health, externalizing, bullying, substance use, and internalizing), *psychoeducation for children* emerged as the most common element, present in 77% of all programs. It was followed in order of prevalence by *problem solving* (67%), *social skills training* (65%), *insight building* (64%), and *communication skills* (60%). Figure 1 illustrates the overlap in elements across program categories. *Role-play* and *modeling* were frequently used to teach skills across programs.

The frequency of elements varied based on the primary focus of programs (i.e., bullying vs social-emotional learning). *Psychoeducation for children* (81%), *problem solving*

(69%), *social skills training* (69%) and *insight building* (69%) were the most commonly represented elements in social-emotional learning programs. *Psychoeducation for children* (79%), *self-efficacy* (74%) and *problem solving* (68%) were the top three most common elements in externalizing focused programs. Bullying prevention programs prioritized *psychoeducation for children* (83%), *insight building* (75%) and *social skills training* (67%). Substance use prevention programs more commonly included *communication skills* (86%) followed by *problem solving* (71%) and *family engagement* (71%). Finally, *cognitive coping* (80%) was the most common element for programs targeting internalizing problems, with *psychoeducation for children, problem solving, social skills, and maintenance* each present in 60% of programs.

Certain elements were relatively unique to their program target. For example, *cognitive coping* was a top practice element among programs targeting internalizing problems (80%), compared to externalizing (37%), bullying (33%), substance use (29%), and social-emotional learning (22%) focused programs. Although a relatively popular skill overall, *communication skills* was more prominent in substance use programs (86%), relative to social-emotional learning (63%), internalizing (60%), externalizing (53%), and bullying (50%) focused programs. A detailed overview and breakdown by program focus are provided in Fig. 1.

Despite taking place largely in school settings, a few more than half of programs included a parenting component such as *family engagement* (52%) which refers to any efforts to engage families in the program by inviting them to sessions, sending newsletters home, etc. *Psychoeducation with parents* (28%) was also present, reflecting the importance of teaching parents about the skills and content of the programs.

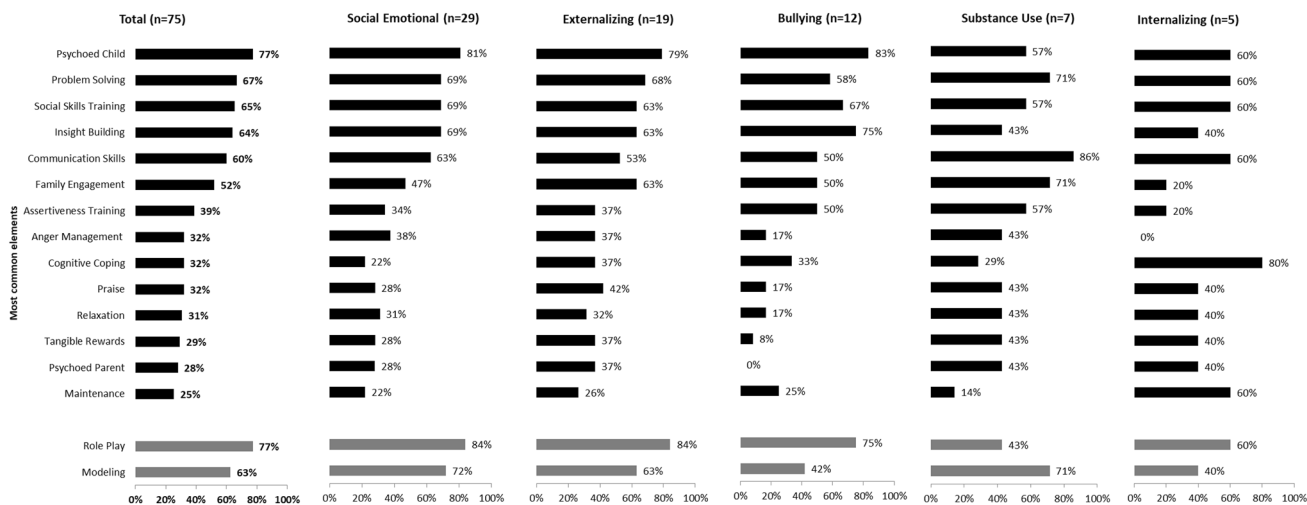


Fig. 1 Frequency of practice elements in children’s prevention programs, by category

Almost half of the programs (44%) included both preschool and elementary school versions. However, among programs that target preschoolers exclusively ($n=7$), 71% focused on social-emotional health outcomes and 29% focused on externalizing outcomes. In programs that target elementary school children exclusively ($n=35$), all five targeted outcome categories were represented (31% bullying, 23% social-emotional health, 23% externalizing, 17% substance use, 6% internalizing). The top five elements were the same in both preschool-only and elementary school-only programs: *psychoeducation with the child* (71% vs 77%), *problem solving* (57% vs 63%), *communication skills* (43% vs 51%), *insight building* (43% vs 54%), and *social skills training* (43% vs 60%). However, a few elements were not present at all in preschool-only programming. These elements were more cognitive in nature, rather than behavioral, such as *cognitive coping* (40%), *self-esteem building* (31%), and *self-monitoring* (23%), which necessitate more maturity.

Discussion

These findings highlight the elements most commonly represented in universal mental health programming for early and middle childhood. This method of knowledge aggregation (e.g., Boustani et al. 2015; Becker et al. 2018; Chorpita et al. 2011; McLeod et al. 2017) provides an efficient avenue to understanding the most commonly implemented skills across evidence-based universal mental health programming and may offer insight into how to maximize reach (i.e., mitigate risk for multiple problem areas) while minimizing burden (i.e., via a manageable subset of crucial skills).

Most Common Elements of Universal Mental Health Programming

Psychoeducation, problem solving, insight building, social skills training and *communication skills* appear to provide the broadest scope. These common practice elements have a strong presence in universal programming for children and may reflect the relevance of these skills for successful interpersonal and mental health development. Indeed, as children move from elementary to middle and high school, they are more likely to exhibit prosocial behaviors if they have good communication skills and good relationships with teachers and peers (Cefai and Camilleri 2015). In addition, insight building, problem solving, and social skills are among the most common elements of social-emotional and behavioral interventions for children with behavior problems and are considered essential to positive mental health outcomes (e.g., McLeod et al. 2017). Integrating early opportunities for learning these core skills into daily routines (home,

school, after school) may maximize the potential for learning, rehearsal, and reinforcement throughout development.

These five elements (*psychoeducation, problem solving, insight building, social skills training* and *communication skills*) are also most prominent in adolescent universal programming (Boustani et al. 2015). Although it is unclear how much time is allocated to each skill within programs and across age groups, there appears to be at least some continuity in programming across development. For instance, *problem-solving* is taught for preschool children in the context of interpersonal conflict, for older children in the context of substance use, and for adolescents in the context of sexual health.

Differences Between the Childhood and Adolescent Literatures

Despite this overlap in skills, adolescent and child universal programming differed in their targeted outcomes and the relative frequency of certain practice elements. For instance, adolescent universal programs focused more heavily on high-risk behaviors that emerge in adolescence, such as substance abuse, sexual risk-taking, and violence (Boustani et al. 2015). Although we identified seven child-focused programs that address substance abuse, we did not find any sexual health or violence prevention (other than bullying prevention) programs for children. Internalizing programs were available for both children and adolescents, although childhood programs were more likely to target anxiety whereas programs designed for adolescents targeted depression and suicide prevention, highlighting a typical trajectory in internalizing problems from early anxiety to later depression (Merikangas et al. 2003).

In terms of practice element differences, childhood programs were more likely to include skills related to regulating behavior such as *tangible rewards* and *praise*. By contrast, adolescent programs were more likely to include practices such as *goal setting*, that encourage self-determination, an important developmental consideration in middle childhood and adolescence (Grolnick et al. 2002). In addition, childhood universal programs were much more likely to incorporate *role-play* (77% vs 21%) and *modeling* (63% vs 31%) to teach skills compared to adolescent programming. This may be the result of efforts to make children's programming more engaging for younger children with a shorter attention span (Bellini and Akullian 2007; Spence 2003). However, we believe that adolescent programming may benefit from more experiential learning opportunities (e.g., Banister and Begoray 2004). Behavior rehearsal (use of role play in therapy) has been recommended for decades, with research to support that it improves knowledge retention in therapy (Lazarus 1966, McFall and Martson 1970; McFall and Lillesand 1971).

Family involvement is another key difference between adolescent and childhood prevention programming. Among universal adolescent programming, only 15 (26%) programs had a parenting component, though their involvement was typically limited to receiving a newsletter or pamphlet (Boustani et al. 2015). By contrast, an encouraging 52% of universal childhood programming included an active parenting component, defined as *family engagement* (52%) and *psychoeducation with parents* (28%) via workshops, sessions, and home activities, aligned with recommendations from the field. The content of these practices were largely focused on helping parents support and reinforce skills that their child was learning in school. This is different from what we see in the treatment literature – especially with interventions that target disruptive behavior disorders. Most of the parenting practice elements in those treatments (e.g., *praise, time out, monitoring, attending*) are meant to build parents' own skills to manage their child. Parental involvement can be key to ensuring behavioral change (e.g., Perry et al. 1988), and parental involvement in the school (e.g., attending parent-teacher conferences) is correlated with improved academic outcomes for youth, including ethnic minority youth (Abdul-Adil and Farmer 2006) as well as better outcomes and sustainable school-based services (Rones and Hoagwood 2000).

Finally, we noted some semantic differences in the childhood versus adolescent literatures. For instance, general mental health promotion skills conceptualized as “social and emotional skills” in the childhood programming are relabeled “life skills” in adolescent programs, although they comprise similar foci (e.g., social skills, communication skills). *Insight building* in the adolescent literature involved self-reflection, perspective taking, and understanding the impact of external pressures on the self. By contrast, in the childhood literature, *insight building* referred more often to emotion identification and regulation in the self and understanding emotions in others.

Limitations

There are several limitations to extracting data from publicly available materials. First, we were only able to obtain 27% of manuals; therefore, we cannot say with certainty that all elements present in a given program have been coded in these analyses. A recent review (Knudsen et al. 2018) comparing universal program elements coded in article- versus manual-sources indicated that 14 out of 33 elements were not reliably coded when comparing article versus manual coding. The authors suggested that this could be due to publication page limitations or an implicit understanding that certain elements are present (e.g., *psychoeducation*; Knudsen et al.

2018). Nevertheless, the majority of elements (19 out of 33) were reliably coded from articles alone.

Furthermore, analyses herein point only to the presence or absence of practice elements, but not to the amount of time allocated to each skill, their relative potency, nor the extent to which they are directly associated with outcomes of interest (e.g., is learning social skills directly associated with improved interpersonal relationships in the future). Although we only included programs for which there was evidence of at least one positive outcome relative to a comparison group, we do not have the dismantling data needed to make causal inferences related to the relative influence of each individual element (which would necessitate a lengthy and expensive series of randomized controlled trials).

Implications for Policy and Community Practice

Practice elements offer an innovative source of information for stakeholders to consider when making policy and programming decisions. This is especially relevant in low-resourced settings or contexts such as schools that have to address behavioral health concerns while prioritizing academics. Providing knowledge about which elements might be helpful could lead to additional means to use evidence in policy and programming, other than full-scale adoption of formal programs. Schools offer an ideal setting in which children can practice these skills (e.g., *problem solving, insight building, social skills, and communication skills*) in different contexts and circumstances so that they can generalize to and be applied in various situations across the lifespan. The substantial overlap in skills across universal mental health programming regardless of targeted outcome (i.e., substance abuse prevention, bullying prevention) offers an opportunity to consider how we can extend the generalizability and reach of content. For instance, if a setting has already implemented a depression prevention program with time spent on problem-solving, perhaps application of this skill can be explicitly extended to other situations (e.g., handling conflict, substance abuse prevention, etc.) to help youth learn how to generalize these skills. Although we are not suggesting using a depression prevention programming to address substance abuse concerns, we do think that program facilitators can make an explicit effort to link the skills learned to other outcomes or behaviors.

In addition, we recommend that stakeholders check the extent to which their current programming already offers opportunities to practice these skills. If a practice element is considered essential to a particular setting but is not available in a program that is already being implemented, a stakeholder may consider adding it to existing programming, rather than implementing a new program. Alternatively, stakeholders may consider adding practice elements in other areas such as sports, tutoring, in the classroom, or

any environment where children spend time. Hedemann and Frazier (2017) provide an excellent example of how a team of university researchers and community stakeholders leveraged a distillation study to identify three practice elements to infuse into an after-school music program for children living in urban poverty. The three practice elements that they identified (feelings identification, relaxation techniques, and problem-solving) were derived from the evidence-base on adolescent universal prevention programming (Boustani et al. 2015) and were deemed compatible with the music program's needs.

However, in order to accomplish any of the above, stakeholders need access to a database of these practice elements, searchable by age group, problem area, setting, and program. This manuscript provides a first step in this direction. A public database of prevention practice elements may assist stakeholders and researchers in their efforts to bridge the research-to-practice gap. This has been successfully accomplished in the context of mental health treatments in clinical settings by Chorpita et al., via the development of a modular approach to mental health treatment known as Managing and Adapting Practice (MAP; Chorpita and Daleiden 2014). MAP is a system of resources and tools that clinicians use to design, deliver, and evaluate treatments. Clinicians have access to a database (PracticeWise Evidence Based Services database; <https://www.practicewise.com>) of research on evidence-based treatments, from which they can identify treatments that have been proven effective in clinical trials for certain populations with specific problems. Using this database, they can identify the most common elements found in those treatments, select elements (organized into practice and process guides to facilitate implementation) and organize them to build an individualized treatment that flexibly fits their needs. MAP is well-liked by providers (e.g., Bruns et al. 2014), highly scalable (Southam-Gerow et al. 2014), and yields medium to large effect sizes (Southam-Gerow et al. 2014). As far as we know, such a system does not exist in the field of prevention.

Conclusion

Decades of research indicate that universal programming for children and adolescents can build resilience, reduce future risky behaviors, and improve long-term outcomes (Durlak et al. 2011; Domitrovich et al. 2007). Children across development and from various economic and cultural backgrounds benefit from participation in such programming (e.g., Greenberg 2010; Linares et al. 2005; McIntyre 2008; Rivers and Brackett 2011). By summarizing and synthesizing the content of these programs, we may begin to alleviate the burden stakeholders experience when deciding between competing priorities in their selection of universal

programming. The common elements extracted from universal programs may assist stakeholders such as community leaders, school principals and teachers, in making decisions about programming for their community and their setting. First, findings may assist stakeholders in *evaluating* their current curriculum by determining if these most common practice elements are included. Second, they may begin to strategically *select* programming that includes some or all of these elements, to maximize benefits by targeting multiple outcomes simultaneously. Third, they may *adapt* current programming, by infusing additional elements as needed. Finally, this knowledge may inform the *development* of future universal programming.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed Consent Informed consent was not obtained as this study does not involve any human participants.

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