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ORIGINAL RESEARCH

# Common Principles Embedded in Effective Adolescent HIV Prevention Programs

**Mary Jane Rotheram-Borus · Barbara L. Ingram · Dallas Swendeman · Diane Flannery**

**Abstract** Each interpersonally delivered, evidence-based (EB) program for HIV prevention shares common features that aim to shift HIV risk behaviors. We used qualitative research methods to examine manuals from five EB programs for adolescents and identified 10 core principles embedded in each program's activities. *Principles* reflect the stated goals and anticipated lessons in an activity. The principles were: *Believe in your own worth and your right to a happy future; Commit to change; Distinguish fact from myth; Plan ahead and be prepared; Practice self-control; Know pleasurable alternatives to high risk activities; Negotiate verbally, not nonverbally; Evaluate options and consequences; Show concern for others; Choose to limit your own freedom;* and *Act to help others protect themselves*. Focusing on common features rather than the unique properties of each EB program may allow community providers to have more flexibility and ownership in adapting EB programs, and may also facilitate development of new EB program.

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## Introduction

The widespread diffusion of HIV prevention programs for adolescents is an important public health goal. Adolescents account for 50% of new HIV infections worldwide, and fewer than 50% of this age group are able to identify ways of preventing HIV transmission (UNAIDS 2006). Over the past two decades, researchers have achieved empirical validation for HIV prevention programs in a wide range of formats and settings, and with diverse groups of adolescents. No fewer than 24 evidence-based (EB) programs have been identified as "Programs that Work" by Advocates for Youth (2003, 2006). Responding to the need for a higher rate of community adoption of EB programs, the Centers for Disease Control and Prevention (CDC) have created several integrated projects, providing community agencies with conveniently packaged program materials, training, and ongoing consultation (e.g., Replicating Effective Programs [REP; http://www.cdc.gov/hiv/projects/rep/default.htm] and Diffusion of Effective Behavioral Interventions [DEBI; http://effectiveinterventions.org]).

The availability of effective programs, however, does not guarantee utilization by providers or young people (Rotheram-Borus et al. 2004). Barriers to community adoption stem from both researchers' failure to meet the needs of community agencies (Collins et al. 2006; Dworkin et al. 2008; Kelly et al. 2000b; Lyles et al. 2006) and constraints within the community agency such as lack of resources, leadership, and buy-in by staff needed to replicate, with fidelity, an entire program (Ginexi and Hilton

2006; Kraft et al. 2000; Simpson 2002). Even when community agencies have had staff trained in an EB program, fewer than half will implement the program (Harshbarger et al. 2006).

When communities *do* adopt an EB program, they invariably implement it with modifications (Dworkin et al. 2008; McKleroy et al. 2006; Rebchook et al. 2006; Rohrbach et al. 2006; Stanton et al. 2005). In fact, the dissemination goal of "replication with fidelity" is commonly rejected by community interventionists, who prefer to customize the program to meet the needs of their clients (Schoenwald and Hoagwood 2001) and to have a sense of ownership. Since community providers will inevitably adapt, tailor, or reinvent the EB program, it is necessary for the program's non-adaptable "core elements" to be identified. However, there is a lack of consensus on the scope and specificity of core elements. Core elements are intended to reflect the theoretical bases, internal logic, and causal components of the intervention (Eke et al. 2006) but have been variously defined as specific activities and scripts (e.g., handling condoms; Stanton et al. 2005); the physical setting (dedicated meeting space versus shared room), group process factors (e.g., small group discussions; Janz et al. 1996); leadership variables (e.g., peer-led groups in Mpowerment Project; Rebchook et al. 2006), specific competencies addressed (e.g., condom use), and ethnic similarity between presenters and participants (e.g., culturally specific video; Harshbarger et al. 2006).

The strategies and methods recommended for identifying core elements are similarly diverse: specification by the creators of an intervention (Eke et al. 2006; Rebchook et al. 2006; Solomon et al. 2006); outcome evaluations of community adaptations (Stanton et al. 2005); feedback from participants and facilitators (Kelly et al. 2000a); and process evaluations of successful programs (Janz et al. 1996). Each of these approaches captures a different type of core element from a different methodological approach and often different informants. Each strategy for identifying core elements has its own limitations. The default approach in the CDC REP and DEBI programs is for core elements to be defined by the EB program researcher-developers, occasionally with input from providers or participants (Eke et al. 2006; McKleroy et al. 2006).

Rather than promote replication with fidelity to specific EB program core elements, it has been argued that there is a set of common elements that are consistently implemented across EB program (Rotheram-Borus et al. 2008). A focus on common elements may assist researchers and providers who wish to use EB programs by moving focus away from activities specific to an EB program toward a focus on effective practices. It also may support collaboration by intervention researchers and new interventions could be developed faster as the pandemic continues to change.

Perhaps most importantly, if the field can identify the common elements of successful EB program practice, training and adapting EB programs could become far easier for practitioners by using a language and framework that cuts across the multiple EB programs that providers deliver.

Similar to core elements, common elements can be defined at multiple levels, with varying degrees of specificity, and through a diversity of research methods. Meta-analyses have been conducted to identify common elements supporting program efficacy across EB programs for HIV prevention that focus on facilitator characteristics (Noguchi et al. 2007) and practices reflecting constructs nested in behavior change theories such as attitudes, norms, intentions, self-efficacy, skills and behaviors (Albarracin et al. 2003, 2005). This deductive research agenda is noted by the studies' authors as being limited by intervention developers' varying descriptions of intervention activities. A complementary inductive research agenda, therefore, examines EB program manuals to identify common elements. For example, mental health services researchers (Chorpita et al. 2007, 2005; Garland et al. 2008) have conducted content analyses of EB program manuals for child and family therapy, with expert confirmation that identifies about thirty common "practice" elements at the level of specific techniques or procedures. Example elements include psycho-educational *content* (e.g., principles of coping, problem solving, activity scheduling, relaxation), and treatment *techniques* or *delivery devices* (e.g., skill training, modeling, rehearsal).

In this article, we describe an inductive, qualitative study of manuals from five EB programs for adolescent HIV prevention to identify common *principles* across the EB programs. *Principles* reflect EB program content themes or the stated goals and anticipated lessons learned from an intervention activity, which are separate from intervention processes (i.e., treatment techniques or delivery devices; Ingram et al. 2008).

## Methods

Following the procedures for developing a grounded theory (Strauss and Corbin 1998; Charmaz 2005) we: (1) selected successful EB programs for HIV prevention with adolescents; (2) iteratively coded and categorized each activity in each session of each manual; and (3) interpreted the qualitative data to define, validate, and name the embedded principles for HIV prevention.

Program Selection

To be eligible for analysis, programs needed to meet three criteria (1) to be identified by the CDC as efficacious; (2) to

be in use for over 5 years; and (3) to be packaged for dissemination with a manual that clearly presented program parameters, strategies, and procedures. Five programs were selected that met these criteria: (1) *Be Proud! Be Responsible!* (Jemmott et al. 1992); (2) *Becoming A Responsible Teen* (St. Lawrence et al. 1995); (3) *Focus on Kids* (Stanton et al. 1996); (4) *Safer Choices* (Coyle et al. 2001); and (5) *Street Smart* (Rotheram-Borus et al. 1991, 2003).

Table 1 describes the key structural features (i.e., target groups, settings, number and duration of sessions) of each program. The programs shared a number of similar characteristics: (1) targeted populations of ethnic minorities who are at greatest risk of infection based on the current epidemiological profile of HIV in the United States; (2) targeted young people from ages 9 to 18 years old; and (3) delivered in group formats with multiple sessions (from 7 to 20 sessions). Differences among programs include (1) the specific age range within a broader range of 9–18 years old; (2) setting, with one program part of a school curriculum; (3) and the choice of having same-gender or mixed gender groups.

## Coding and Category Development

### Step 1   Open coding

One of the authors and a psychology graduate student used an open coding method with three of the manuals, reading the text without a priori assumptions, to develop a list of concepts to represent common elements, including both group process elements (e.g., creation of safe supportive group; having fun; and promoting participation; see Ingram et al. 2008) and desired outcomes or principles (e.g., mastery of facts; increased self-worth; and modification of values). A list of 21 "program elements", each with a definition and selection of examples, resulted from this stage of the analysis.

### Step 2   Refinement of list of codes

Two psychology graduate research assistants ("coders") were trained in the meaning of the coding categories and given the opportunity to study and discuss the examples. Then they were each presented with a new set of 21 program element examples to code. There was agreement in classification of all but 4 of the items, over 85% agreement. Discussing the items for which there was disagreement resulted in combining two pairs of concepts, reducing the list to 19 program elements.

### Step 3   Coding five manuals

Coding forms were created with rows for these 19 elements, columns for entry of examples, and a column for numerically rating the degree of emphasis of that element in the session. Coders were instructed that a single activity in a group session could receive multiple codes, and that they were free to define an additional category if an activity did not fit into the 19 codes on the rating form. One research assistant coded three manuals and the other coded two. A separate coding form was completed for each session in each manual. When an element was found to be present, specific examples were written directly on the

**Table 1** Key characteristics of five adolescent, evidence-based HIV prevention programs

| Program | Ethnicity | Gender | Ages | Settings | Format | Sessions | Theory |
|---|---|---|---|---|---|---|---|
| *Be Proud! Be Responsible!* (BPBR) | African-American | Males | 13–18 | Multiple urban | Small group | 6 @ 50-min, weekly | Social cognitive (Bandura 1986) |
| | | | | | | | Reasoned action/ planned behavior (Ajzen 1991) |
| *Becoming a Responsible Teen* (BART) | African-American | Separate groups | 14–18 | Community-based urban | Small group | 8 @ 1.5–2 h, weekly | Social learning (Bandura 1977) |
| | | | | | | | Self-efficacy (Bandura 1986) |
| *Focus on Kids* (FOK) | African-American | Separate groups | 9–15 | Friendship networks urban | Small group | 7 @ 1.5 h, weekly 1 one-day retreat | Protection motivation (Rogers 1983) |
| *Safer Choices* (SC) | Multiethnic | Mixed groups | 14–17 | Schools urban and suburban | Classroom | 20 @ 45-min | Social cognitive (Bandura 1986) |
| | | | | | | | Social influences and school change |
| *Street Smart* (SS) | Multiethnic | Mixed groups | 11–18 | Community-based urban | Small group | 8 @ 1.5–2 h 1 individual follow-up 1 community visit | Social learning (Bandura 1977) |

coding form. Neither coder found the need to add additional categories, demonstrating that the list of concepts was comprehensive. Each manual was reviewed and coded several times. As a final reliability check, one of the authors randomly selected coding forms for three sessions from each manual to verify that all codes were justified by examples from the text and that all content in the session was coded appropriately.

Two of the authors met to review the findings and concluded that that two distinct domains of program elements had emerged, "group processes and techniques" and "implicit content themes or principles". The findings on process elements were presented by Ingram et al. (2008). The findings on implicit content themes, or principles, are the focus of this paper.

*Step 4*  Interpretive qualitative analysis

Our goal was to develop a list of principles that would meet three criteria: (1) comprehensive—there would be no program element that could not be categorized under one or more of the principles; (2) parsimonious—we would avoid redundancy and reduce the system to the fewest possible elements; and (3) worded at a conceptual level that would be understandable to EB program providers and that would facilitate adaptation to specific adolescent populations.

The derivation of a list of common principles required us to think more abstractly about the intentions of the activity and the desired outcome in terms of internalized rules to guide decisions and actions. The list of principles evolved based on analysis and discussion by the research team, using reflective tools as described in guidelines for qualitative research (Denzin and Lincoln 2005). This stage of analysis involved not only immersion in the data, but also application of the knowledge base and professional experience of the research team members, which included clinical psychology, community health, cognitive behavior therapy, social learning theory, urban education, adolescent development, HIV prevention intervention development and implementation, and replication and dissemination activities of several adolescent EB programs. The research team made explicit its knowledge of normative adolescent developmental issues and the recognition that HIV prevention for adolescents must address aspects of psychological immaturity such as poor impulse control, lack of future orientation, novelty and sensation seeking, susceptibility to peer pressure, poor decision making skills, and difficulty maintaining positive sense of worth. These challenges are also applicable to other populations at high-risk for HIV infection or transmission. The wording of the list of principles conveyed that the desired outcomes of effective HIV prevention programs were not only behavioral and cognitive change, but development of more mature ways of functioning.

Preliminary examples of principles included "learn to resist peer group pressure", "always carry condoms", "tell other people what you learned", "donot put yourself in risky situations", and "care more about yourself than the approval or others". We immersed ourselves in the examples on the coding forms, reorganized them into different categories, and continually kept our focus on the intended guiding principle. The presence of a principle was recognized in three ways:

(1) *The content of the facilitator's script*: The principle "Act to help others protect themselves" was part of the facilitator's message to "spread the word" and tell others in the community what they are learning.
(2) *The explicit intention of an activity*: The principle "Be prepared" was embedded in the activity of giving a reward to each participant who was carrying a condom.
(3) *Inferences from diverse activities*: The principle "practice self control" was inferred from diverse activities such as learning to use an "emotional thermometer", relaxing when uncomfortable, and role playing diversion strategies when a sexual situation is moving too fast to make good decisions.

*Step 5*  Refining and renaming

Both individually and in group meetings, the following tasks were accomplished: (1) Review of the examples to consensually validate that the designated principle was being imparted; (2) Combining principles that either had the same meaning in different words or had very similar meaning; and (3) Development of acceptable wording for each principle to make it clear and accessible to both facilitators and easily adaptable to diverse adolescent populations. The following example illustrates how we combined and renamed items on the list:

> Initially there were separate principles for "be a health advocate" and "protect your friends and partners". Those were lumped together and initially given the name "Be socially responsible". However, that wording did not seem easily accessible to adolescents, so the principle was reworded to "Act to help others protect themselves".

In the final stage of revision, we recognized that our initial label for the first principle ("Be internally directed") did not meet our own criterion of accessible language, and we changed it to "Believe in your own worth and your right to a happy future". We chose *not* to state explicitly this principle as "resist peer pressure" to ensure recognition that peer pressure is not necessarily harmful when it supports one's own worth and long term goals.

For some pairs of principles, there appeared to be overlap because the same activities are used to teach them. For instance, behavioral rehearsal to teach assertive communication is used both for "planning ahead" before a sexual encounter and "practice self-control" during a risky situation of sexual temptation. We agreed that the two principles should not be combined because there is an important distinction between preparation for a challenge while in a state of low emotional arousal and coping in the middle of a challenge which involves both sexual and emotional arousal.

A final list of 10 principles was ordered in a developmental sequence: a principle at the beginning of the list generally serves as a prerequisite and foundation for subsequent principles. For instance, the first principle emphasizes valuing yourself and believing that you deserve a positive future, while the ninth principle (choose to limit your own freedom) involves exercising the self-discipline to put future benefits ahead of immediate gratification.

Criteria for evaluating qualitative research differ from the standards for quantitative research, and we solicited feedback from colleagues not involved in prior stages of analysis to confirm that our method and findings met standards of credibility, adequacy of research procedures, and empirical grounding (Strauss and Corbin 1998).

## Results

Table 2 presents the final list of principles, with examples of (1) concrete ways that the principle can be articulated; and (2) examples from each program for each of the principles to illustrate the variety of ways in which principles are embedded in program activities. The following paragraphs elaborate the meaning of each principle and the relevance to HIV prevention.

1. *Believe in your own worth and your right to a happy future*. In each program, there was an assumption that positive feelings about oneself aid in the ability to resist peer pressure and to act in a self-protective manner. Programs stated that it would be difficult to resist pressure to engage in unsafe sex if the individual's feelings of self-worth depend on the approval and love of another person. Thus, the prevention programs helped adolescents identify their personal values, to act in a manner consistent with their goals, to strengthen inner sources of self-esteem and the behavioral skills to say "no" to pressure to engage in high risk activities. The principle can be internalized with the affirmation "my self-protection is more important than my partner's approval". There was also an orientation that adolescents are much more motivated to protect themselves in the present if they have personal goals for a desirable future. These goals function as an internal source of value when the individual weighs the pros and cons of engaging in risky behavior. A sense of hope about the future is a protective against self-destructive behavior (Lawrence et al. 1995). Adolescents who are depressed and feeling hopeless may engage in self-destructive behavior unless self-worth and optimism about the future are mobilized.

2. *Distinguish fact from myth*. Successful HIV prevention is impossible if individuals are not knowledgeable about the virus, its transmission, and the best methods of self-protection. Every prevention program has a didactic component that not only teaches accurate information, but reveals common myths and faulty assumptions. For example, a frequent myth is the belief that HIV infected persons will be visually distinguishable. More than just teaching facts, which are subject to change with new discoveries, the programs inculcate the principle that all good decisions and wise choices must be based on accurate information. Some programs go a step further in building skills of information-gathering.

3. *Evaluate options and consequences*. This principle is essential for decision making, and embraces the necessity of considering multiple alternatives and keeping a future perspective. Each program argued that self-protective behaviors have desirable long term outcomes and hence are preferable to unsafe behaviors that have short term rewards. A presupposition is that the individual will have the ability to keep emotions separate from reasoning; one program (SS) teaches participants how to distinguish rationalizations from sound reasoning.

4. *Commit to change*. Once alternatives are evaluated, the individual needs to make a choice, which may initially be phrased as an intention. The bridge between intention and action is commitment; without commitment a positive resolution easily yields to the temptations and pressures of daily life. Because the behaviors that put adolescents at risk for HIV are inherently pleasurable and can occur with the impulse of a moment, the scales need to be weighted on the side of commitment. Thus, programs seek to get members to recognize at a deep, emotional level, that they are personally vulnerable. As long as the individual believes "It can't happen to me", there is no motivation for an unwavering commitment to safe behaviors (Maddux and Rogers 1983). An alternative strategy to reinforce personal commitment to acting safely is to have the group participants make public, verbal commitments, both within the group and by becoming health advocates in the wider community.

5. *Plan ahead and be prepared*. Adolescents need to realize that risky situations can arise unexpectedly and that unless they are prepared they will be unable to keep their commitments. The most common implementation of this principle is the rule "always carry a condom". One program (FOK) includes a homework assignment to go to a store and investigate how to buy condoms. Preparation also

**Table 2** Ten common principles embedded in five adolescent, evidence-based HIV prevention programs

| Principle | How the principle is demonstrated (outcome goals) | Program | Examples of how principle is embedded in program activities |
|---|---|---|---|
| 1. Believe in your own worth and your right to a happy future | Know your values | BPBR | Participants role play how to explain condom use in terms of self-respect and self-protection |
| | Have personal goals for desirable future | BART | Teaches the concept of "Kujichagulia"—*believe in self and do those things that strengthen and protect the self* |
| | Value yourself & your self-preservation | FOK | Activities to define and rank their values |
| | Be able to resist peer pressure | SC | Participants identify their own values and experience that saying "no" is empowering |
| | | SS | Visualization activity to clarify future goals; then write postcards to themselves from 3 years in the future |
| 2. Distinguish fact from myth (operate from head, not gut) | Know facts of HIV transmission | BPBR | Facilitators teach the facts of HIV transmission. Participants learn to objectively assess their own vulnerability |
| | Know how to gather information | BART | Video and guest speaker teach that judgments of risk based on people's appearances are not reliable |
| | Make judgments using objective facts | FOK | Facilitators challenge "false feelings of safety". Participants make phone calls to gather information |
| | | SC | Participants learn how to recognize inaccurate information about HIV/STDs |
| | | SS | "You can never tell" game teaches that appearances cannot be trusted in deciding if someone is infected |
| 3. Evaluate options & consequences | Be able to identify probable consequences in risky situations | BPBR | Participants assess their options regarding sexual behavior using accurate knowledge and their personal values |
| | | BART | Video with characters making different choices teaches problem solving skills. Participants brainstorm to evaluate potential solutions |
| | Recognize when options with short term pleasure may cause long term harm | FOK | Participants learn to evaluate different options of HIV prevention in terms of consequences |
| | | SC | Participants learn how to appraise consequences of actions |
| | | | Recognize that HIV is irreversible and that not having sex is an option |
| | | SS | Participants learn concept of 'rationalization' and how to counter it with reasoning. Learn tool of cost-benefit analysis and how to practice it |
| 4. Commit to change | Acknowledge personal vulnerability | BPBR | Game that simulates HIV transmission dramatizes the negative consequences of staying the same and refusing to engage in safe sex habits |
| | Decide to change unsafe behaviors | BART | Game using traffic light helps participants determine their acceptable level of risk; RED: what I will not do, YELLOW: what I might do, GREEN: what I will do |
| | Make verbal commitment to others | FOK | Participants learn that a decision is followed by commitment to implement it through action |
| | | SC | Game and video of teens with HIV personalizes risk; "What can I do?" worksheet with space for private personal commitment |
| | | SS | Ask participants to write goal cards. End of session homework, homework report at beginning of session |
| 5. Plan ahead and be prepared | Carry a condom | BPBR | Group instruction on condom use followed by game where 20 different steps in proper condom use have to be put in correct order |
| | Rehearse how to cope with pressure | BART | Visualization activity of a successful condom purchase; practice putting condoms on penile models; practice negotiating safe sex in a mirror |
| | Select safe settings | FOK | Participants take part in a "condom hunt" activity in which they are encouraged to go to a store and locate condoms for purchase |
| | | SC | Role play activities: participants anticipate what partners will say and rehearse responses |
| | | SS | Facilitators give $1 reward to everyone carrying a condom (teens who are already sexually active) when they arrive at a session |

**Table 2** continued

| Principle | How the principle is demonstrated (outcome goals) | Program | Examples of how principle is embedded in program activities |
|---|---|---|---|
| 6. Practice self-control | Develop awareness of emotions | BPBR | Facilitators teach that drugs and alcohol lower inhibitions. Participants review reasons for saying "no" |
| | Identify triggers to lack of control | BART | Facilitators teach that it is easier to extricate oneself sooner rather than later in the sexual sequence and explain how drugs and alcohol impair judgment |
| | Examine and modify self-talk | FOK | Participants role play strategies to either refuse engaging in sexual intercourse or assert the necessity of condom use |
| | | SC | Facilitators teach delay tactics to break the mood, cool-down a situation and provide time to think or rehearse |
| | | SS | Facilitators teach constructive self-talk before, during, and after risky situations. Participants learn to identify feelings that interfere with cool judgment and rate feeling on a thermometer |
| 7. Know pleasurable alternatives to high-risk activities | Know ways of being sexual without intercourse | BPBR | Facilitators introduce the concept of "outercourse," pleasurable sexual activities without sexual intercourse |
| | Understand needs that are being met by sex and have safe ways to meet them | BART | A video shows people talking about safer sex with partners; Participants role play proposing an alternative to sexual intercourse |
| | | FOK | Participants brainstorm on how to experience closeness and show caring without having sexual intercourse |
| | Have skills to make use of condom enjoyable | SC | Participants learn to offer alternate activities to maintain caring relationship when refusing sexual intercourse |
| | | SS | Participants create a list of safe sex activities that they can keep in mind when faced with high-risk sexual expectations of others |
| 8. Negotiate verbally, not nonverbally | Know what you want and how to say it | BPBR | Participants learn how to say "no", share feelings, and ease tension, to show that you still want to be in a close relationship |
| | Be able to say it with conviction | BART | Role play assertive communication skills |
| | | FOK | Exercises illustrate how to send clear, assertive messages and check out others' meaning |
| | Be able to send relationship enhancing messages | SC | Activities with scripted and semi-scripted role plays for refusal skills and condom negotiation skills. Practice refusing "pressure lines" |
| | | SS | Facilitators teach use of "I statements" to assert values and personal health goals and give participants the opportunity to practice sounding firm and stern |
| 9. Choose to limit your own freedom | Create your own set of rules that benefit you and protect your health | BPBR | Participants develop ground rules and are praised for creating their own rules |
| | | BART | Game gets each person to create own rules for sexual behavior |
| | | FOK | Activity demonstrates that conscious decision making gives control over their future |
| | Set limits on present gratification in order to attain future goals | SC | Participants imagine and verbalize how future goals would change if they were infected |
| | | SS | Activity demonstrates how to choose behavior based on results rather than on rules imposed from outside |
| 10. Act to help others protect themselves | Value the health and safety of others | BPBR | Facilitators instruct participants to notify all sexual partners if they learn they are HIV positive |
| | Be able and willing to adopt a health educator role | BART | Participants are encouraged to 'spread the word' after each session and to and to discourage others from taking risks |
| | | FOK | Participants take part in projects to deliver HIV prevention messages in their community after finishing the program |
| | | SC | Activities show how friends can help friends make good choices |
| | | SS | In the final session, participants prepare and videotape a media message to others, incorporating what they've learned |

involves rehearsal of patterns of thinking and skills of communication that help the individual resist temptation and cope with peer pressure. Effective planning means anticipating and avoiding risky situations, such as watching pornography in mixed gender groups, selecting safe settings, and agreeing with friends to stay together. SS gives an individual session at the end of the program to help the participant design a personal plan for staying safe.

6. *Practice self-control*. The interpersonal path to sexual intercourse involves stages or sequences of coordinated verbal and nonverbal behaviors, and recognizing how difficult it is to stop in the middle of a sexual sequence must be emphasized. Therefore, it is essential that the adolescent has a strategy for maintaining self-control that can be implemented at the earliest stage of the sexual sequence. Self-control requires awareness of one's emotional states, recognition of situational triggers to lack of control and conscious attention to self-talk that either strengthens or threatens self-control (Rotheram-Borus et al. 2003). Programs teach that alcohol and drug use weaken self-control. Behavioral rehearsal prepares individuals to say "no" or use delay tactics as ways to break the sequence once started.

7. *Know pleasurable alternatives to high risk sexual activity*. Self-control is enhanced when there are other pleasurable alternatives besides the two extremes of unsafe sex and avoidance of sexual contact. Sexually active adolescents need to have skills to make condom use enjoyable instead of aversive. Simultaneously, adolescents may not recognize that many emotional needs are often linked to sex, including the need for stress reduction, approval, closeness, and love, and that there are alternative ways to meet these needs that do not include sexual intercourse. Fulfilling those needs for love and approval in different ways (e.g., friendship) may result in abstinence or delayed sex, rather than unplanned and risky sexual activity.

8. *Negotiate verbally, not nonverbally*. Sexual sequences are largely nonverbal. Rather than making a verbal request for sexual contact, kissing or touching is the more likely strategy used to communicate a desire. By encouraging verbal negotiation, there are many more opportunities to stop a sequence of sexual signals between adolescents. To implement verbal negotiations, adolescents must know what to say and how to say it when faced with a request to engage in high risk behaviors. They must have congruent verbal and nonverbal behaviors in order to assert themselves with conviction. Yet, adolescents need skills to maintain a relationship that they value, while refusing a specific activity. When they learn how to send verbal, relationship enhancing messages, they relieve the fear that "saying no" will drive the other person away. Adhering to the personal rule to verbally express desires and limits also enhances the commitment to self-protection, strengthens

the sense of self-worth, and helps shape the social network to one that supports HIV prevention practices. Assertion training techniques are well-suited to help adolescents implement this principle successfully.

9. *Choose to limit your own freedom*. Personal freedom is voluntarily limited when the adolescent creates a personal set of rules to protect health and keeps those rules when peers reject them—and even when parents and other authorities agree with them. This principle is necessary for all self-enhancing behaviors that involve foregoing pleasure (e.g., dieting, smoking cessation, studying) and comprises concepts of both free choice and acceptance of limits. Because adolescents easily resist rules imposed by authorities, it is essential for them to take responsibility for creating their own list of personal rules. One way the principle is embedded in program design is by having the group members brainstorm their own list of rules and norms in the first session, hoping that rules of courtesy and confidentiality will be self-imposed rather than dictated by the leader. When limitations are seen as necessary for protecting health and insuring valued future goals, individuals are more likely to accept them. Examples of rules that promote HIV prevention are "carry condoms", and "avoid high risk situations". This principle recognizes the difference between short and long term rewards; in almost all cases, HIV prevention requires limiting one's choices in the short term so that there is a long term reward of being healthy.

10. *Act to help others protect themselves*. Either directly or indirectly, all programs endorse the importance of valuing and protecting the health and safety of others. Some of the role plays teach that "friends don't let friends engage in risky behavior" and all programs convey the importance of informing past partners and protecting future partners if you are HIV positive. When graduates from the program are able and willing to adopt the role of health educator in their community, then the norms of the peer group may tip in favor of HIV prevention.

## Discussion

Each EB program analyzed in this study included each of the principles outlined above, suggesting that these principles may be common to all EB programs. These principles can be viewed as *implicit intermediate outcomes* that are embedded within successful, effective adolescent HIV prevention programs. Currently, it is assumed that the attributes responsible for behavior change are the theory-based mediators that are specified in the research studies. This analysis suggests that there are other components embedded in EB programs that may not have been analyzed in examination of mediators (i.e., in meta-analyses

by Albarracin et al. 2003, 2005) because the principles outlined in this article are not necessarily components of the theory on which the intervention is based. This analysis suggests that there is substantially more within each program than its theoretical model dictates.

The common principles in each EB program are embedded in multiple activities, demonstrating that there may be diverse strategies to shift the same behavior. Thus, when community-based agencies are replicating EB programs, it may be possible to have flexibility in the specific manner to meet one goal. At the same time, a single activity can incorporate multiple principles, suggesting that programs can be shortened and become more easily adapted and diffused, without losing the elements required for successful outcomes.

The 10 principles identified in this study embrace motivational factors, problem solving and decision making competence, behavioral skills, and developmental concepts of autonomy, maturity of thinking skills, and social responsibility. Although all program designers were guided by cognitive-behavioral or social learning theories, the list of principles suggests that other theoretical models may also make contributions. For instance, the emphasis on freedom, choice, and multiple alternatives resonates with humanistic and existential theories, such as Glasser's *Reality Therapy* (Glasser 1965) or self-determination theory (Sheldon et al. 2003). The capacity to believe in your own worth and maintain self-esteem, especially when external support is lacking, is explored by psychodynamic theorists. Defining core elements related to EB program content themes from a menu of "common principles" may help interventionists integrate knowledge and activities from diverse EB programs and theoretical orientations.

Developmental and social psychologists have repeatedly outlined the special challenges facing adolescents. Adolescents are challenged to establish their identity, define their sense of self, struggle with values and morals, face novel situations which require new social rules, and live very much in the present (Shaffer and Kipp 2007). The principles are not only useful for conceptualizing the effective elements in HIV prevention interventions, but also embrace the competencies that researchers state are essential for mature adult functioning and positive social relationships. To consistently engage in self-protective HIV prevention behaviors, adolescents and people struggling with changing high-risk behaviors need a sense of both personal and social responsibility, skills of informed decision making, and the capacity for impulse control. HIV prevention programs include activities, scripts, information, and coaching to reinforce these developmentally linked capacities. These EB programs are likely to create opportunities for helping adolescents mature, as well as to stay safe from HIV. As HIV prevention is integrated into ongoing health services, the benefits of prevention programs are likely to be greater than is currently recognized.

## Conclusions

Currently, community-based agencies are expected to deliver EB programs with fidelity (Castro et al. 2004). Typically, *fidelity* means adherence to the same activities, scripts, and instructions that the researchers used in the original study that documented an EB program's efficacy. Given this study's results demonstrating that there were variable ways in which the same principles were demonstrated in different interventions, it may be possible to define *fidelity* in terms of *construct fidelity* or *fidelity to the principle*, rather than to specific, sequenced routines or scripts. If researchers and providers have greater awareness of the *robust* components and principles that are common to all EB programs, there might be greater flexibility in adapting or developing EB programs. It may be that the local providers can identify different strategies to deliver HIV prevention more applicable to their population, while still having fidelity to the common principles, processes, and structures of the original EB programs. Implementation is far more likely when community providers can exercise flexibility, use their knowledge of their target population, and experience ownership of the programs they deliver (Dworkin et al. 2008). An argument against an approach to adapting EB program based on common elements would be that community interventionists are not competent to deliver EB program without being trained to replicate specific, sequenced activities and scripts. This argument does not give credit to the professional level of education and experience of community interventionists. Future research should test the comparative effectiveness of EB program replicated using a common elements approach.

To date, the approach to translating research to practice is to maintain the original package, but to overcome barriers to replication and tolerate minor adaptations from community members. Interventionists at the community level are thus faced with the choice between selecting a single EB program and replicating it in its entirety, with fidelity to variously defined core elements, or constructing an original program that is not evidence-based. When the core elements are defined on an abstract level of common elements, including common principles identified in this study, then the professional interventionists can replicate elements from a variety of EB programs and incorporate their original ideas, often stemming from long experience with their target population, all the while assuring that all core principles are incorporated.

One feature of an EB program is its delivery format. Each of the adolescent programs analyzed in this article

was delivered in small groups. To date, no prevention program has identified the core elements of the delivery format, separate from the content or theory of the intervention. A science of delivery format is sorely needed for all prevention research, not just HIV prevention. It may be that some principles are more easily transmitted and acquired in small group formats in contrast to one-on-one sessions, community-level interventions, or technological innovations incorporating internet and/or mobile phone delivery. An empirical literature is absent in this area.

The use of qualitative methods to identify principles in EB programs is a useful methodological contribution to the strategies of translating research to community practice. The methodology we used involves the rating and concept development by people who are not invested in the researcher's theory and specific program design, but who bring a commitment to stay close to the data and allow new, unforeseen concepts to emerge. Theoretical foundations may not be sufficient for identifying core elements, since programs from differing theoretical orientations are equally effective and incorporate very similar components (see Albarracin et al. 2005). Our content analysis of these EB programs demonstrated the gap between how scientists describe their programs and what is actually done in the programs. Qualitative research is a useful tool for finding cross-theoretical commonalities as well as elements that the designers did not recognize as efficacious and essential. This may be a useful strategy to apply to analyze robust components of other EB programs for physical and mental health challenges.

The usefulness and acceptability of our model of 10 core principles requires further research. Here is a working list of questions to guide our inquiries:

1. Are these principles indeed robust and efficacious components of EB programs, as identified by deductive, quantitative research studies such as meta-analyses or component analyses?
2. If the same research method were applied to video-taped recordings of group interventions, rather than the instructions in the program manual, would the same list of principles be recognized?
3. Would examination of a different set of 5EB programs by a different research team following the same method yield the same list of principles?
4. Do the researchers who designed, empirically tested, and disseminated packages of these programs agree that the 10 core principles are indeed present and essential?
5. Do facilitators of effective community prevention programs find these principles to be core elements?
6. Do adolescents who successfully maintain self-protective health behaviors, even in the face of temptations and peer pressure, recognize these 10 principles as ones they believe in?
7. Does the list of principles make a contribution to research on "protective factors", i.e., would adolescents whose behavior is guided by these principles, whether or not they articulate them verbally, be less likely to contract HIV, and more likely to benefit from HIV prevention programs?
8. Will these principles be applicable to design of interventions for adolescents with chronic diseases, such as diabetes?
9. Would these principles reflect health in a non-US population?

The more we can accurately and comprehensively specify the robust components in our EB programs for adolescents and others, the more easily we can broadly diffuse these programs. HIV prevention efforts must focus on the distinction between core elements and elements that can be modified, tailored, or eliminated without threat to successful outcomes, in order to make an empirically validated knowledge base more accessible to community interventionists. Current approaches to identifying core element are varied and have not yet led to clear guidelines that would enable community providers to assure that their programs carry the essential elements. Furthermore, the core principles identified in the present study hold promise for designing interventions in areas other than HIV prevention, such as drug abuse, anger management, and management of chronic illnesses.

The literature on translation from research studies to community settings often conveys a bias in favor of the researchers and quantitative empirical data over professional interventionists and their clinical and community experience. In a common elements approach to translation and adaptation, interventionists would be trusted to integrate research and practice, bringing their cultural competence, creativity, and professional experience to bear in program development. The CDC's REP and DEBI programs have succeeded in meeting the essential need to diffuse EB programs to community providers and their clients with fidelity to the original program to ensure effectiveness in scale-up. A common elements approach meets another pressing need and addresses one of the major barriers to diffusion, the lack of buy-in by staff members to programs for which they have no sense of ownership. The lack of a clear vision for community-provider partnering and input in adapting and disseminating EB programs has been noted in the REP and DEBI program agenda (Dworkin et al. 2008). It is our hope and intention with this paper and others (Ingram et al. 2008; Rotheram-Borus et al. 2008) to stimulate discussion in the field around new methods for EB program development and dissemination

in order to reach communities in need with effective and engaging prevention programs with the capacity for population-specific tailoring and community and provider ownership.

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