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ORIGINAL PAPER

A Critical Analysis of Approaches to the Development of Preventive Interventions for Subcultural Groups

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Abstract The ultimate success of preventive interventions relies on their ability to engage and influence the growing presence of subcultural groups. To encourage and guide the development of effective preventive intervention for subcultural groups, four approaches are described, illustrated, and critiqued with respect to their considerations of cultural fit, reach, efficacy and adoption. Those approaches are (a) the prevention research cycle, (b) cultural adaptations of evidence-based interventions, (c) investigator-initiated culturally-grounded approaches, and (d) community-initiated indigenous approaches. Special attention is given to recent advances in the specification of stages in the cultural adaptation of interventions. The paper closes with some conclusions and topics in need of greater attention.

Keywords Prevention · Subcultural · Interventions · Race · Ethnicity

There is an ambitious and idealistic agenda at the foundation of prevention science. Proponents of prevention science envision a society that broadly implements evidence-based practices to improve health and promote positive human development. Some prevention approaches such as selective and indicated interventions target specific groups of high-risk individuals while others are universal and aspire to engage every member of a defined population (Kellam and Langevin 2003). In general, prevention science's mission and promise convey the importance of inclusion and broad reach. Challenging questions emerge when the aspiration for inclusiveness meets the reality of our nation's growing heterogeneity. Can preventive interventions reach our nation's diverse subcultural groups, demonstrate effectiveness with those groups, and achieve adoption by community agents that serve culturally diverse communities? Those questions are among the most critical issues facing prevention science now and in the near future.

An article devoted to the past, present and future of prevention science chronicled truly impressive advancements over the past 30 years, most notably, the development of efficacious preventive interventions for a variety of conditions (Barrera and Sandler 2006). Three decades ago there were few examples of true preventive interventions and little evidence that they were effective. Now, sufficient depth of evidence has accumulated to support meta-analyses on prevention programs for many disorders (see O'Connell et al. 2009). Barrera and Sandler's (2006) analysis of future directions in prevention science noted that there is still work to be done on the creation of efficacious prevention programs for some disorders (e.g., anxiety disorders), but attention has now turned to the challenges of reaching a broad spectrum of people with the interventions, delivering the interventions in effective ways, and promoting the adoption of effective preventive interventions by systems of care. The terms *adoption*, *dissemination*, *type 2 translation*, *technology transfer*, and *"going to scale"* are often used to describe efforts to

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extend efficacious prevention programs to the public. Because of the rising diversity of our nation's population, the challenge of crafting programs that engage subcultural groups in effective practices is embedded in the broader challenge of spreading the impact of preventive interventions to the general public (Spoth and Redmond 2002).

The purpose of this paper is to conduct a comparative analysis of different approaches to the development of preventive interventions for subcultural groups. Four prominent approaches are discussed: the prevention research cycle, cultural adaptations of evidence-based interventions (EBIs), investigator-initiated culturally-grounded approaches, and community-initiated indigenous approaches. Each approach is described, illustrated, and critiqued relative to four considerations of special importance for the delivery of prevention services to subcultural groups. Those considerations are the intervention approach's emphasis on: (a) cultural fit with subcultural groups in the community, (b) ability to reach intended audiences, (c) empirical demonstrations of efficacy, and (d) adoption by systems of care (see Table 1). Those dimensions are adapted from the RE-AIM framework that has guided the evaluation of public health interventions and translational research (Glasgow et al. 1999). Other relevant strengths and weaknesses are also described. The hope is that the analysis will heighten awareness of choice points during the intervention development process that will facilitate the future development of even more effective and broad reaching interventions for subcultural groups.

Status of Preventive Interventions with Subcultural Groups

Although there have been numerous reviews including meta-analyses of preventive interventions (O'Connell et al. 2009), those reviews generally have not focused on intervention efficacy for subcultural groups (see Albarracın et al. 2005, 2008; Wilson and Miller 2003 for exceptions concerning HIV prevention). In contrast, reviews of psychotherapy research have been concerned specifically with the efficacy of culturally-adapted treatments (Griner and

Table 1 Four approaches to the development of preventive interventions for subcultural groups: a comparative summary of approach emphases

	Considerations of cultural fit	Considerations of reach	Considerations of empirical demonstration of efficacy	Considerations of adoption
Prevention research cycle interventions	Early stages emphasize establishing the theoretical and empirical foundation for intervention content and efficacy. Early stages might or might not consider cultural fit. Last stage on large-scale implementation confronts issues of cultural fit	Potential reach is not emphasized in the early stages. Last stage of cycle addresses concerns about reach	Establishing efficacy is a primary emphasis of this approach. External validity (generalizability to groups that differ from those used in the initial efficacy trials) is established in later stages	Feasibility of adoption is not emphasized in the early stages. Last stage of cycle addresses concerns about adoption
Cultural adaptation of evidence-based interventions	Primary emphasis is on intervention modifications to improve cultural fit while maintaining core intervention components	Stage models of cultural adaptation include steps for collaborating with community stakeholders, a method for improving reach	Establishing efficacy of the adaptation is a critical step in this approach	Stage models of cultural adaptation include steps for collaborating with community stakeholders, a method for improving adoption
Investigator initiated culturally-grounded interventions	Primary emphasis is on cultural fit by having subcultural group members create intervention materials	Culturally-grounded interventions reflect characteristics of the subculture, which should increase reach to the intended audiences	Establishing efficacy of the intervention is a primary role for the investigators who initiated the intervention development	Culturally-grounded interventions include the active participation of both consumers and community stakeholders, factors that increase the probability of adoption
Community initiated indigenous interventions	Indigenous interventions presumably reflect a community agent's values, priorities, and perceptions of needs in the community. Considerations of cultural fit might or might not be prominent	This is a potential strength of the approach when the intervention is created and implemented by a community agent that has credibility and capacity to reach intended audiences	These interventions are created and maintained because stakeholders perceive them to be effective. Empirical tests of efficacy are not initial priorities and might occur after widespread adoption	A strength of this approach is that it originates as a demonstration that the intervention is desired and can be implemented by a community agent

Smith 2006) and the efficacy of evidence-based interventions for ethnic minority adults and children (Huey and Polo 2008; Miranda et al. 2005). Those reviews demonstrated why there are controversies surrounding the strategies for developing interventions for subcultural groups. Some evidence supported the value of culturally adapting interventions for ethnic minority participants and some evidence suggested that EBIs are as effective with ethnic minority participants as they are with majority participants.

A review by Wilson and Miller (2003) on HIV prevention did, in fact, feature an analysis of culturally responsive interventions. They found 17 studies published between 1985 and 2001 that stated an explicit goal of addressing issues of culture. Seven of the 17 studies evaluated the hypothesis that culturally tailored interventions were more effective than those that were not tailored. They found little evidence that culturally tailored interventions were superior to untailored interventions on risk of exposure to HIV. However, Wilson and Miller (2003) were critical of several shortcomings of the tailored interventions that were evaluated. They noted "that there have been few efforts to articulate how these strategies relate to or evolve from the theoretical models guiding HIV prevention efforts and that relatively few authors have actually assessed whether culturally grounding programs enhances their effects" (p. 191). They urged HIV prevention scientists to (a) work from a definition of culture and to include it in research reports, (b) develop interventions from theoretical frameworks that include cultural concepts, and (c) design interventions that go beyond brief educational programs. The first two recommendations apply to research on virtually all prevention topics and not just those concerned with HIV prevention (Trickett in press). Although there was not much evidence that cultural tailoring enhanced the effectiveness of these prevention programs, it appears that cultural tailoring efforts could be improved substantially by moving beyond superficial efforts.

Comprehensive reviews of HIV preventive interventions illustrated how intervention methods based on theory and research can have very divergent effects when applied to different racial and ethnic groups (Albarracın et al. 2005, 2008). Albarracin et al. (2005) summarized a heavily nuanced set of findings as follows:

> Samples of predominantly European backgrounds were less negatively affected by normative and threat-inducing arguments than those with a predominantly African background…whereas condom provision benefited only samples with predominantly European backgrounds, behavioral skills arguments and HIV counseling and testing benefited only samples with predominantly African backgrounds. Finally, interpersonal skills training had stronger negative effects when the predominant background was European, and self-management skills training had stronger positive effects when the predominant background was African. (p. 873)

Even with broad racial group comparisons, there were differences in the efficacy and iatrogenic effects of otherwise well-regarded intervention methods. The results illustrated the importance of evaluating subcultural differences in intervention efficacy and of developing special intervention methods for achieving prevention effects for subcultural groups when such differences are observed.

Even though the scope of the present analysis does not include a comprehensive review of preventive interventions conducted with subcultural groups, prominent preventive interventions that have been conducted with subcultural groups are described in Table 2. Some projects and modalities could not be summarized succinctly in the table because their results have been published in scores of articles (e.g., Fast Track, Olds' Home Visitor interventions, Botvin's Life Skills Training). Nevertheless, we can make several observations about the studies that are summarized there. First, there have been extensive applications of preventive interventions to ethnic/racial groups. It is noteworthy that prevention scientists have designed multisite trials to include large numbers of ethnic and racial minorities (e.g., Diabetes Prevention Program, Fast Track) or made significant applications to specific subcultural groups after initial efficacy trials with predominantly European American samples (e.g., Penn Resilience Program, Olds' Home Visitor interventions). Also, a variety of content areas including aggression, child abuse, depression, diabetes, juvenile crime, and substance abuse have been the targets of these interventions. It is interesting that most studies were either efficacy studies confined to a particular ethnic/racial subgroup (e.g., Yu and Seligman 2002) or evaluations that tested for intervention-by-ethnicity interactions in intervention efficacy (e.g., Diabetes Prevention Program). It was extremely rare for studies to probe for possible intervention moderation effects of acculturation or for possible cultural mechanisms that could explain intervention effects. Overall, there are good examples of effective preventive interventions for ethnic/racial minority groups, particularly for African Americans and Latinos who have been studied the most.

Approaches to Preventive Intervention Development for Subcultural Groups

Approaches to developing preventive interventions can be sorted into four categories that have different implications for applications with subcultural groups: (a) evidence-based interventions (EBIs) that were developed through the

Table 2 Illustrative prevention studies that have included subcultural groups

Illustrative study Reference (intervention development method)	Sample	Results
Adolescent Diversion Project Smith et al. (2004) (prevention research cycle)	Four samples included White and African American youth who were referred for property-related offenses such as breaking and entering, larceny, and auto theft. In the 4 samples, 30, 26, 33, and 91% were African American	This paper summarized 25 years of research on William Davidson's Adolescent Diversion Project. It strengthened family and community support and diverted youth from further contact with the juvenile justice system. There were three phases of research that assessed overall intervention efficacy, intervention components, and staffing options. Staff used behavioral contracting and community advocacy to help families of delinquent youth. ADP reduced delinquency and negative labeling compared with "warn and release" or juvenile justice processing conditions
Diabetes Prevention Project Diabetes Prevention Program Research Group (2002) (prevention research cycle)	3,234 nondiabetic persons with elevated fasting and post-load plasma glucose concentrations: mean age of 51 years; 68% women, 19.9% African American, 15.7% Hispanic, 5.3 Native American, 4.4% Asian	Treatment effects did not differ significantly by race or ethnic group. The lifestyle intervention was highly effective for all subgroups. Compared to a placebo control, the DPP lifestyle intervention reduced the incidence of type 2 diabetes by 58%, significantly more than the 31% reduction achieved with a prominent diabetes medication (metformin)
Fast Track Conduct Problems Prevention Research Group (2007) (prevention research cycle)	Mean age of participants was 6.5 years at the time of identification. 51% African American, 47% European American, and 2% of other ethnicity [e.g., Pacific Islander, Hispanic]	In a report of findings from grades 3–9, intervention was effective in reducing conduct disorder, attention-deficit/hyperactivity disorder, and any externalizing disorder, and lowering antisocial behavior scores, but only for those at highest risk initially. Intervention effects did not vary by race
Home Visiting Programs (a) Olds (2002) (b) Olds et al. (2004) (prevention research cycle)	(a) Elmira, NY ($N = 400$), 85% were either low income, unmarried, or younger than 19 years of age; none had a previous live birth. 89% White; African Americans more likely to participate than Whites Memphis, TN ($N = 1{,}135$), 92% African American, at least two of the following: (a) unmarried, (b) less than 12 years of education, (c) unemployed; African Americans more likely to participate than Whites (b) Denver, CO ($N = 735$), low-income, pregnant women with no previous live births; 85% unmarried, 47% Mexican–American, 35% White, 15% African American, and 3% American Indian/Asian	(a) This program has been successful in improving a wide range of outcomes for both the parents and infants who participate. Positive outcomes include parental care of the child as reflected in fewer injuries and ingestions that may be associated with child abuse and neglect; fewer subsequent pregnancies, greater work force participation, reduced use of public assistance and food stamps Long-term effects (15-year follow-up) on the number of arrests, convictions, emergent substance use, and promiscuous sexual activity of adolescents who were infants in the initial Elmira trial (b) Denver: program effects were essentially equivalent for each ethnic group
Keepin' it REAL Kulis et al. (2005) (investigator-initiated culturally-grounded)	$N = 3{,}402$, 7th graders, 63% Mexican heritage, 37% also identified with other ethnic typically White or American Indian [note: students indicated their ethnic/racial background as follows: (a) Mexican–American, Mexican, Chicano/a; (b) Other Latino (Puerto Rican, Cuban, etc.); (c) White (Anglo); (d) African American (Black); (e) American Indian (Pima, Yaqui, Navajo, etc.); or (f) Asian or Pacific Islander (Chinese, Japanese, etc.)]. This scheme allowed students to report mixed ethnic backgrounds	Compared to those in the control schools, the students who participated in keepin' it REAL reported beneficial effects on recent alcohol and marijuana use, future intentions to accept substance offers, confidence to refuse substance offers, and more realistic perceptions of peer substance use. All significant program effects belonged to the Latino and Multicultural versions of the curriculum that specifically targeted Mexican–American cultures. However, no differences emerged in direct contrasts of the effectiveness of the Latino and Multicultural curricula compared to the non-Latino version

Table 2 continued

Illustrative studyReference (intervention development method)	Sample	Results
Life skills training		
(a) Botvin et al. (1989b)	(a) $N = 471$, 7th graders, 74% Hispanic, 11% African American, and 4% white.	Study (a) compared modified vs. non-modified version of the well-known Life Skills Training program using intervention materials designed to increase Latino/a relevance. Study (b) designed to test adaptations for African American youth. Study (c) for smoking prevention with predominantly Hispanic participants, suggested similar effects across different groups. Study (d) compared LST for the prevention of substance use with a "culturally-focused" approach. The conditions shared highly similar goals and curriculum content, but they differed in delivery format. Results of these studies reportedly showed no marked enhancement of outcomes for modified versions
(b) Botvin et al. (1989a)	(b) $N = 608$, 7th graders, 87% African American, 10% Hispanic, 1% white,	
(c) Botvin et al. (1992)	(c) $N = 3{,}153$, 7th graders, 56% Hispanic, 19% African American, 14% White	
(d) Botvin et al. (1994) (prevention research cycle & cultural adaptation of EBI)	(d) $N = 639$, 7th graders, 48% African-American, 37% Hispanic, 5% White	
Penn Resiliency Program		
(a) Cardemil et al. (2002)	(a) Cardemil et al. conducted two studies, the first with 49 Latino 5th and 6th graders and the second with 103 African American 5th and 6th graders	(a) For Latino children, intervention was responsible for less depression, hopelessness, and negative thinking at post-test and follow-up. For African American children, there were no significant intervention effects
(b) Yu and Seligman (2002) (cultural adaptation of EBI)	(b) Yu & Seligman's intervention study sample was 220 Chinese children living in Beijing	(b) For Chinese children, the intervention was effective in reducing depression at post-test, 3-month, and 6-month follow-up. Optimistic explanatory style appeared to mediate intervention effects
Resolving Conflict Creatively Program Aber et al. 2003 (community-initiated indigenous approach)	Over 11 thousand 1st–6th grade students in 15 New York City schools participated. The sample was comprised of 40% African American, 41% Latino, 14% White, and 5% other (including Native American and Asian American). All participants were exposed to the conflict resolution intervention; there was no control group	Students who had teachers who taught more conflict resolution lessons showed less growth in hostile attributions, aggressive negotiation strategies, conduct problems, and depression; as well as steeper growth in teacher-reported prosocial behavior. Interaction effects for race/ethnicity were described as "few and inconsistent"
San Francisco Depression Prevention Research Project Muñoz et al. (1995) (cultural adaptation of EBI)	$N = 150$ adult primary care patients, 10% Asian, 24% African American, 24% Latino, 35% White, 7% other	Relative to controls, intervention decreased depressive symptoms at post-test, 6-month and 1-year follow-up. Depression changes were mediated by decreases in negative thinking and increases in optimism
Strong African American Families Murry et al. (2007) (prevention research cycle)	Participants were 284 African American families with 11-year-old children who resided in 9 rural Georgian counties. They were assigned randomly to the Strong African American Families program or to a control condition	Data fit a structural model in which the intervention strengthened parenting practices that were related to increases in youth self-pride, which was associated with decreases in peer orientation, sexual risk intentions, and sexual risk behavior at the 29-month follow-up
Triple P Positive Parenting Program Prinz et al. 2009 (prevention research cycle)	This was a population-based study of 18 counties in a southeastern state that were randomized (with stratification) to Triple P or usual care. Evaluation focused on families with young children. African Americans comprised about 31% of the residents in participating counties	Relative to usual care control, the Triple P intervention showed significant intervention effects on all three primary outcome variables: substantiated child maltreatment, out-of-home placements, and hospital care due to child maltreatment. There were no race-by-intervention analyses because "county" was the unit of analysis

prevention research cycle (Mrazek and Haggerty 1994; Price 1983), (b) cultural adaptations of EBIs that modified original interventions to improve fit to one or more subcultural groups (e.g., Yu and Seligman 2002), (c) investigator-initiated culturally-grounded approaches (e.g., Hecht et al. 2003), and (d) community-initiated indigenous programs (Miller and Shinn 2005). Each approach is described, illustrated with examples, and critiqued with an analysis of its emphasis on considerations of cultural fit, reach, efficacy, and adoption.

Prevention Research Cycle

The prevention research cycle (Mrazek and Haggerty 1994; Price 1983) has been the most influential prevention science paradigm over the past 30 years and is responsible for guiding the creation of many evidence-based preventive interventions. As summarized by Wandersman (2003), the paradigm:

> (1) begins with basic research (e.g., epidemiology, neuroscience, genetics) and identifies the problem or disorder and its causes; (2) reviews research to develop an intervention, with an emphasis on risk and protective factors: (3) designs and conducts pilot and confirmatory intervention trials (efficacy trials); (4) extends the interventions developed in efficacy trials to large-scale trials in multiple sites with multiple investigators to assess generalizability (effectiveness trials); and finally (5) promotes large scale implementation of the preventive intervention program into the community. (p. 228).

Examples from the Prevention Research Cycle

There have been prime examples of several stages of the prevention research cycle approach that began with field-based generative research guided by theoretical models, intervention development informed by the field research, efficacy trials, and long-term outcome evaluations (Sandler et al. 1991; Tein et al. 2006; Wolchik et al. 1993, 2002). When at its best, intervention development with the prevention research cycle approach is not only grounded in theory; efficacy trials become opportunities to test theory (Howe et al. 2002). The work of David Olds on variations of home visitor interventions illustrated the latter stages of the prevention research cycle. The initial outcome study was conducted with a predominantly (89%) White sample of mothers residing near Elmira, New York, a location that was feasible because of its proximity to the investigators (Olds 2002). Subsequent studies were directed at questions concerning intervention effectiveness with African American and Latino participants, intervention fidelity when applied to large communities, feasibility of using paraprofessionals as interventionists, and cost-effectiveness analyses (Olds 2002; Olds et al. 2004). Many of the other prominent interventions shown in Table 2 were also developed with this approach and evaluated with samples that had ethic or racial heterogeneity (e.g., Conduct Problems Prevention Research Group 2007; Diabetes Prevention Program Research Group 2002; Smith et al. 2004).

Analysis

It is apparent from Wandersman's (2003) summary that great emphasis is given to establishing the research foundation for intervention methods and the systematic evaluation of intervention efficacy. Intervention development is a deliberate, systematic process that makes effective use of theory and research findings. By design, the contents of the intervention correspond closely with the risk and protective factors that were identified by theory and generative research. Intervention procedures are explicit and can be specified in manuals and other media, thus facilitating both replication and dissemination. Efficacy is tested rigorously with attention to fidelity of implementation. The emphasis on early efficacy evaluations increases the possibility that iatrogenic effects can be detected before the intervention is distributed broadly. Trials can be designed as true experiments to test developmental theories on the etiology of disorders. In the delivery of preventive interventions to subcultural groups, efficacy is clearly an important consideration.

It is also apparent from Wandersman's (2003) summary that cultural considerations, reach and feasibility for adoption are not defining features of this approach and are not emphasized in the initial phases of the cycle (see Table 1). The last stage of the cycle, after efficacy has been established with at least one or more samples, is when the most serious considerations of broad scale dissemination and adoption are made typically. As the authors of the 2009 Institute of Medicine (IOM) report observed (O'Connell et al. 2009, p. 334):

> The prevention research cycle proposed in the 1994 IOM report assumes a "hierarchical scientist-as-expert perspective and portrays scientists as separate agents conducting research on 'subjects' and 'groups'" (Dumka et al. 2007). Although the stages of research in the model require the cooperation of individuals and organizations, the model did not specifically address the relationships and collaborative processes that are critical to accomplishing each stage (Dumka et al. 2007).

With notable exceptions such as the Triple P Positive Parenting Program (Prinz et al. 2009; Sanders 1999), interventions are often developed from a primary concern of establishing a strong treatment effect (efficacy) and not from an initial concern about reach or feasibility of dissemination and adoption. A weak link in the chain of phases through the prevention research cycle is the translational research phase (Wandersman et al. 2008). In this phase, interventions are brought to community systems of care with the hope that they will be adopted, implemented with fidelity, and provided broadly to community members, including subcultural groups. However, those subcultural groups might or might not be similar to participants in the earlier stages of the cycle. Tensions can develop when the principle of fidelity to the evidence-

based intervention procedures clashes with the recognition that the foundation research did not establish its applicability to a subcultural group (Castro et al. 2004). It is at this stage when cultural adaptations of EBIs might be done to increase the intervention's fit with consumers and with community agents.

Considerations of culture and community context are not defining features of the prevention research cycle, yet there is no inherent reason why field research, intervention development and other early stages of the prevention research cycle could not start with subcultural groups and the community organizations that serve them. That strategy could narrow the gap between intervention development and applications that reach subcultural groups. The Strong African American Families (SAAF) preventive intervention program is a prime example of an application of the prevention research cycle that maintained its focus throughout the various stages on a specific subcultural group, African American families in the rural south (Murry and Brody 2004). This project also was exemplary in establishing collaborative relationships with the communities that participated in all phases of the research, including the decade-long longitudinal generative research. The highly programmatic research of Murry et al. illustrated the use of outcome research to test their developmental model of sexual risk behavior of African American adolescents living in rural Georgia (Murry et al. 2007). The prevention research cycle can be applied in a way that considers subculture and community context at every phase.

A Prevention Service Development Model has been proposed as a distinct alternative to the traditional prevention research cycle (Sandler et al. 2005). Sandler et al. (2005) noted that the prevention research cycle has not produced interventions that have been adopted broadly because (a) there is a lack of fit between research-based interventions and the capabilities of the community organizations that are expected to implement them, (b) interventions lack appeal to potential consumers when they do not reflect their preferences or values, (c) evidence-based prevention programs are not implemented with fidelity when they are adopted, and (d) there is a lack of confidence in efficacy data when supporting research was conducted with people who differ from those who are considering program adoption. To avoid these shortcomings, Sandler et al. (2005) advocated a Prevention Service Development Model, inspired by ideas from human service marketing (i.e., the New Service Development Process; Zeithaml and Bitner 2003) that from the very beginning of intervention development integrate considerations of prevention science, organizational culture and capabilities, and consumer satisfaction. Although we are not aware of a formal application of all aspects of this model, it shares some features of the ADAPT-ITT model (Wingood and DiClemente 2008), a model also influenced by marketing research methods used in the cultural adaptation of preventive interventions (to be described in the next section).

Cultural Adaptations

The prevention research cycle has been successful in developing an impressive number of EBIs. However, when EBIs are perceived to have characteristics that are inappropriate or ineffective for a particular subcultural group, some have advocated for cultural adaptations rather than adherence to the original intervention procedures or content (Castro et al. 2004). Falicov (2009) described cultural adaptations to EBIs as procedures that maintain fidelity to the core elements of EBIs, while also adding certain cultural content to the intervention or its methods for engaging participants. She saw cultural adaptations as a middle ground between two extreme positions: (a) a universalistic approach that views an original EBI as having content that is automatically applicable to all subcultural groups and, therefore, not in need of alterations, and (b) a culture-specific position that calls for the design of a unique culturally-grounded treatment that reflects the unique values, beliefs, traditions, and practices of a particular subcultural group. With its position in the middle, cultural adaptation might draw criticism from both extremes by proposing alterations that are regarded as deviations from fidelity or, conversely, that lack sufficient integration of essential cultural perspectives.

Justifications for Conducting Cultural Adaptations

Castro et al. (2004) argued that cultural adaptations were warranted when there were mismatches between program conditions that existed in intervention validation research and the conditions that would exist in an application to a subcultural consumer group. Their analysis identified specific sources of possible mismatches under three domains: (a) group characteristics, (b) program delivery staff, and (c) administrative/community factors. The general cultural adaptation strategy is to identify sources of intervention-consumer mismatch and then to conduct specific adaptations that resolve each of these mismatches to enhance fit.

Lau (2006) wrote a compelling argument that identified circumstances that would justify a cultural adaptation of an EBI. She advocated a theory and data-driven approach for determining if an EBI should be culturally adapted and if so, which intervention elements might be altered. In their commentary on Lau's article, Barrera and Castro (2006) elaborated on the features of an intervention that might be considered for adaptation: (a) ineffective engagement such as poor recruitment, retention, program attendance, or participation in intervention activities, (b) unique risk or

Table 3 Comparison of adaptation process models

Kumpfer et al. (2008)	McKleroy et al. (2006)	Wingood and DiClemente (2008)
1. Gather needs assessment data on etiological precursors	1. Assess: target population's risk factors, behavioral determinants, risk behaviors; potential evidence-based treatments and their internal logic; stakeholders, potential collaborators; agency's capacity to implement the intervention	1. Assessment: focus groups with target population and key community stakeholders to understand risk factors
2. Careful selection of the best EBT to culturally adapt and transport: review literature for evidence of effectiveness; conduct focus groups of parents and staff to review intervention materials	2. Select: use assessment data to select treatment and determine if adaptation is needed	2. Decision: which EBI fits needs best, and is it going to be adopted or adapted?
3. Pilot original EBT with just minor changes to the surface structure	3. Prepare: make necessary changes to EBI (but maintain fidelity to core elements); prepare the organization; pre-test with focus groups, test materials for reading level, attractiveness	3. Administration: specific decisions about which treatment components are adopted or adapted
4. Staff selection and training	4. Pilot test the adapted intervention	4. Production: create initial draft version of the adaptation
5. Program implementation with fidelity and quality	5. Implement: with conscientious monitoring of fidelity and outcomes	5. Topical experts: identify experts to assist in adaptation
6. Cultural adaptations made continuously with pilot groups		6. Integration: create second draft of the adaptation from input of topical experts
7. Revisions of program materials to improve engagement		7. Training: train staff to implement refined version of the adaptation
8. Empowerment evaluation to improve outcomes and implementation		8. Testing: conduct pilot research and short-term outcome study to evaluate efficacy of the adaptation
9. Disseminate results of the effectiveness of the culturally adapted version		

resilience factors (e.g., immigration experiences) underlying the intervention target, (c) unique symptoms of a common disorder, and (d) poor intervention efficacy for a particular subcultural group. Those conditions might identify intervention procedures and content that are not optimal for a subcultural group and, therefore, merit revisions.

Methods for Conducting Cultural Adaptations

Until recently, there was little guidance on the steps an intervention designer might follow in conducting a cultural adaptation. That void has been filled with the publication of several papers that showed considerable agreement in their approaches even though they appear to have been derived independently (Kumpfer et al. 2008; McKleroy et al. 2006; Wingood and DiClemente 2008). A critical aspect of these models is that they contain deliberate steps that guide intervention developers in using qualitative and quantitative data to determine the need for a cultural adaptation, the aspects of the intervention that might be changed, and assessments of the effects of intervention alterations (see Table 3).

These comprehensive stage models of cultural adaptations were illustrated with specific interventions, the Strengthening Families Program (Kumpfer et al. 2008) and HIV/AIDS prevention (McKleroy et al. 2006; Wingood and DiClemente 2008). The comprehensiveness of those models is understandable because the stages were intended for the national and international dissemination of the core interventions. Activities such as assessing agency capacity and staff selection are indicative of the models' grounding in the practicalities of broad scale dissemination. An article describing the ADAPT-ITT model is particularly valuable because it contains specific descriptions of methods, including marketing research strategies that could be used at each stage (Wingood and DiClemente 2008). The ADAPT-ITT model was illustrated with applications to African American women in Atlanta and Zulu-speaking adolescent women in Africa. This model, which grew out of a public health tradition, has considerable relevance for applications to prevention.

Examples of Cultural Adaptations

The Penn Resilience Program (Jaycox et al. 1994) is a school-based intervention that was designed to prevent depression symptoms in early adolescent children, although collateral effects on anxiety, conduct problems and school performance are possible secondary outcomes. Group meetings of children who reported high levels of depressive symptoms and inter-parental conflict focused on methods for coping with stress, cognitively challenging unhealthful thinking, and building social skills. The initial evaluation of the program showed that it reduced depressive symptoms by the end of the active intervention period and prevented depression during a follow-up period. Since the initial study, there have been at least 12 extensions of this program in the United States (Gillham et al. 2006) and

other nations (Pattison and Lynd-Stevenson 2001) (see http://www.ppc.sas.upenn.edu/prpsum.htm).

The Penn Resiliency Program has been culturally adapted for Chinese, Latino, and African American children. A multi-study project by Yu and Seligman (2002) provided a particularly informative example of a cultural adaptation with their modification of the program for youth in Beijing (China). Their article described three studies with Beijing children that included epidemiological research and a field-based study that looked to empirically confirm the risk factors underlying the Penn Resiliency Program model. This basic research led to changes in the original core component material on assertiveness in order to accommodate local cultural norms and expectations. These investigators cited research supporting their view that low assertiveness was less of a risk factor for these Chinese children as compared with Western children. In this case, the assertive interactions of Chinese children with their parents were qualitatively different from assertive interactions of their Westernized peers with their parents. This led to a modification of the intervention protocol.

An adapted version of the Penn Resiliency Program also was tested with Latino and African American youth in Philadelphia (Cardemil et al. 2002). Results showed that the intervention was successful in reducing depression symptoms for Latinos, but the intervention did not affect the hypothesized mediating mechanisms or depression for African American youth. The data indicated that additional adaptations of the intervention for African American children were warranted.

Analysis

Cultural fit is the primary emphasis that drives the intervention development activities associated with this approach. The approach takes advantage of the foundational theory, basic research, and efficacy research that established the original EBI. To this foundation, cultural adaptations add some specificity to improve the fit for applications to subcultural groups. At one point, a valid criticism of this approach was that there were few guidelines for identifying which aspects of EBIs should be modified and how they might be changed. There now exist some good models and growing agreement on the process that might be followed in conducting an "evidence-based cultural adaptation" of an evidence-based intervention (see Castro et al. 2010).

Despite careful attempts to conduct evidence-based adaptations, it is still possible that adaptations could actually diminish the effectiveness of EBIs (Kumpfer et al. 2002). Even when they are not detrimental, cultural adaptations have not demonstrated consistently that they are more effective for subcultural groups than the original EBIs. However, few of the cultural adaptations that have appeared in the literature benefited from the recent advancements in the methods for conducting systematic adaptations. Also, there have been too few adequately powered, direct comparisons of original and adapted interventions to form firm conclusions about a null effect.

However, even when effect sizes and outcomes do not necessarily show augmented effectiveness of interventions, there is evidence that cultural adaptation can profoundly impact reach (recruitment) and retention. This is critical because, as noted by Yancey et al. (2006), racial/ethnic disparities in health care cannot be addressed adequately if racial/ethnic minority populations do not participate in service-related research. Kumpfer and Alvarado (1995) found that while original versions of Strengthening Families had slightly better outcomes in their trials, recruitment and retention of participants receiving culturally adapted versions of the curriculum was 41% better. Thus, cultural adaptations have the potential to substantially improve involvement and acceptability leading to improved engagement of ethnic families.

In addition to enhanced reach and engagement, cultural adaptation methods often include strategies for establishing collaborative relations with stakeholders and for assessing agency interest and capacity for intervention implementation (see Table 3). There is an emerging consensus on the stages recommended for effective cultural adaptations of EBIs, stages that recognize the importance of community context and collaborative partnerships.

Investigator-Initiated Culturally-Grounded Approaches

Unlike cultural adaptations that begin with an established EBI and then work toward the introduction of cultural elements that increase intervention relevance for a local subcultural group, investigator-initiated culturally-grounded approaches begin with an assessment of need obtained from members of a particular subcultural group who then participate actively in the creation of a culturally grounded intervention. This approach is, essentially, an aspect of community-based participatory research (Minkler and Wallerstein 2003). Both researchers and practitioners have long recognized the need for an augmented focus on the complex health compromises in communities, integration of research and practice, greater community involvement and control, increased sensitivity to and competence in working within diverse cultures, and more focus on health and quality of life (Israel et al. 1998).

A growing number of researchers are embracing the community-based participatory research (CBPR) model, also referred to as Participatory Action Research (Gosin et al. 2003), which braids together, as the name implies, systematic inquiry, participation, and action (Minkler

2005). Research has long established that a sense of community ownership enhances prevention interventions (Castro et al. 2004).

Concurrently, minorities have continued to be underrepresented in prevention efforts across the continuum from theoretical frames (often elicited from mostly non-minority research samples), design (i.e., few prevention programs are developed with cultural appropriateness specifically in mind), and implementation as well as evaluation (Roosa et al. 2002). "Culturally grounded interventions," on the other-hand, initiate from the particular subculture and move into theory, design, intervention, and evaluation (Hecht et al. 2003). Programs that make superficial attempts to represent subcultures or modify existing programs run the risk of "leaving intact the dominant cultural values that are embedded in the existing curriculum" (Hecht et al. 2003, p. 234). Such attempts can lead to omission of the real life experiences of subcultural groups and might even invalidate them (Holleran Steiker 2008).

Although researchers initiate and organize the activities that are necessary for creating an intervention, the hallmark of the culturally-grounded approach is the primary role that consumers and key stakeholders play in developing the intervention's procedures, content, and materials. The participation of consumers infuses the intervention with appropriate cultural values and norms (deep structure) as well as the appropriate external features (surface structure) that are so important for determining the intervention's appeal and perceived fit (Resnicow et al. 1999).

An Example: The Drug Resistance Strategies (DRS) Project

The Drug Resistance Strategies Project was initiated with the aim of developing a "culturally-focused" prevention program tailored for effectiveness with minority youth. The resulting *keepin' it REAL* drug prevention curriculum was developed in Phoenix, Arizona from 1995 to 2002 (Marsiglia and Hecht 2005). The Project involved 4,224 Caucasian, Latino/a, and African-American high school youths in the creation of culturally-grounded substance abuse prevention videos. The DRS followed from previous research suggesting the utility of video-based approaches not only for engaging African-American and Latino youth (Schinke et al. 1992), but also as an effective mode of intervention with these groups (Hecht et al. 1993; Polansky et al. 1999). The DRS curriculum was based on established social mediators (e.g., cultural norms supporting substances and economic deprivation) and protective factors (e.g., strong role models, educational successes, school bonding, adaptation to stresses, and positive attitudes) (Clayton et al. 1995; Hawkins et al. 1992; Moon et al. 2000).

The initial DRS project made the important contribution of combining core aspects of social influence models with the added integral component of cultural groundedness. The DRS study findings confirmed the theoretical rationale for involvement of minority adolescents in the development of substance abuse prevention projects (Holleran et al. 2002). The study utilized an experimental design incorporating videos as tools for depicting resistance strategies (Alberts et al. 1991; Hecht et al. 1992). Youths participated in the development of videos that featured African American, Anglo and Latino youths who modeled ways to refuse solicitations to use alcohol, tobacco or drugs (Alberts et al. 1991; Hecht et al. 1992, 1993; Polansky et al. 1999; Schinke et al. 1992).

Analyses of the original DRS project indicated that students in the experimental schools gained greater confidence in the ability to resist drugs, increased use of the strategies taught by the curriculum to resist substance offers, adopted more conservative norms both in school and at home, reduced the use of alcohol (a decrease of nearly 16% in the experimental group and an increase of slightly more than 20% in the control group), and had less positive attitudes towards drug use (Hecht et al. 2003; Kulis et al. 2005). The *keepin' it REAL* curriculum is now recognized as a SAMHSA model program, has been disseminated nationally and internationally, and has been adapted for younger children. It has even been integrated with DARE programs in efforts to boost the effectiveness of DARE.

Analysis

The primary strength of culturally grounded approaches is that important elements of culture are embedded into the intervention through the participation of consumers who inform and literally produce intervention materials. Participatory action designs create partnerships between investigators and community agencies, thus enhancing critical technology transfer, research-to-practice initiatives, and sustainability that come when agencies invest and develop a sense of ownership in the intervention from the start. Because researchers are involved in initiating and guiding the projects, there is still a strong awareness of theory and rigor in the program evaluations.

The specificity that comes with grounding an intervention in the cultural context of a group in one community can be a liability in another community (Lopez and Castro 2006). For example, despite positive results for Mexican–American and other Latino youth with the video intervention materials they produced in Arizona, Mexican–American youth in Texas responded critically to the videos. They expressed that they could not relate to certain content and activities as depicted within these videos, such as brake dancing, even though these videos incorporated

Mexican–American youths as protagonists (Holleran et al. 2005). This revelation prompted the need for a local adaptation of the *keepin' it REAL* intervention for those Texas communities (Holleran Steiker 2008). Even within specific communities, it is not always obvious when subcultural groups are unique and should be treated separately or when they can be combined.

Community-Initiated Indigenous Programs

The most recent Institute of Medicine report on prevention (O'Connell et al. 2009) recommended three methods for researcher-community partnerships to put knowledge into practice: (a) modification of existing interventions to better fit cultural characteristics of specific communities; (b) the design of preventive interventions from research that is responsive to specific community concerns; and (c) "preventive interventions that have been developed in the community, have demonstrated feasibility of implementation and acceptability in that community, but lack experimental evidence of effectiveness" (p. 7). The third recommendation refers to "community-initiated indigenous programs" or what Wandersman et al. (2008) described as user-based or community-centered models. Because such interventions are created and implemented by community agents, they obviate the need for selling the adoption of externally developed interventions to communities. As Miller and Shinn noted, "rather than (or in addition to) incubating programs in the hothouse of the university, and then attempting to transplant them to the rather different soil of the community, community psychologists should identify promising programs that are already functioning in communities, study them to determine their effectiveness and active ingredients, and disseminate those that work" (p. 176).

Examples

Miller and Shinn (2005) illustrated this approach with several examples that included large numbers of ethnic minority participants. One example was the Resolving Conflict Creatively Program (RCCP). RCCP is a school-based intervention for preventing violence and promoting intergroup understanding that was created through a partnership between two community entities, Educators for Social Responsibility and the New York City Board of Education (Aber et al. 2003). By 2003 it had been implemented broadly in New York City public schools and 12 other diverse school systems in other states. The general program goals were to improve children's decision-making and social skills in conflict situations, but there were also more culturally relevant objectives such as encouraging respect for everyone's cultural background and opposing prejudice. The intervention involved training teachers to deliver the intervention in classroom instruction, peer mediation, principals' training, and parent training. Of the 11,000 children in the sample, 41% were Hispanic and 40% were African American. The results were extensive and complicated, yet overall, there appeared to be associations between the amount of classroom instruction children received and declining trajectories of conduct problems and hostile attribution bias.

Other examples of community-initiated indigenous programs illustrated how widely disseminated they can be when community professional organizations were responsible for their inception and implementation. The Drug Abuse Resistance Education (DARE) program is illustrative of a well-intentioned intervention developed by a community organization (Los Angeles Police Department). Its official website proclaims, "DARE was founded in 1983 in Los Angeles and has proven so successful that it is now being implemented in 75% of our nation's school districts and in more than 43 countries around the world" (http://www.dare.com/home/; October 16, 2010). Substantial numbers of ethnic minority students have participated in DARE over the years. Unfortunately, its claim of success was not substantiated by evaluation research (West and O'Neal 2004) and its subsequent transformation into Take Charge of Your Life has not been successful as a universal intervention (Sloboda et al. 2009). Another widely disseminated program, Sexual Assault Nurse Examiner (SANE) services, was created over 30 years ago by nurses, often in conjunction with community rape crisis centers and victim advocacy groups (Campbell et al. 2005). Campbell et al. (2005) indicated that nearly 450 SANE programs had been established nationwide at the time of their report. SANE program services are not exclusively preventative. They provide first-response medical care and compassionate support to prevent the retraumatization of victims, but service goals also include the collection of forensic evidence to improve the prosecution of sexual assault cases. There is little doubt that SANE programs reach ethnic minority women who receive emergency medical care following sexual assault (e.g., Avegno et al. 2009). Neither DARE nor SANE exemplify special considerations for accommodating the needs of subcultural groups, but they do illustrate how the feasibility and appeal of indigenous interventions can result in widespread dissemination and adoption that reach subcultural groups.

Analysis

Aber et al. (2003, p. 326) observed that interventions that are developed through the prevention research cycle "are often quite expensive, but they rarely, if ever, solve the multifaceted problems of how the programs might go to

scale." They also noted that community-initiated indigenous programs, "grow out of practice-based philosophies, solve the financial, bureaucratic, and implementation challenges required to go to scale, but are of unknown efficacy and validity." A primary advantage of indigenous programs is that with their histories of thriving in the real world, they establish from the very beginning economic feasibility, local relevance, and the ability to be implemented by community agencies. Although there is no guarantee that community agents will create programs that emphasize cultural fit, it is reasonable to speculate that indigenous programs that (a) are developed by community agents who are familiar with the needs of residents and (b) attract the participation of community residents, can capture salient cultural components.

There are limitations and potential disadvantages associated with indigenous, user-based models. There is no certainty that effective interventions indigenous to one community can be transferred to other communities, although some have been adopted fairly broadly (e.g., Aber et al. 2003). Perhaps the primary disadvantage of indigenous programs is that they typically have undocumented efficacy until that is established either by outside professionals or the agencies themselves. There is the possibility that indigenous programs could enjoy broad-scale participation and community support even when the programs are found to be ineffective or harmful. For example, research has failed to demonstrate DARE's effectiveness as a drug use preventive intervention (Rosenbaum and Hanson 1998; West and O'Neal 2004). In fact, the original version of DARE was identified as an intervention that had iatrogenic effects (Lilienfeld 2007; Werch and Owen 2002). It is important to note that community-initiated indigenous programs do not have a unique risk for inert or iatrogenic effects. However, until they are subjected to systematic evaluations of their efficacy, there is a risk that damaging effects could go undetected or unheeded long after the intervention is implemented in communities. In their evaluation of the SANE indigenous community intervention, Campbell et al. (in press) observed:

> This intervention model spread quite quickly, growing from a handful of SANE programs in the 1970s and 1980s to nearly 500 programs currently in existence…This diffusion occurred despite very minimal evaluative data on the effectiveness of SANE programs, as is often the case with indigenous interventions (Miller 2001; Miller and Shinn 2005).

Fortunately, there are indications that SANE programs have many beneficial effects (Campbell et al. 2005, in press). There is a vital need for the thorough evaluation of indigenous programs, including evaluations that assess their effectiveness for subcultural groups.

General Conclusions

A Substantial Body of Knowledge on Prevention with Subcultural Groups

Each of the approaches for developing culturally informed preventive interventions has strengths and weaknesses. All of them have produced examples of prevention programs that reached subcultural groups and achieved beneficial effects. Prominent preventive interventions demonstrated generalizability by including sizable numbers of ethnic and racial minority participants. There is now a substantial literature on preventive interventions with diverse samples that would support a meta-analytic review similar to those that have been done on psychotherapy research. Such a review should include research on engagement as well as outcomes. Because engagement issues (recruitment, retention, program participation, etc.) are so critical for evaluating the overall effectiveness of prevention efforts (Dillman Carpentier et al. 2007), scrutiny of engagement in prevention research would be even more critical than it is in traditional psychotherapy trials. A meta-analytic review would further organize what we have learned thus far and would quantify the effectiveness of prevention activities conducted with subcultural samples.

Cultural Adaptation: The Best of Two Approaches

With clearer explications of cultural adaptation stage models, it is becoming more apparent that they incorporate elements of the prevention research cycle as well as elements of culturally-grounded interventions. Cultural adaptations take advantage of the theory and research rigor that established the original EBI, the source of the adaptation. To that foundation, stage models of cultural adaptation add qualitative research components to incorporate input from potential consumers and community agencies that might implement the intervention. Input from key stakeholders might fall short of full participatory research, however, such input could still increase cultural grounding in the early stages of cultural adaptations (Wingood and DiClemente 2008). One of the most important recent developments for preventive intervention designers is the guidance provided by stage models of cultural adaptations (Barrera and Castro 2006; Kumpfer et al. 2008; McKleroy et al. 2006; Wingood and DiClemente 2008).

The Challenge of Finding Core Components

Despite its many attractive features, the cultural adaptation approach presents a steep challenge for future research. If a key aspect of cultural adaptations is the preservation of core components of the EBI (cf., Falicov 2009), then a

research priority should be the identification of core intervention components. However, the expense and possible participant burdens in doing component analyses of comprehensive interventions make the empirical identification of core components unlikely. Elliott and Mihalic (2004) wrote, "Our knowledge about core components is simply inadequate to make this determination, and any negotiation with local implementers about what can be deleted or modified on these grounds is highly problematic. In time, this may become a viable option, but for the present, it is not" (p. 50).

Where is the "Culture" in Culturally Relevant Interventions?

Research on preventive interventions that are designed to reach subcultural groups could still do more to understand how cultural variables might be included in adapted interventions and how those variables might contribute to intervention efficacy. Wilson and Miller (2003) were critical of a basic shortcoming of HIV prevention efforts directed at ethnic and racial minorities when they noted that few studies appeared to be developed from theoretical frameworks that included cultural concepts. Those criticisms are certainly applicable to other prevention topics besides HIV. Intervention outcome research can be used not only to evaluate the efficacy of an intervention, but also to test theory (Howe et al. 2002). When cultural adaptations are explicitly designed to influence a cultural construct (e.g., strengthen cultural identity), such studies could inform culturally relevant theory by evaluating if the intervention was successful in changing that construct and if that change affected the outcome (Castro et al. 2010). Towards this important aim, the designers of culturally-relevant prevention interventions should be explicit from the beginning regarding the hypothesized roles of specific cultural variables and should design evaluation research that tests theoretical assertions (Castro et al. 2007).

Trickett (in press) wrote forcefully about the importance of understanding the culture of communities before assisting communities with selecting interventions and implementing them. He gave examples of the harmful consequences that occurred when interventions were conducted in communities without sufficient understanding of the local culture. Even those who conduct cultural adaptations start with the intervention and then consider ways that it could be modified to fit culture. Trickett advocated reversing that order by considering culture first, appreciating the value of indigenous interventions that might exist in a community, and then respecting the autonomy of communities to select interventions that are appealing or even to reject the basic premise that interventions are needed. Even though cultural adaptations and culturally-grounded approaches involve the local community in shaping interventions, they still contain "product development" features that might not go far enough in capturing all the relevant cultural considerations that make interventions culturally appropriate and effective.

Closing the Intervention Development-Adoption Gap

The gap between intervention development and broad-scale adoption by community service providers is still wide, particularly for those interventions produced through the prevention research cycle (Wandersman et al. 2008). Concepts from the Prevention Service Development Model (Sandler et al. 2005) and Participatory Action Research (Gosin et al. 2003) emphasize partnerships with community entities early in the intervention development process and show promise for closing that gap. For subcultural groups, participatory models have special relevance because they provide opportunities for cultural factors to shape the content, style, and form of the intervention and how it is delivered.

So Which Intervention Development Approach is Best?

Despite the appeal of culturally adapted EBIs that integrate the strengths of the prevention research cycle and culturally grounded approaches, there is not a clear favorite among the four approaches. All have produced efficacious interventions. However, efficacy is only one of several criteria that could be used to evaluate the overall quality of approaches to the development of preventive interventions for subcultural groups. The RE-AIM framework that is prominent in the evaluation of public health interventions provides highly relevant dimensions for evaluating the overall strengths and weaknesses of preventive interventions (Glasgow et al. 1999). RE-AIM is an acronym that refers to Reach (Does the intervention reach the intended consumers?), Effectiveness (Is it effective in preventing the intended target?), Adoption (Is it adopted by systems of care?), Implementation (Can it be implemented with fidelity?), and Maintenance (Is it sustained by organizations over the long term?). This framework overlaps considerably with the "4 Es" of effectiveness, extensiveness, efficiency, and engagement described by Spoth (2008). In addition to RE-AIM factors, the costs involved in developing an intervention and delivering it are relevant. Considering that head-to-head comparisons of EBIs with their culturally-tailored versions are extremely rare (see Botvin et al. 1994 for an exception), it is highly unlikely that there will be many direct comparisons of more discrepant approaches to prevention development. What are more likely are indirect comparisons through meta-analytic reviews, similar to those conducted on cultural adaptations

of psychotherapy approaches (Griner and Smith 2006; Huey and Polo 2008). When critical masses of research for each of the four approaches accumulate, it will be possible for meta-analyses to use RE-AIM to evaluate studies that might differ considerably in intended outcomes, subcultural group identity of participants, and intervention strategies. At present, it appears that all intervention development approaches are capable of demonstrating efficacy. How well they fare on reach, engagement, adoption, and sustainability has yet to be determined.

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