



# Strengthening the Power of Evidence-Based Prevention in Cooperative Extension: A Capacity-Building Framework for Translation Science-Driven Behavioral Health

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## Abstract

**Background** Translation science entails application of information gained through scientific research to practices intended to improve prevention and public health. The outreach arm of Land-Grant Universities—the Cooperative Extension System—is uniquely poised to facilitate this translation process and contribute to resolution of current substance misuse and other behavioral health issues.

**Objective** This paper summarizes selected literatures that guided the conceptualization of a framework for building Extension’s capacity to enhance the translation process, in order to better address substance misuse and other behavioral health issues.

**Method** Peer-reviewed literature was obtained from journals representing varied disciplines including medicine, public health, education, and psychology. Journals for Extension professionals were a prominent source of relevant literature. The literature review informed the identification of relevant practice gaps, barriers in addressing those gaps, and the development of a capacity-building framework.

**Results** The framework described highlights opportunities for building Cooperative Extension’s capacity to address goals in four key domains. These goals include (1) catalyzing Extension’s organizational development to support science-driven practices, (2) bolstering prevention and behavioral health-oriented professional development for Extension faculty and staff, (3) creating a stronger culture of behavioral health in Extension, and (4) strengthening Extension’s financing of prevention-oriented behavioral health efforts.

**Conclusion** Addressing the capacity-related goals identified in this paper could be a major catalyst for enhancing the power of proven, prevention-oriented behavioral health and, thereby, the well-being of our families, communities and nation.

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## Introduction

The United States Department of Health and Human Services (USDHHS) 2016 Surgeon General's report on Facing Addiction in America states that it is "...critical to prevent substance misuse from starting and to identify those who already have begun to misuse substances and intervene early" (p. 3–1). Evidence-based prevention, guided by the intervention science reviewed in the report, "...can markedly reduce disease and related costs" (USDHHS 2016, p. 3–1). Addressing substance misuse and associated behavioral health problems is greatly bolstered by putting science into broader practice by disseminating evidence-based preventive interventions for general populations (USDHHS 2016). The Land-Grant University-based Cooperative Extension System (Extension) is well-poised to augment this approach.

In this paper, we summarize selected literatures that support a broader role for Extension in addressing growing behavioral health problems in this country. First, we cite literature on the rationale for increasing Extension's capacity for disseminating effective behavioral health practices. The rationale reveals Extension is well-positioned to build upon an enduring tradition of translating university-generated science into widespread community practices—in order to broadly disseminate evidence-based prevention, particularly that addressing substance misuse. Second, we identify translation practice gaps in infrastructure and capacity, along with barriers to surmount in filling these gaps. Finally, we summarize opportunities for capacity building to strengthen research- and evidence-based prevention through translation-science driven behavioral health. Relevant capacity-building literatures are organized around the following four domains: seizing opportunities for Extension organizational development, staff and faculty professional development, building a culture of behavioral health, and strengthening financial support.

## Rationale for Expanding Extension's Role in Disseminating Evidence-based Prevention for Improved Behavioral Health

### Magnitude of the Problem

Behavioral health refers to "the scientific study of the impact of emotions, behaviors, and biology on emotional, psychological and social well-being, and the application of this research to the improvement of well-being" (Spath 2019, np; also see the National Association of Addiction Treatment Providers, at [naatp.org](http://naatp.org)). Behavioral health problems have become the leading causes of death for 15–34 year olds in the United States (Centers for Disease Control and Prevention 2017). These problems affect millions of Americans each year, draining billions of dollars from our economy and causing immeasurable disruption and suffering for individuals, families, and entire communities. The health, social, and economic consequences of substance misuse, including the negative impact of substance misuse on mental health, are especially key in appreciating the magnitude of the problem (USDHHS 2016).

This paper focuses on substance misuse, one of the most salient behavioral health issues confronting this country, in part because of associated behavioral health problems such as depression, suicide, violence, and child abuse. Considering their salience and currency, the severe consequences of the current opioid epidemic are worth highlighting, as

an illustration of the individual and societal impacts of substance misuse and associated behavioral health problems. As widely reported, opioid-related overdose deaths are epidemic. More than 42,000 people died from an opioid overdose in 2016 (USDHHS 2018). Of those overdose deaths, over 17,000 were attributable to commonly prescribed opioids and over 15,000 were attributable to heroin use (USDHHS 2018). In the same year (2016), over 11 million people nationwide misused a prescription opioid, nearly one million people used heroin, and over two million people had an opioid use disorder (USDHHS 2018). Elevated rates of prescription opioid misuse, heroin use, and overdose deaths have prompted government responses at federal, state, and local levels.

The magnitude of opioid-related morbidity and mortality does not adequately represent the tremendous impacts of substance misuse and associated behavioral health problems on family functioning and intergenerational transmission of adversity. Adverse childhood experiences constitute a highly impactful set of social experiences with powerful public health implications (Chapman et al. 2004; Dube et al. 2003; Felitti et al. 1998). Having someone in the home with a substance-related problem is associated with adverse childhood experiences (Dube et al. 2001, 2003). Notably, substance misuse and dependence can create tension and strain in relationships, increasing the risk for parental separation or divorce—an adverse childhood experience (Felitti et al. 1998).

### **Extension's Potential for Major Contributions to Solutions**

Facilitating the application of science to broad community practice is central to Extension's mission. "The Extension system exists to disseminate the findings of research beyond the academic community to practitioners, policy makers, and the general public" (Hamilton et al. 2013, p. 1). Put another way, the function of Extension is to use scientific research to address the needs of individuals, families and groups in local communities (Hill and Parker 2005; Molgaard 1997). Extension exists as a result of a series of distinct federal acts spanning the late 1800s into the early 1900s (Franz and Townson 2008; Molgaard 1997). Early programming focused on the needs of rural populations and heavily centered around agriculture. Over time, program areas expanded to include youth development, parent education, nutrition education and more (Franz and Townson 2008; Molgaard 1997).

The rural/farm crisis of the late 1980s illustrates Extension's potential contribution to behavioral health. Extension was integral in working with distressed families during that period. County staff earned the reputation of being trusted and valued sources of information and support. As a result, citizens discussed difficult topics and disclosed personal struggles to county agents, despite being reluctant to do so with other public service entities that could be viewed as stigmatizing (Molgaard 1997). It became increasingly clear to county staff that understanding behavioral and mental health was essential to working effectively in their communities: "While some staff were concerned that Extension was trying to turn them into counselors, it soon became evident to most that a rudimentary level of counseling skills was essential in order to deal effectively with distressed clients" (Molgaard 1997, p. 523). In addition to one-on-one support, county agents assisted in creating grass-roots coalitions to address mental health needs. The root causes of distress (e.g., economic changes) were addressed through Extension's job skills training and referrals for financial assistance programs (Molgaard 1997).

A recent survey shows many Extension educators across the nation are already initiating responsive behavioral health programming within their communities (Extension Opioid Crisis Response Workgroup 2018). Substance misuse programs (prevention,

intervention, or recovery) are less common within Extension than general mental health programs and stress management programs, but at least one Land-Grant institution of each type/region (Northeast, North Central, Southern, Western, 1890, and 1994 Tribal) provides programming in each of these major behavioral health topic areas (Extension Opioid Crisis Response Workgroup 2018). At the national level, a Cooperative Extension National Framework for Health and Wellness was developed by the Extension Committee on Organization and Policy through the Association of Public Land-Grant Universities (Extension Committee on Policy Health Task Force 2014). Implementation of this framework has begun to guide Extension health programming across the country. Thus, the stage is set for an expanded role for Extension to enhance evidence-based behavioral health programming and program effectiveness evaluation that has evolved over the past three decades.

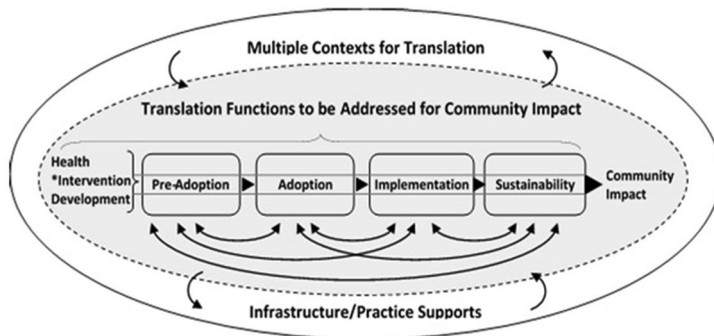
### **Gaps in Practice Supports for Translation of Science into Practice and Extension Barriers to Filling Gaps**

Extension could substantially contribute to the prevention of substance misuse and other behavioral health problems by providing critically—important supports for conducting further science with practice in this arena. By way of background, translation science often is classified as being one of two types (Type 1 and Type 2), the second being most relevant to Extension’s contributions. Type 2 translation science focuses on investigating ways scientifically-proven interventions are integrated into practice and policy on a larger scale. That is, Type 2 translational research “investigates the complex processes and mechanisms through which tested and proven interventions are integrated into practice and policy on a large scale and in a sustainable way, across targeted populations and settings” (Spoth et al. 2013a, b, p. 321). This type of science ensures that research knowledge actually reaches intended audiences, and that programs, services, or treatments are correctly implemented with those audiences (Woolf 2008). According to Rohrbach et al. (2006), “the primary goal of Type 2 translation is to institutionalize effective programs, products, and services” (p. 303). Type 2 translation draws on organizational change theories and diffusion of innovation theory (Rogers 1995), along with program implementation research.

A comprehensive Type 2 translation science literature review guided the conceptualization of a framework to guide advances in the field. It is called the “Translation Science to Population Impact Framework,” or TSci Impact Framework. As shown in Fig. 1, this framework depicts how the Type 2 translation process begins with existing intervention pilot work and outcome research as a basis for a sound prevention and behavioral health programming. However, subsequent ‘science with practice’ is needed to address other factors influencing translation to county or community settings, including consideration of contextual factors and infrastructural supports.

A key component of the TSci Impact Framework concerns multiple contexts of implementation, “ranging from local communities and organizations to national, state, and county governments that ultimately affect the population impact” (Spoth et al. 2013a, b, p. 325). A variety of factors within these multiple contexts impact T2 translation, and the complex relationships among them create a complicated set of interrelated contextual influences.

The literature review of Type 2 translation science (Spoth et al. 2013a, b) identifies two core challenges to address. The first of these is to strengthen infrastructures and build capacity for broad translation of evidence-based interventions (EBIs) into community



\*Intervention is broadly defined to include programs, environmental strategies, other practice and policies.

Source: Adapted from Spoth, R., Rohrbach, L. A., Greenberg, M., Leaf, P., Brown, C. H., Fagan, A., ... & Hawkins, J. D. (2013). Addressing core challenges for the next generation of Type 2 translation research and systems: The translation science to population impact (TSci Impact) framework. *Prevention Science*, 14(4), 319-351.

**Fig. 1** Translation science conceptual framework and four translation science functions to be addressed

practices through prevention delivery systems. The review highlighted how the development of practice infrastructures better able to support adoption, implementation and sustainability of EBIs are central to addressing the core challenge. Broadly defined, practice infrastructures consist of the basic supports and systems that serve to achieve sustained, high quality implementation of EBIs at scale.

The framework in Fig. 1 outlines four translation functions: pre-adoption, adoption, implementation, and sustainability. The *pre-adoption* function entails examination of factors that could influence the ultimate adoption of EBIs, such as consumer and provider attitudes or preferences, packaging of materials, and marketing. The *adoption* function focuses on the decision-making process and relevant factors, such as institutional readiness for change, intervention information dissemination, incentives for adoption, and potential economic benefits. The *implementation* function addresses factors such as training and technical assistance, program implementation quality, adaptation of curricula, and participation factors. The fourth function, *sustainability*, includes maintenance of evidence-based interventions as a function of funding strategies and structures, organizational capacity, policies, and other factors (Spoth et al. 2013a, b).

Table 1 applies the four translation functions as an organizational frame to summarize practice support gaps identified in the literature review on advances in Type 2 translation science. These four types of practice support gaps will be used to present literature-based barriers to surmount in efforts to bolster Extension's capacity for translating evidence-based prevention.

## Barriers to Pre-adoption Translation Efforts

There is some literature about pre-adoption barriers among Extension staff that concern unfavorable attitudes about evidence-based programming or prevention-oriented behavioral health, preferences for “in-house” programming, and views about how programs can be called “effective” without thorough evaluation of effectiveness. Unfavorable attitudes,

**Table 1** Overview of practice support gaps and associated barriers to accomplishing translation functions in cooperative extension

Type 2 Translation Science Functions	Key Practice Support Gaps for Translation <sup>a</sup>	Documented Extension Barriers to Filling Gaps
Pre-Adoption	Marketing proven prevention EBI awareness building	Unfavorable attitudes toward prevention/effectiveness standards Lack of common language
Adoption	Readiness enhancement EBI information dissemination systems	Variable levels of readiness Lower levels of readiness than public schools/public health partners
Implementation	EBI-related training, competency-building EBI-related technical assistance systems	Limited training and skills Limited professional development opportunities
Sustainability	Financing structures and strategies	Diminished public funding, in general Limited resources for EBIs, in particular

EBI = Evidence-Based Intervention

<sup>a</sup>Spoth, R., Rohrbach, L. A., Greenberg, M., Leaf, P., Brown, C. H., Fagan, A., ... & Hawkins, J. D. (2013). Addressing core challenges for the next generation of type 2 translation research and systems: The translation science to population impact (TSci Impact) framework. *Prevention Science, 14*(4), 319–351

preferences and views EBIs can be exacerbated by a lack of common language or standards about effectiveness of programming.

Extension staff attitudes regarding the value of evidence-based programming in their work is a key barrier. Many staff are trained in fields (e.g., agriculture, nutrition) that did not include education about substance misuse or behavioral health; they might view those substantive areas as not being part of their job, or they might not be comfortable engaging in activities that address related issues. In many other cases, field staff prefer to address emerging issues through responsive programs already developed in-house but not rigorously evaluated for effectiveness (Fetsch et al. 2012). In yet other cases, staff change rigorously evaluated programs to better fit their own or their learners' needs and interests, negating the ability to achieve or claim proven outcomes.

Related to the above points, staff can view EBIs as lacking consideration of the specific context or community setting requirements for adaptation, and might be unaware of the literature that addresses sound adaptations of EBIs (e.g., Castro Barrera and Martinez 2004; O'Brien et al. 2012; Spoth et al. 2013a, b). These perspectives are consistent with findings from several studies showing that programs developed within Extension are perceived to be equally as effective in preventing problem behaviors as externally-developed programs that have a stronger evidence base (Hamilton et al. 2013; Hill and Parker 2005; Perkins et al. 2014). Among 4-H educators, these patterns of Extension practice sometimes are viewed as being reflective of the historical tension between prevention and positive youth development approaches (Perkins et al. 2014).

“Prevention” approaches often are viewed as focusing on deficits and avoiding negative outcomes, whereas positive youth development approaches are viewed as focusing on promoting positive outcomes through building competencies and strengths (Perkins et al. 2014). Catalano et al. (2004), however, emphasize that prevention encompasses positive youth development. Importantly, other authoritative sources highlight how these two approaches are not incompatible or mutually exclusive (NRC-IOM 2009). Perkins and colleagues (2014) have recommended finding a way to combine the “best practices of existing 4-H culture” with evidence-based programming, and utilizing strengths-based programming with general audiences. These perspectives provide an opportunity to educate Extension professionals about how evidence-based “prevention” programs are not separate from positive youth development.

Attitudes toward evidence-based programming are affected by a lack of common language. For example, Sellers et al. (2017) document a lack of consistent use of the terms “research-based” and “evidence-based” among educators in Human Sciences Extension. Participants in their study completed a baseline survey. At baseline, about two-thirds of the participants correctly identified the standard for “research-based,” but only about one in five correctly identified accepted standards for “evidence-based.” Several other Extension-based researchers have noted this issue (Fetsch et al. 2012). A survey of Extension systems on the status of behavioral health programming (Extension Opioid Crisis Response Workgroup 2018) also showed very limited reference to evidence-based programming in behavioral health. In addition, a recent literature review suggested a lack of familiarity with literature on evidence-based behavioral health frameworks (Brennan et al. 2018).

There is a clear need for common language and understanding about the process of translating science into practice, including that highlighted in the literature on adopting evidence-based programming and conducting program effectiveness evaluation. Although enhanced Extension educator and practitioner partnerships with social scientists have been recommended to address this issue, there are important scientist-practitioner tensions in the implementation and evaluation of behavioral health programming (Spoth and Greenberg

2005). These tensions in partnerships between scientists and practitioners often are due to differences in goals and priorities. This is especially true concerning advantages and disadvantages of implementing evidence-based behavioral health programs, as directed by written manuals or protocols (i.e., with fidelity, or implementing in a way that is consistent with the original evaluation research), vs. following community-driven adaptations of a program (Spoth and Greenberg 2005).

### **Barriers to Adoption-related Translation Efforts**

Examining Extension's capacity for adopting Evidence-based prevention was among the reasons for a national survey of Extension readiness for implementing prevention-oriented behavioral health programming. Spoth et al. (2015) assessed a broad set of readiness factors in a sample of Extension representatives from all but one state. More specifically, they conducted a survey of Extension professionals concerning readiness for implementation of evidence-based prevention programming, comparing results with parallel surveys of Departments of Education (DOE) and Departments of Public Health (DPH) employees in all 50 states. Drawing on published measures of readiness-related constructs, key readiness factors assessed included: state engagement in prevention programming, support for prevention, knowledge of EBIs, commitment to program effectiveness evaluation, perceived need for EBI collaborations, organizational capacity, perceived resources, collaboration experience, system openness to change, as well as staff training and development.

The findings indicated there was a mixed picture of Extension readiness for implementation of evidence-based, prevention-oriented behavioral health programming. This included (a) only a moderate level of overall readiness nationally, (b) readiness-related variations in different regions of the country, and (c) indications of relatively higher levels of readiness among DOE and DPH employees. Relatively higher Extension readiness was reported in the Northeast and the South, with the North Central region showing more middling levels and the West with relatively lower readiness levels. Notably, the authors conclude that findings indicate all surveyed systems have some readiness-related strengths and that results indicate the potential of the surveyed systems for enhanced dissemination of EBIs, especially when the various readiness-related strengths are working in combination (Spoth et al., 2015).

### **Barriers to Implementation-related Translation Efforts**

There are a variety of barriers to implementing prevention-oriented behavioral health programming. This is especially true for implementation of evidence-based programs (Spoth et al. 2015). The 2018 survey of the status of behavioral health programming in Extension (Extension Opioid Crisis Response Workgroup 2018) revealed that very few respondents strongly agreed that their state Extension system currently had the capacity to implement such programming.

A study of Extension professionals in Washington state by Hill and Parker (2005) found that although two-thirds of staff reported a perceived need for prevention programming to address teen substance abuse, only about half believed they had skills to identify and implement EBIs. In a survey of Extension educators in New York state, Hamilton et al. (2013) found that 4-H educators felt less competent than agriculture or family development educators in self-rated knowledge of specific EBIs, their ability to determine whether a



program is an EBI, and awareness of resources for finding EBIs. Broader studies of Extension educators across numerous states (Perkins et al. 2014) suggest gaps in knowledge and proficiency regarding EBIs, particularly among 4-H/youth development staff, suggesting that these constraints are not isolated to a few Extension systems.

In many Extension systems, especially smaller systems, the depth and scope of implementation-related professional development is limited. Professional development offerings and systems for Extension professionals are also changing due to advances in educational delivery and increased complexity of addressing issues through education-focused approaches. Additional challenges in providing professional development about implementing EBIs include increasing programmatic and accountability expectations, competing priorities, and limited resources (Garst et al. 2014).

### **Barriers to Sustainability-Related Translation Efforts**

For several decades, Extension has been confronting diminishing public funding (Franz and Townson 2008; Spoth et al. 2015). The original Extension funding model of one third federal funding through USDA, one third state funding, and one third local/county funding has changed over time. Federal funding has remained flat since the 1980's; some Extension systems receive less than 10% of funding from their state, and in some states counties have greatly reduced or withdrawn funding for Extension. In response to these changes, Extension has supplemented public funds with grants, contracts, gifts, and fees (Franz and Townson 2008). The national Extension survey conducted by Spoth and colleagues concluded that, "The financial resource-related factor has become especially prominent in the last 4–5 years, as a result of shrinking federal and state budgets" (Spoth et al. 2015, p. 255). Importantly, limited financial resources constrain not only efforts to sustain EBIs, but also adversely affect adoption and implementation of EBIs. In short, limited financial resources is a barrier to all translation functions.

Enhanced capacity building for prevention-oriented behavioral health programming could result in attaining sustainable funding beyond what has been described as the "patchwork quilt of yard and bake sales, car washes, and temporary grants" often used to fund prevention programs (IOM & NRC, 2014, p. 54). At this point, there are limited data on the existing financial capacity for addressing substance misuse and associated behavioral health problems. For example, there is limited information on the amount of Extension budget/resource support directed towards behavioral health education.

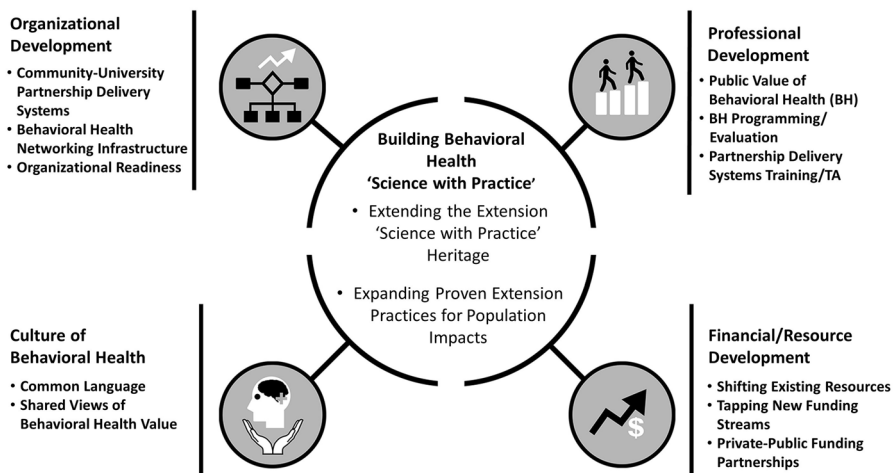
### **Building Extension's Capacity to Fill Practice Gaps for Effective Substance Misuse Prevention and Other Behavioral Health Practices**

To maximize Extension's contributions to filling the translation practice gaps and developing solutions for the pervasive and costly behavioral health problems in this country, capacity building will be required. The 2018 survey of state Extension systems on the status of substance misuse prevention and behavioral health programming underscores this point (Extension Opioid Crisis Response Workgroup 2018). Over two-thirds of survey respondents believed Extension should play a role in reducing opioid use; however, only 5% of these respondents "strongly agreed" their Extension system currently had the capacity to address this behavioral health issue (Extension Opioid Crisis Response Workgroup 2018). Despite perceptions of minimal existing capacity within their state

Extension systems, respondents were optimistic about potential of their systems to build capacity. More than half of respondents indicated agreement with the statement, “Your Extension system has potential to build capacity to respond to the opioid crisis in your state” (31.6% selected *Agree*, 26.3% selected *Strongly Agree*) (Extension Opioid Crisis Response Workgroup 2018). These positive perceptions of possibilities for system-level change could be construed as a readiness-related strength (Foster-Fishman et al. 2007).

Specific capacity-building goals associated with each of the four domains include the following.

1. *Catalyze Extension’s organizational development to support science-based behavioral health-focused efforts* This could include taking advantage of opportunities for expanding partnership-based delivery systems for behavioral health programs, strengthening behavioral health networking infrastructures, and enhancing readiness for implementing evidence-based behavioral health programming.
2. *Bolster behavioral health-oriented professional development for Extension faculty and staff* This could entail seizing opportunities for training in promoting the public value of behavioral health education, increasing competence in evidence-based behavioral health programming and program effectiveness evaluation, and training in developing and sustaining practitioner-scientist partnerships.
3. *Create a stronger culture of behavioral health in Extension* This could involve pursuing opportunities for understanding and application of language from prevention science literature (e.g., evidence-based programs, or EBPs), and increasing attention to Extension’s public value from behavioral health efforts.
4. *Strengthen Extension’s financing of behavioral health education* This could include seizing opportunities for shifting human resources toward behavioral health programming and education, tapping new federal funding streams, and organizing private-public funding partnerships for Extension and its partners.



Source: Adapted from the MacPhee Forum Lecture at Colorado State University, Harnessing the Translation Science Power of Extension: Fostering Development of 'Science with Practice' Frontiers in Behavioral Health, November 2019

Fig. 2 Capacity-building framework for behavioral health extension

The next section summarizes selected literatures regarding capacity-building goals and specific opportunities across the four domains, as represented in Fig. 2.

To show how pursuit of the goals for the four capacity-building domains could address a range of barriers, Table 2 maps the preceding overview of barriers related to each of the four basic translation functions onto capacity-building opportunities. In some cases, specific opportunities for capacity building would address multiple barriers, concerning practice gaps across the four translation functions, as represented in Table 2.

## Catalyze Extension's Organizational Development

To enhance Extension's capacity for addressing related issues, in 2018 the Association of Public Land-Grant University's Extension Committee on Organization and Policy (ECOP) developed a work group that included behavioral health partners. This group, known as the Extension Opioid Crisis Response Work Group (EOCRW) examined Extension's potential roles in addressing the crisis. Early on, the Work Group expanded its efforts to cover substance misuse and behavioral health issues more broadly. The EOCRW recommendations for Extension systems included building organizational capacity to address behavioral health issues.

Opportunities to address the organizational development domain include the following.

*Increasing the number of effective, partnership-based delivery systems* One successful program delivery example for Extension is found in a long-standing research and education program funded primarily by the National Institutes of Health. Initiated in response to needs articulated by the National Institutes of Health (NIDA) in the mid-1990 s, this program of research sought to address unique challenges in implementation of evidence-based interventions in rural areas by cultivating partnerships among rural practitioners and

**Table 2** Seizing capacity building opportunities and translation function barriers primarily addressed

Capacity building goals and specific opportunities	Translation function barriers primarily addressed by each opportunity			
	Pre-adoption	Adoption	Implementation	Sustainability
<b>Catalyze organizational development</b>				
Partnership-based delivery systems	X	X	X	X
Networking infrastructure	X	X	X	X
Organizational readiness orientation	X	X		
<b>Bolster professional development</b>				
Promoting public value	X	X		
Training in proven programming			X	X
Partnership delivery systems training		X	X	X
<b>Stronger culture of behavioral health</b>				
Common language	X	X		
Shared views	X	X		
<b>Stronger financing</b>				
Shifting resources		X	X	X
Tapping new federal funding		X	X	X
Private-public funding		X	X	X

university-based scientists (Spoth 2007). The ultimate result was the development of an evolving community-university partnership model, now referred to as PROSPER (Promoting School-university Partnerships to Enhance Resilience) (Spoth 2007; Spoth et al. 2017). The model is the only one designed specifically for Extension that has been tested through a randomized, controlled longitudinal study. In that vein, it recently has been cited as an “evidence-based strategy that works” in the 2020 Rural Community Action Guide (see United States Office of National Drug Control Policy 2020). In this model, Extension serves a vital facilitative and connecting role, providing leadership and support for community teams that deliver school-based and family-focused evidence-based interventions for youth. In the PROSPER model, school staff and community stakeholders are linked with scientists by Extension system staff.

A Surgeon General’s call to action to prevent prescription drug abuse among youth (USDHHS 2014) underscored the importance of developing community-wide strategies, noting that PROSPER serves to support long-term sustainability of efforts. The PROSPER delivery system uses a four-tiered partnership structure, consisting of community-based teams led by Extension staff, a state-site prevention coordinator team, a state-site management team, and a cross-state PROSPER Network Team (Spoth and Greenberg 2011). Before it was highlighted in the 2020 Rural Community Action Guide, the PROSPER delivery system was cited as an example of a highly effective, sustainable community-based approach for prevention of youth prescription drug misuse (USDHHS 2014). The program also was classified as Tier 1 in a recent Weiss Institute systematic review of the scientific literature (Flanagan et al. 2018). Moreover, PROSPER delivery of an evidence-based family program and a school-based program has been described as an “efficient allocation of societal money” for addressing prescription opioid misuse (Crowley et al. 2014, p. 75).

A more recent randomized controlled study currently underway examines the effectiveness of an extension of the PROSPER partnership-based delivery system that supports a continuum of interventions, ranging from universal preventive intervention to treatment. This extension of the model includes a treatment-related component by adding a “Screening, Brief Intervention, and Referral to Treatment” (SBIRT) approach (Tradeau et al. 2019). Basically, adding this component to PROSPER implementation involves screening all middle schoolers for risk for substance misuse and other problem behaviors and then training school-based “Care Facilitators” to provide tailored follow ups for students classified as being at risk, along with their parents.

The PROSPER staff have organized a network to support its broader dissemination in communities. In addition, dissemination studies are underway to examine strategies for building capacity for implementation of an updated version of PROSPER (see [helpingkidsprosper.org/](http://helpingkidsprosper.org/)). It is noteworthy in this context that efforts directed toward broader dissemination of PROSPER have been hampered by many of the barriers summarized above. In particular, unfavorable attitudes toward and a lack of common language about evidence-based prevention have been a challenge. For this reason, current PROSPER dissemination efforts have included an initial phase for enhanced readiness assessment to assure alignment of goals in prospective implementation sites, along with more time to review the details of long-term implementation plans. Another barrier concerns sustainability funding related to the costs of implementing a partnership-based delivery system. To address this issue, sustainability funding strategies and planning have been intensified, even in the very formative stages of the implementation process. In that connection, the last four states to adopt PROSPER wrote proposals for additional funding within the first year of implementation.

*Strengthening the behavioral health networking infrastructure* A critically important consideration for expanding Extension's role in addressing behavioral health is adopting a capacity-building network. This was emphasized in the recent EOCSRW report (see Skidmore 2018). Such a network would support the generation and sustainable provision of resources to address behavioral health issues, involving community-university or scientist-practitioner partnerships. It also would entail an Extension-based support system designed to be responsive to these issues, no matter what the state's initial level of readiness for this work. In cases where readiness is limited, there could be an effort to increase readiness.

Development of a National Behavioral Health Extension Network (NBH E-Net) has received endorsement from ECOP, and has been funded for formative stage development. The network's mission is to improve community prosperity and quality of life by increasing dissemination of proven programs and services designed to enhance youth and family behavioral health, and to prevent substance misuse, particularly in underserved rural communities.

The NBH E-Net is designed to build capacity across Extension and collaborator systems to support training, technical assistance, and workforce development for dissemination of science-based behavioral health resources. This effort will be coordinated by an NBH E-Net Hub at Iowa State University's Partnership in Prevention Science Institute. The institute is partnering on this work with the United States Department of Agriculture's Regional Centers for Rural Development. The North Central Regional Center for Rural Development (NCRCRD) is providing seed funding; staff at the NBH E-Net Hub have engaged the NCRCRD leadership in their provision of inputs on activities undertaken in its formative stage. Initial contacts also have been made with prospective partners at the Substance Abuse and Mental Health Services Administration's (SAMHSA) Technology Transfer Centers (<https://www.samhsa.gov/technology-transfer-centers-ttc-program>), the National Guard Counterdrug Centers (<https://ctrd.ng.mil/Pages/CDTrainingCenters.aspx>), and the National Prevention Network (<https://nasadad.org/npn-4/>).

Eventually, the Hub will organize a Learning Community for USDA and SAMHSA grantees conducting network-relevant projects. In addition, if future plans are funded, it will organize Extension-assisted state partnerships and Behavioral Health Resource Coordinating Units. Eventually, a consortium of public universities will be developed to support the network. The planned state-based Behavioral Health Resource Units will coordinate responses to population behavioral health needs assessments by working with Extension Behavioral Health Specialists at both the state and regional levels within each state. The county-based Extension staff will link priority populations with behavioral health needs to available resources, beginning with those vetted by the EOCSRW. The Behavioral Health Coordinating Units also will organize a state management team to support adaptation of the evidence-based PROSPER Partnership Model. Figure 3 illustrates the planned organization structure for NBH E-Net.

The rationale for the NBH E-Net essentially supports the points made earlier about organizational capacity-building for Extension. First, the NBH E-Net would build on the existing infrastructure in every state: Extension, Regional Rural Development Centers, public and behavioral health agencies, SAMHSA's Prevention and Treatment Technology Training Centers, and the National Guard prevention training support systems. It would respond to high-level calls for preventive action to address the opioid crisis and other major behavioral health problems, consistent with recent Surgeon General (USDHHS 2016) and Trust for America's Health reports that specifically highlight scientifically-proven approaches, including the Extension-based PROSPER Model.

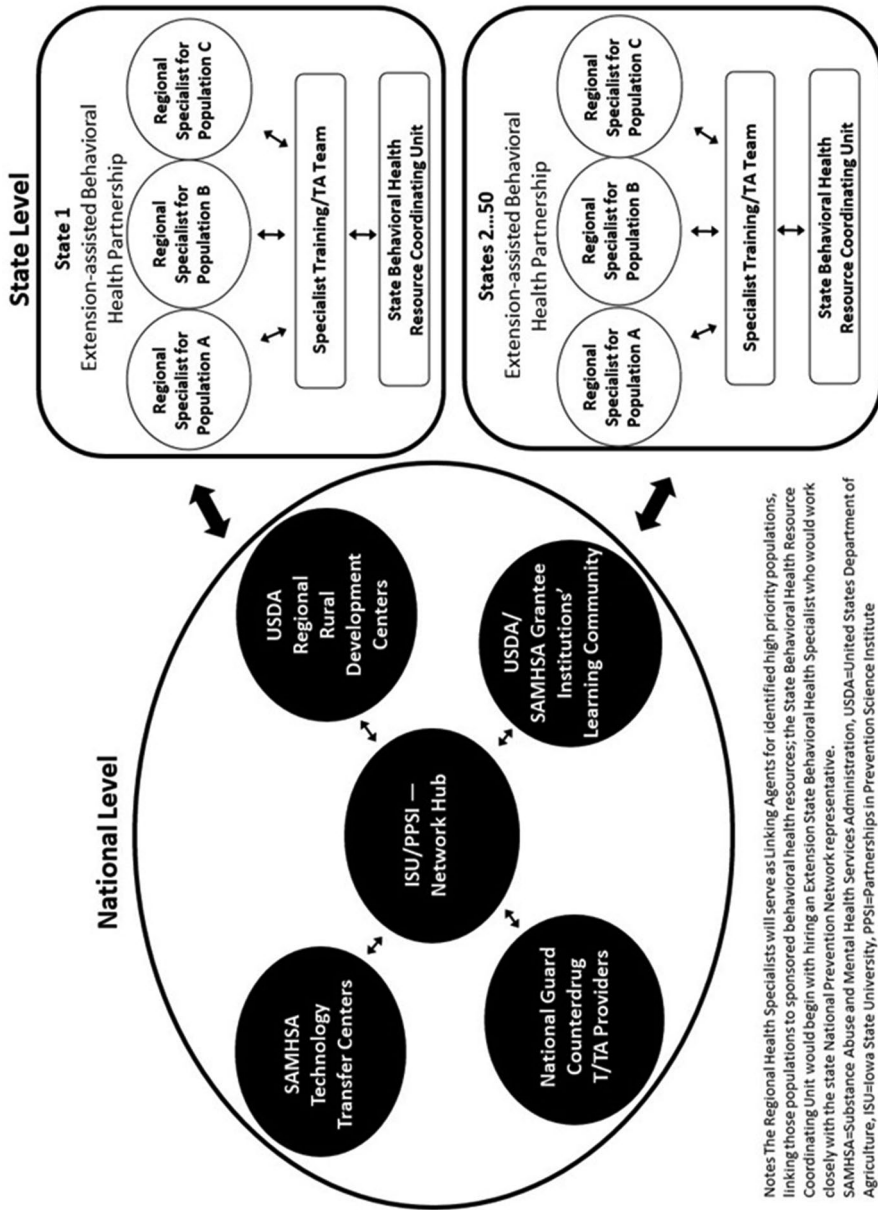


Fig. 3 National behavioral health extension network: formative stage design

Second, the NBH E-Net would apply existing capacity-relevant systems within Extension. This would entail building on delivery systems that combine a design for Extension education and conclusive demonstrations of reductions in opioid misuse (the PROSPER Partnership Model). Ideally, it also would include a “continuum of prevention approach” linking prevention and education activities with local behavioral health treatment/services.

Finally, the NBH E-Net will address dire rural community needs concerning substance misuse, as suggested by October 2017 statistics from the Centers for Disease Control and the American Farm Bureau Federation indicating that (a) the drug overdose death rates in rural areas were higher than in urban areas and (b) nearly half of all surveyed rural adults are, or had been, directly impacted by opioid misuse. About 75% of farmers and farm workers were directly impacted. At the same time, 85% of rural counties lack the behavioral health services they need (American Farm Bureau Federation 2017).

*Enhancing organizational readiness for behavioral health programming* As noted, the literature highlights varying levels of readiness and capacity among Extension systems to address behavioral health issues. Assessing system readiness and capacity to address residents’ behavioral health needs could be done in a coordinated, consistent way, with standardized assessments, to allow for comparison and common approaches across states and regions. Assessments could consider a range of capacity-related factors, such as those illustrated by Spoth et al. (2015). Such assessments could guide strategies to align with a state’s current level of capacity, clarifying how to build from there. The process would begin with needs and resource assessments that identify existing human, technical, and other resources, guiding how to build enhanced capacity. This would be consistent with the approach taken by those advocating for a readiness-building approach to evidence-based program implementation at the community level (Edwards et al. 2000; Flaspohler et al. 2012; Foster-Fishman et al. 2007). For example, Edwards et al. (2000) have developed a Community Readiness Model consisting of nine distinct stages based on six dimensions of readiness. They also have provided suggestions for assessing readiness, as well as stage-specific strategies for increasing readiness to support prevention efforts (Edwards et al. 2000).

The initial level of readiness development could include states that presently have limited capacity and interest to conduct behavioral health programming. This capacity development could entail preliminary capacity-building supports (e.g., awareness building about the problem and solutions and other foundational work). The next level of program readiness could include states with stronger intent to address behavioral health needs but also have somewhat limited capacity to do more. Supports could entail assistance with resource gap analysis and improved access to additional information/tools or other educational resources that do not require additional budgetary or other resources.

The highest level of program readiness would include states with strong intent and greater readiness/capacity to support adoption, implementation, and sustainability of research-based programs or EBIs integrated with program effectiveness evaluation. States at this capacity level could be trained in organizing and maintaining community-university partnerships like PROSPER. For states at any level, there could be technical assistance or other supports to help them assess need gaps and to strategically move through building capacity that expands behavioral health programming in their state or territory.

## Bolster Prevention-oriented Behavioral Health Professional Development

Opportunities to address several of the barriers summarized earlier would entail Extension staff professional development in the prevention-oriented behavioral health arena. These include: (a) increased understanding of how to measure and articulate the public value of behavioral health education, (b) increased competence in behavioral health programming and program effectiveness evaluation, along with (c) increased knowledge and use of best practices in developing and sustaining mutually beneficial community-university partnerships.

*Promoting the public value of behavioral health programming* Most Extension professionals collect and share substantive data on the private/personal value or benefits of their programming. However, increased accountability by funders and other stakeholders has required Extension to articulate the public value (e.g. social, economic, and environmental condition changes) of their educational efforts (Franz 2011, 2013; Franz and VanGinkel 2011).

Extension professionals often struggle to understand and measure how their educational efforts change high-level societal conditions (Franz 2014). Behavioral health, with a tradition of EBIs, provides an optimum opportunity to measure and articulate the public value of Extension education. In particular, professional development on evaluation and storytelling helps develop Extension public value stories and statements about educational program impact to share with stakeholders (Franz 2016; Franz et al. 2014; Peters and Franz 2012). More Extension professionals may become interested in implementing and evaluating behavioral health programs when they discover the deep need for, and the public value of, that programming for their clients and other stakeholders.

*Training in effective behavioral health programming* The aforementioned perception of Extension staff responding to the 2018 EOCSRW survey suggested a limited capacity for programming in the behavioral health arena, but favorable attitudes among Extension professionals to broaden offerings in this particular area of programming (EOCSRW 2018). These findings were a key reason the EOCSRW report recommended "...basic training on behavioral health topics for community based educators" across Extension (Skidmore 2018).

It is tempting to situate behavioral health solely in the Extension Family and Consumer Sciences, Community Development, or 4-H Youth Development program areas. A holistic approach to addressing broad behavioral health issues would require all Extension staff who interact with the general public, including those providing agriculture and natural resources education, to be competent in behavioral health programming knowledge and skills (e.g., Molgaard 1997). During the farm crisis of the 1980s, county agents in rural areas came to understand the importance of mental health literacy and de-escalation skills (Molgaard 1997). Similar issues emerged due to natural disasters and weather-related crises in the 1990s (Williams 1996) and are again surfacing due to stressful economic and social conditions. This includes the weakened farm economy, the high percentage of rural residents adversely affected by substance misuse (American Farm Federation Bureau 2017), and sparse behavioral health resources available, especially in rural areas (Manderscheid et al. 2018).

As trusted and well-connected members of their communities, Extension educators can identify individuals who need Extension behavioral health programs or refer them to partners with professional services or other supports (Williams 1996). This requires Extension professionals to competently recognize signs and symptoms of distress and use skills and



resources to respond appropriately (Molgaard 1997; Williams 1996). This competency also entails understanding and using a common behavioral health language and conceptualizations (Sellers et al. 2017).

The National Research Council and Institute of Medicine (2009) provides guidance on the range of recommended prevention-oriented programming to address substance misuse and associated behavioral or mental health problems. These include universal-oriented behavioral health programming for general populations well suited for Extension. The EOCSRW survey report showed that readily available training on the implementation of such programming is limited (EOCSRW 2018).

There is a clear opportunity to build on existing Extension education that supports behavioral health programming by expanded training for implementation of evidence-based programming and behavioral health subject matters. This could include training for staff whose educational background did not include instruction about substance misuse or behavioral health, such as that offered by public health departments in every state, or by social work-related professional organizations. It also could include training regarding scientifically-sound adaptations of EBIs (see, for example, Castro et al. 2004; O'Brien et al. 2012) so that they are responsive to the Extension contextual requirements. Examples of existing evidence-based universal prevention programs being utilized within Extension, albeit to a limited degree, include Life Skills Training, with distinct curricula for elementary, middle and high school students, and the Strengthening Families Program for Parents and Youth 10–14 (SFP 10–14), a family-based program designed to increase protective factors and reduce risk factors for adolescent substance use. The SFP 10–14 has been particularly effective when delivered in conjunction with Life Skills Training as part of the PROSPER delivery model (Crowley et al. 2014; Spoth et al. 2017).

Extension program leaders may need to make tough decisions about programming and related training, including prioritizing training for programs with greater evidence and relevance to behavioral health issues. This may require careful evaluation of programs with unknown impact, or the replacement of scientifically-weak programs (Sellers et al. 2017). Programs with limited outcome data on their efficacy may need to be further evaluated (Fetsch et al. 2012). Fetsch et al. (2012) provide specific guidelines for Extension professionals interested in conducting program effectiveness evaluations.

The specific approaches and programs reviewed above are focused on individuals and their micro-contexts, specifically schools and families. However, broader social systems significantly impact development of addiction and associated mental or behavioral health problems. From this systems perspective, Extension community development work including economic development and community capacity-building can be key for addressing behavioral health problems. According to Rigg et al. (2018), these community level strategies are among Extension's most important contributions to behavioral health improvements. That is, "...the most important upstream solution may well be a revitalized economy and social safety net. Therefore, existing interventions are unlikely to be effective without addressing the underlying social and economic determinants, including poverty, unemployment, and declining opportunities for upward mobility" (Dasgupta et al. 2018) (p. 126).

*Training in developing and sustaining community-university partnerships* Extensive training protocols and materials have been developed to expand Extension's community-university partnership success; they could be disseminated more broadly. For example, a PROSPER Network Organization has been organized to support each state implementing the PROSPER Partnership model. That is, each state receives ongoing support from the PROSPER Network Organization's team of trainers, technical assistance providers,

prevention scientists, and evaluation specialists. Coaches from the PROSPER Network Organization address topics including: all aspects of the PROSPER Delivery System; aligning with the work of schools and community and state agencies; use of data for Extension and funder reporting needs; and identifying potential funding opportunities to sustain the effort.

## Create a Stronger Culture of Behavioral Health

Opportunities for creating a stronger culture of behavioral health are suggested by prospects of (a) developing a common language from the relevant prevention science literature, and (b) facilitating shared views of behavioral health, along with the promotion of the public value of behavioral health work described immediately above.

*Common language about behavioral health programming from the literature* The literature provides appropriate language and definitions for use by Extension professionals (e.g., clear and consistent definitions for “research-based,” “evidence-based,” and “evidence-informed”), based on standards of evidence (Flay et al. 2005; Gottfredson et al. 2015). Clarifying definitions, especially if published in journals and reports for Extension audiences (Fetsch et al. 2012), creates a shared understanding of standards regarding the language of evidence-based programming. In addition, shared understanding can be bolstered through focused trainings that fill academic preparation and practice gaps for Extension professionals. For example, in the Sellers et al. (2017) study, an in-service series was developed to educate participants about the various literature-based terms and distinguishing between research- and evidence-based programs. In a follow-up assessment, there was a modest improvement in correct identification of research-based programs, compared with baseline responses (68% vs. 63%). There was a larger increase in the correct identification of EBIs, though it still was relatively low (35% vs. 21% at baseline).

There have been suggestions for dissemination of definitions to contribute to the development of a common language for behavioral health programming in Extension (see Fetsch et al. 2012). A suggested definition for “Evidence-Based Programs” is “...well-defined programs that have demonstrated their efficacy through rigorous, peer-reviewed evaluations and have been endorsed by government agencies and well-respected research organizations” (Fetsch et al. 2012, np). A similar term, with a similar definition, “Evidence-based Interventions” (EBIs), is frequently used in the prevention and behavioral health science literature, as illustrated earlier in this article. The label “efficacious” is applied to programs supported by at least two rigorous trials, usually involving random assignment of participants, with long-term positive outcomes (Fetsch et al. 2012). The label “effective” is reserved for efficacious programs also showing practical, statistically significant outcomes under “real-world conditions;” moreover, this designation is associated with having the manuals, training, and support needed for third-party adoption and implementation (Fetsch et al. 2012).

*Shared views of behavioral health* As noted above, emerging efforts in the behavioral health arena in Extension provide an opportunity to measure and articulate the public value of Extension education (see Franz 2016; Franz Arnold and Baughman 2014; Peters and Franz 2012). Articulating the public value of Extension education can be implemented in a way that encourages increasingly shared views of the value of behavioral health programming. For example, Extension professionals involved in implementation of the EBIs described in the section on behavioral health programming have opportunities to convey the public value of their community-level impacts by sharing demonstrated outcomes

from published research. The EOCRW strategic plan (Skidmore 2018) identifies rigorous program evaluation and use of standardized measures as key action steps—steps supporting the ability of Extension to communicate impacts of behavioral health programming. Additionally, the strategic plan noted the critical need for identifying advocates at local, state, and national levels (Skidmore 2018). This could include increasing the number of Extension Health Specialists since the largest concentration of these specialists is currently found only in Extension’s Southern Region. These “champions” would be able to articulate the importance of Extension involvement in the behavioral health arena, ideally leading to increased funding for evidence-based prevention within Extension (Skidmore 2018).

### **Strengthen Extension’s Financing of Behavioral Health-oriented Efforts**

Capacity building to strengthen a culture of behavioral health in Extension should result in motivating support for increasing resources for behavioral health education and programming. Additional opportunities for strengthening financing to address behavioral health problems include: (a) shifting more of Extension’s human resources toward evidence-based prevention and behavioral health efforts, (b) tapping new federal funding streams, and (c) organizing private-public funding partnerships to support prevention-oriented behavioral health efforts.

*Shifting more of Extension’s human resources toward evidence-based prevention and behavioral health* Several approaches have been used by Extension in the past to shift finances to address critical issues. Similar approaches should be explored to strengthen financing for prevention-oriented behavioral health education and programming. These include: (a) requiring current Extension professionals across Extension to integrate behavioral health education and/or programming into their work, (b) moving funds to new behavioral health programs/curricula delivered by current staff and partners, and (c) moving funds available from vacant positions to create new Behavioral Health Specialists in each Extension program area to become part of the NBH E-Net (see Fig. 3). Similar strategies were used successfully to address the farm crises of the 1980s and 1990s (Lines 1987; Williams 1996). The addition of Extension Behavioral Health Specialists is a natural evolution of the Southern Region Extension Health Specialists Network already initiated (Harden et al. 2020).

*Tapping new federal funding* The literature reveals that several leading professional organizations, including the American Psychological Association Science Directorate and the Trust for America’s Health, are advocating for federal-level action in addressing addiction and other behavioral health crises in the United States. Increasingly, this includes recommendations for collaborative work and coordinated funding among federal agencies to address large-scale behavioral health issues like the opioid crisis. In some cases, this advocacy work specifically references the potential role of Extension in addressing behavioral health problems.

Information about opportunities for advocating for federal-level action in addressing addiction and other behavioral health crises is provided on the American Psychological Association Science Directorate and the Trust for America’s Health web sites. Most importantly, the Association of Public & Land-Grant Universities (APLU) touts its purpose of drawing on the collective strength of member universities in advocacy for federal policies and funding that support the work of public universities. In particular, the aforementioned APLU Committee, Extension Committee on Organization and Policy (ECOP), provides guidance and support for issues impacting the future of Extension; as noted above, it has

special interest in supporting the advancement of capacity building in the behavioral health arena, including development of a Cooperative Extension National Framework for Health and Wellness (ECOP 2014).

The USDA (particularly the National Institute of Food and Agriculture [NIFA] Rural Cooperative Development Grants), as a funder of Extension, could lead coordinated funding among key stakeholder agencies. These funding efforts would help implement the strategic plan developed through the EOCRW. An illustration of a similar coordinated effort is provided by a 2018 announcement that HHS's SAMHSA is engaging with Extension to bring opioid prevention, treatment, and recovery activities to rural America more efficiently. Specifically, it is providing grants from the U.S. Department of HHS to build on successful 2017 and 2018 USDA-NIFA Rural Health and Safety Education projects focused on opioid abuse. This is an opportunity for Extension professionals to submit grant proposals or be partners/subcontractors with other agencies requesting funding.

There also is an opportunity for the USDA-NIFA to fund more grants for projects that optimally align with the above considerations. An illustration of such funding is another recent announcement by the Assistant to the Secretary for Rural Development in USDA. The announcement concerns how the agency is partnering with rural communities in 22 states to support opportunities for opioid prevention, treatment, and recovery. This is consistent with findings from and recommendations by the Interagency Task Force on Agriculture and Rural Prosperity intended to increase prosperity in rural communities, including increased investments in rural infrastructure.

*Organizing public-private funding partnerships* Several foundations are supporting initiatives involving public-private partnership funding approaches. To assist with these approaches, the Annie E. Casey Foundation (aecf.org) has developed a series of documents describing financing projects, strategies, and structures that could facilitate state-level efforts to increase investment in evidence-based behavioral health (also see Langford et al. 2012). SAMHSA describes funding opportunities on their website ([samhsa.gov/tloa/tap-development-resources/funding-opportunities](http://samhsa.gov/tloa/tap-development-resources/funding-opportunities)) to further support these approaches. In addition, a number of states have initiated illustrative public-private funding partnerships to support behavioral health capacity building. The Administration for Children & Families (ACF) has a summary of successful public-private partnerships ([childcareta.acf.hhs.gov/sites/default/files/public/overview\\_of\\_profiles](http://childcareta.acf.hhs.gov/sites/default/files/public/overview_of_profiles)) that support early childhood learning and development. They serve as models for using these types of partnerships for diverse activities that foster behavioral health. Finally, Spoth et al. (2013) describe state "Prevention Translation Financing Teams" that develop strategic plans for financing population impact-oriented delivery of evidence-based interventions. A key point of focus of these teams can be the organization of public-private partnerships like those illustrated in the ACF summary and those applying the guidelines provided in the Annie E. Casey financing documents.

## Conclusions

The opioid epidemic has drawn attention to complex addictions and behavioral health crises. Rapidly growing behavioral health problems have had devastating impacts on individuals, families, the workplace, and communities, contributing greatly to future intergenerational transmission of adversity. Further, these problems have resulted in billions of dollars

in healthcare costs, lost earnings, and diminished workplace productivity, plus law enforcement and incarceration costs.

The current behavioral health crises have emerged in the context of complex, interconnected historical, economic, and social factors. A complicated interplay of individual, social, and community factors suggests a need for a comprehensive capacity-building approach. Extension, as part of the Land-Grant University system, is well suited to engage in behavioral health crisis solutions through prevention-oriented behavioral health programming.

Extension has some existing infrastructure and capacity for behavioral health programming in all states. Extension personnel often serve as change agents, linking citizens with resources and relevant organizations. Moreover, Extension is well-suited to diffusion of innovative, ‘science-with-practice’ solutions to behavioral health issues. From this perspective, Extension has recently exhibited expansion and growing openness of programming to include behavioral health topics.

Harnessing the assets of the Land-Grant system to realize Extension’s potential in addressing behavioral health problems will require factoring current conditions of relevance to programming efforts and taking advantage of opportunities suggested by the literature reviewed. Key goals for realizing this potential are:

- Catalyze Extension’s organizational development to support science-driven behavior health-focused efforts.
- Bolster behavioral health-oriented professional development for Extension faculty and staff.
- Create a stronger culture of behavioral health in Extension.
- Strengthen Extension’s financing of behavioral health efforts.

In sum, the staggering statistics in the literature showing the health, social and economic consequences of current behavioral health crises require wide and deep action. Behind the statistics, there are countless stories of devastation wreaked among families and communities, bringing home the need to find viable and effective solutions to the crisis. Clearly, there are opportunities to seize by harnessing the transformative ‘science with practice’ power of Extension systems across the country to implement behavioral health programming solutions for the well-being of families, communities, and the nation.

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## Compliance with ethical standards

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

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