

The promise of tailoring incentives for healthy behaviors

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Abstract

Purpose – The purpose of this paper is to describe how tailoring financial incentives for healthy behaviors to employees' goals, values, and aspirations might improve the efficacy of incentives.

Design/methodology/approach – The authors integrate insights from self-determination theory (SDT) with principles from behavioral economics in the design of financial incentives by linking how incentives could help meet an employee's life goals, values, or aspirations.

Findings – Tailored financial incentives could be more effective than standard incentives in promoting autonomous motivation necessary to initiate healthy behaviors and sustain them after incentives are removed.

Research limitations/implications – Previous efforts to improve the design of financial incentives have tested different incentive designs that vary the size, schedule, timing, and target of incentives.



The strategy for tailoring incentives builds on strong evidence that difficult behavior changes are more successful when integrated with important life goals and values. The authors outline necessary research to examine the effectiveness of this approach among at-risk employees.

Practical implications – Instead of offering simple financial rewards for engaging in healthy behaviors, existing programs could leverage incentives to promote employees' autonomous motivation for sustained health improvements.

Social implications – Effective application of these concepts could lead to programs more effective at improving health, potentially at lower cost.

Originality/value – The approach for the first time integrates key insights from SDT, behavioral economics, and tailoring to turn an extrinsic reward for behavior change into an internalized, self-sustaining motivator for long-term engagement in risk-reducing behaviors.

Keywords Self-determination theory, Behaviour change, Behavioural economics, Financial incentives, Employee behaviour, Workplace wellness, Motivation psychology, Behaviour modification, Health promotion, Wellness interventions

Paper type Conceptual paper

Modifiable behavioral risk factors such as tobacco use, poor nutrition, and physical inactivity are chief causes of morbidity and mortality around the globe (Global status report on noncommunicable diseases, 2014) and are major drivers of high and growing health care costs in workplaces (Goetzel *et al.*, 2012). Despite widespread recognition of the health and economic consequences of modifiable behavioral risk factors, there has been limited success in alleviating the burden of chronic illnesses (Ward and Schiller, 2013). As a result, there is broad interest in novel approaches to reduce behavioral risk factors for chronic conditions (Schroeder, 2007).

One emerging strategy that has shown promise in promoting reduction of modifiable risk factors is the use of financial incentives. For example, in the USA more than four in five large employers now offer their employees financial incentives to complete health risk appraisals (HRAs), participate in wellness programs, or, in a rapidly increasing number of cases, achieve biometric targets such as a particular body mass index or blood pressure (Towers Watson/NBGH Employer Survey on Purchasing Value in Health Care, 2014). In other countries such as the UK (Marteau *et al.*, 2011; Relton *et al.*, 2011; Ryan *et al.*, 2015), Germany (Schmidt *et al.*, 2009), and South Africa (Patel *et al.*, 2013), stakeholders like government agencies and health insurance plans are also delivering incentives for healthy behaviors.

Providing financial rewards to encourage healthy behaviors is both intuitive and supported by a strong base of evidence from the field of behavioral economics (Loewenstein *et al.*, 2013; Sutherland *et al.*, 2008; Volpp *et al.*, 2009). Multiple studies show that individuals commonly exhibit “present-biased preferences” (i.e. overweighting of near-term costs and benefits) in their decision making (O'Donoghue and Rabin, 1999). The challenges people face in achieving and maintaining a healthy weight constitute a prime example of such present-biased preferences. Obese individuals often want to lose weight yet have difficulty consistently engaging in behaviors that can help them do so because effective weight loss strategies confer a certain and immediate disutility (e.g. reducing intake of enjoyable high-caloric foods) in return for an uncertain and distant benefit (e.g. long-term reduction in risk for chronic conditions such as type 2 diabetes mellitus (T2DM)). Similarly, although many cigarette smokers wish to quit smoking to avoid adverse health consequences, the “present” gratification afforded by a cigarette overwhelms concerns about possible future health problems like cancer, cardiovascular disease, or chronic obstructive pulmonary disease.

Financial incentives seek to shift these types of imbalances by providing an immediate reward for engaging in a behavior to offset the certain and immediate disutilities of the behavior. Such incentives have been shown to promote short-term weight loss (Jeffery, 2012; John *et al.*, 2011; Kullgren *et al.*, 2013; Volpp *et al.*, 2008), abstinence from tobacco (Volpp *et al.*, 2009), and increased physical activity (Finkelstein *et al.*, 2007; Mitchell *et al.*, 2013) among employees and other populations. Two studies have suggested financial incentives may help aid longer-term formation of healthy habits such as regular exercise (Acland and Levy, 2013; Charness and Gneezy, 2009).

In addition to their practical appeal, theoretical rationale, and short-term effectiveness across health behaviors, incentives are attractive because, in contrast to many other health promotion strategies, incentives can be readily scaled to large populations without the need for extensive human interaction or specialized staff or resources. As a result, the use of incentives to promote healthy behaviors has accelerated in recent years as employers, health plans, and government agencies seek to reduce the incidence of chronic conditions and slow the growth of health care costs (Claxton *et al.*, 2013).

Limitations of financial incentives to encourage healthy behaviors

Although the use of financial incentives to reward healthy behaviors has intuitive appeal and has been shown to promote short-term behavior change, these strategies have shortcomings that limit their impact on the long-term health of employees. First, short-term reductions in behavioral risk factors (e.g. an unhealthy weight) achieved in studies of modest financial incentives have in turn often been modest in magnitude (Cawley and Price, 2013; Finkelstein *et al.*, 2007; Jeffery, 2012). Second, there is evidence that in some cases external rewards could fail to enhance, or perhaps even displace (i.e. “crowd out”), an individual’s autonomous motivation to engage in a behavior (Deci *et al.*, 1999; Gneezy *et al.*, 2011; Moller *et al.*, 2012). While there remains intense debate about the extent to which experimental evidence of crowding out of intrinsic motivation by external rewards (Deci *et al.*, 1999) applies to settings in which financial incentives are used to promote healthy behaviors (Promberger and Marteau, 2013), the exchange of a short-term external reward for a longer-term threat to autonomous motivation could nevertheless lead to adverse long-term health effects (Kullgren *et al.*, 2013). Third, in many incentive studies behavior change that was achieved when incentives were offered was incompletely sustained after incentives were removed (Jeffery, 2012; Kullgren *et al.*, 2013; Volpp *et al.*, 2006, 2008).

Applying insights from self-determination theory (SDT) and tailoring could remedy limitations of financial incentives for healthy behaviors

One promising way to overcome these challenges to improve the effectiveness of financial incentives in promoting sustained behavior change would be to integrate key insights from SDT and tailoring into the design of incentives. First, SDT is an approach to understanding and modifying human behavior that highlights the importance of humans’ innate needs, values and aspirations in behavioral self-regulation and the long-term health outcomes that result from behaviors. This model postulates that humans have three innate psychological needs: autonomy; competence; and relatedness (Ryan and Deci, 2000). When these essential needs are supported, people are most likely to internalize their values and aspirations in a way that promotes their personal development, behaviors, well-being and health.

One of the major contributions of SDT to behavioral science has been a deep understanding of different qualities of motivation, each of which has a different likelihood of producing sustained engagement in behaviors (Ryan and Deci, 2000). In this typology, different qualities of motivation lie on a continuum based on the degree to which they are experienced as fully and volitionally endorsed by the self and therefore likely to support sustained healthy behaviors (Table I). At the least autonomous end of the continuum is amotivation, where people lack any intentions to act and thus are unlikely to initiate, let alone maintain, a behavior. On the other end of the spectrum is intrinsic motivation, in which individuals perform a behavior out of curiosity, interest, a sense of challenge, or for its inherent enjoyment. This is the most autonomy supportive type of motivation and consequently the most likely to promote sustained behaviors.

In between amotivation and intrinsic motivation lie four types of extrinsic motivation. In these types of motivation the reason for engaging in a behavior is external to one's self, and the behavior is engaged in to achieve some other outcome. The least autonomous type of extrinsic regulation is external control, which consists of the perception that one is behaving simply to obtain a reward or avoid a punishment. The most autonomous type of extrinsic regulation is integrated self-regulation, in which an extrinsic goal is brought into congruence with a person's aspirations and values. When integrated self-regulation for a behavior is achieved, a person identifies with and internalizes the value of the behavior (Deci and Ryan, 2000). This integrated regulation has been shown in multiple studies to be a key factor in promoting sustained engagement in a behavior (Fortier *et al.*, 2007; Mata *et al.*, 2009; Münster Halvari *et al.*, 2012; Ng *et al.*, 2012; Silva *et al.*, 2010; Teixeira *et al.*, 2012a, b, c; Williams *et al.*, 2006, 2009).

These insights from SDT help explain why financial incentives may often produce only modest, poorly sustained behavior change and how incentives could potentially promote greater and more sustained behavior change. Financial incentives for healthy behaviors have traditionally taken the form of simple financial rewards for a given behavior, thereby cultivating externally controlled regulation. This quality of behavioral regulation may only result in a targeted behavior as long as the incentives are in place because people experience an external locus of causality, which has been shown to be less predictive of long-term behavior change than more autonomous sources of motivation (Ng *et al.*, 2012). In contrast, integrated self-regulation occurs when an extrinsic behavior (e.g. stopping smoking) is brought into congruence with an individual's intrinsic goals, values, and aspirations so that the behavior is given meanings that are directly applicable to what an individual values most and is striving to accomplish. People who

	Amotivation		Extrinsic			Intrinsic
Regulatory style	None	External	Introjected	Identified	Integrated	Intrinsic
Locus of causality	Impersonal	External	Somewhat external	Somewhat internal	Internal	Internal
Regulatory process	Lack of control	External rewards	Internal rewards	Personal importance	Congruence with aspirations	Inherent enjoyment
Support of autonomy	+	++	+++	++++	+++++	+++++
Support of sustained behaviors	+	++	+++	++++	+++++	+++++

Table I.
Motivational types and their support of autonomy and sustained behaviors

experience integrated self-regulation have an internal locus of causality because they feel that their own goals and values lead to the behavior. When this integrated self-regulation is achieved, a person's behavior change efforts are more efficacious because they are more energized to be persistent in their efforts when they encounter barriers and setbacks.

To illustrate this concept, imagine a middle aged obese man with a strong family history of T2DM who has always found exercise uninspiring and reading nutrition labels tedious. He is therefore not intrinsically motivated to engage in key behaviors to reduce his risk for T2DM. What he values most in his life is the time he spends with his children, and he aspires to be an exceptional father. Thus, he might be more likely to exercise and improve his eating habits if he perceives that by being physically active and eating a healthy diet he will be a positive role model for his children. In this way, the source of his reasons for acting would remain to reach the external goal of reducing his risk for T2DM, but engaging in these key risk-reducing behaviors would take on a deeper, more personal meaning when integrated with his relationship with his children. Such integrated self-regulation is more likely to promote initiation and then sustained behaviors that improve health over time. Because many health behaviors are not typically inherently enjoyable (e.g. getting an immunization or mammogram, or stopping use of tobacco), integrated self-regulation is a much more attainable goal than intrinsic motivation, which often arises through a highly complex and variable process.

Second, integration of these key SDT insights into the design of incentives could be achieved by tailoring to individuals' goals, values, and aspirations the information provided with financial incentives. Tailoring is a health communication strategy in which information about an individual is used to determine the communications he or she will receive as part of a behavior change intervention (Hawkins *et al.*, 2008; Kreuter and Wray, 2003). The goal of such tailoring is to make communications more personally salient to each individual so as to promote greater behavior change. Recent systematic reviews concluded that tailored health communications are more effective than generic, non-tailored communications (Krebs *et al.*, 2010; Noar *et al.*, 2007). Additionally, tailored messages can now be readily constructed and efficiently delivered to large populations using widely available, low-cost software programs like the Michigan Tailoring System (Kullgren *et al.*, 2013).

How tailoring financial incentives to goals, values, and aspirations could promote integrated regulation and sustained behavior change

Integrated self-regulation for healthy behaviors could be achieved by tailoring the messages around provision of financial incentives for healthy behaviors to facilitate integration of these behaviors with each individual's intrinsic goals, values, and aspirations. Such integrated regulation could potentially be realized by first eliciting and acknowledging people's goals, values, and aspirations and then facilitating each person's appreciation for how both the financial incentive for a healthy behavior and the incentivized healthy behavior itself could help them achieve their goals, values, and aspirations.

Goals, values and aspirations could be elicited at scale through existing mechanisms used to collect health-related information from individuals. These mechanisms include annual HRAs or interactive wellness programs that utilize web or text message-based communications. Typically such efforts to collect data from individuals have focused on identifying their behavioral risk factors and then feeding generic information about

risk factors back to these individuals. These efforts could be leveraged to also collect information from each individual about their goals, values, and aspirations.

To accomplish this type of automated data collection, one would ideally use a strategy to measure goals, values, and aspirations that has been previously used successfully, is applicable across populations, and could be readily integrated into HRAs and other wellness initiatives. Two promising data collection strategies meet these criteria: the Aspiration Index (AI); and lists of population-specific goals, values, and attributes that have been used in multiple previous studies of tailored interventions.

The AI

The first option is the AI, a scale that asks respondents questions about five goals related to each of seven categories of aspirations: wealth; fame; image; meaningful relationships; personal growth; community contributions; and good health. For each goal, participants rate the goal's importance to themselves, their beliefs about the likelihood of attaining the goal, and the degree to which they have already achieved the goal. For each question, participants choose a number on a 1 to 7 scale, with 1 indicating "not at all" and 7 indicating "very." To calculate scores for each aspiration's importance, likelihood of attainment, and current degree of achievement, the respective scores for each of the five goals that correspond to each aspiration are summed. The full AI scale is lengthy (105 questions), but because this strategy for tailoring financial incentives would rely only on data about individuals' most important aspirations (and not their beliefs about the likelihood of attaining aspirations or the degree to which they have already achieved aspirations), one could use only the 35 items from the AI that ask individuals to rate the importance on a 1 to 7 scale of each of the 35 goals. These 35 items would then enable calculation of a score for each aspiration that would be based on the sum of the scores for each of the five goals that correspond to that aspiration. For each individual these seven scores could then be ranked so that the aspirations with the highest scores could be deemed that individual's main aspirations. The AI has been shown to be valid and reliable in 15 different cultures (Grouzet *et al.*, 2005) and has been frequently used in psychology research (Konkoly Thege *et al.*, 2009; Niemiec *et al.*, 2009; Sabzehara *et al.*, 2014; Steffen, 2014).

Population-specific lists of goals, values, and aspirations

While the AI is a promising way to elicit from individuals their goals, values, and aspirations, there could be limitations to the application of this tool. Some of the categories in this scale could, for example, lack resonance in certain populations. Specifically, some of the categories are broad (e.g. "meaningful relationships") and it is possible that more specific goals, values, and aspirations could have more meaning to participants (e.g. "being a good spouse"). Hence, a more targeted approach would be to adapt one or more lists of goals, values, and aspirations that have previously been used for tailoring in behavioral intervention studies (Resnicow *et al.*, 2002, 2005, 2008, 2009; Resnicow and McMaster, 2012). In these studies participants first selected from a prespecified list the goals, values, and aspirations that were most meaningful to themselves. Then they were encouraged to reflect on how a particular behavior change might affect these important goals, values, and aspirations. In each study the specific list of goals, values, and aspirations was customized to the target population. An example list is shown in Table II. While such population-specific lists of goals,

values, and aspirations could potentially have more resonance with individuals than the AI, a practical challenge to implementation of a population-specific list is that this would require *de novo* construction of such a list each time tailored incentives are offered to a new population.

The importance of optimizing elicitation of goals, values, and aspirations

Because in many populations there have been no studies of interventions that are tailored to individuals’ goals, values and aspirations, it is unclear *ex ante* which values clarification process – the AI measure or a list of goals, values, and aspirations – would be optimal in a particular environment. This is an important consideration for intervention design because messages that are tailored to elicited goals, values, and aspirations will only facilitate integrated regulation and thus autonomous motivation for reduction of behavioral risk factors insofar as they truly target each individual’s valid and deep-seated goals, values, and aspirations. Consequently, if such a tailored intervention were to be pursued in practice, it would be necessary to first pre-test the tailoring strategy. Individuals in the target population could carefully examine each of the two options for eliciting goals, values, and aspirations and then suggest which approach or combination of approaches is most applicable. To ensure that varied perspectives are represented at this formative stage, it would be important for this group to be as diverse as possible with respect to age, gender, ethnicity, and occupation.

Theoretical considerations in designing tailored incentives for healthy behaviors

After optimizing the process for eliciting goals, values, and aspirations in a particular population, a library of tailored messages could be developed. In this library, there would be a separate message that would correspond to each goal, value, and aspiration. Each message would contain two components, each of which would engage a distinct strategy.

The first component would suggest that a financial incentive earned for engaging in a measurable healthy behavior (e.g. losing weight, increasing physical activity, or quitting smoking) could be used to pursue a goal, value, or aspiration that is meaningful to the individual. This component would aim to make the incentive more consequential by helping individuals envision ways they could use earned incentives for value-concordant purposes. In this first part of the tailored message, it would be important to build in encouragement for individuals themselves to identify ways they

Aspiration index		Example list of population-specific goals, values, and aspirations	
Wealth	Relationships	Good parent	Attractive
Fame	Community	Good spouse/partner	Disciplined
Image	Health	Good community member	Responsible
Personal growth		Strong	In control
		On top of things	Respected at work
		Competent	Athletic
		Spiritual	Not hypocritical
		Respected at home	Energetic
		Good Christian (or Jew, Muslim, etc.)	Considerate
		Successful	Youthful

Table II.
Comparison of two options for eliciting goals, values, and aspirations

could use the incentive to achieve their goals so as not to be overly proscriptive. Encouraging individuals to reflect on and generate their own ideas would further help build their autonomous motivation.

An alternative to this approach would be to require that the financial incentive be used for a value-concordant purpose (e.g. for a donation to a specific community-based organization or cause for an individual whose dominant aspiration is community contributions). This type of approach, however, would be much less feasible and, perhaps more importantly, would carry a higher risk of being ineffective because it could easily be perceived as controlling (Williams *et al.*, 2005). When people perceive such external control they are less likely to internalize and integrate their values and aspirations (Williams *et al.*, 2002).

The second component of the message would elicit consideration of how engagement in the healthy behavior itself could help one pursue that same goal, value, or aspiration. This component would aim to help individuals perceive healthy behaviors as being concordant with their values so as to promote integrated regulation – and thus autonomous motivation for these behaviors – that is independent of the incentive. In this way, if an incentive were administered only for a defined period of time and then removed, integrated regulation for the incentivized behavior and autonomous motivation to engage in the behavior would persist, resulting in sustained engagement in the behavior.

These two intervention components are related yet clearly distinct. We hypothesize that this combination is necessary to overcome the present-biased preferences that often preclude initial engagement in healthy behaviors (through the first component) and promote the autonomous motivation that is key to sustained engagement in healthy behaviors (through the second component) (Figure 1). However, it would be interesting and highly useful to both practitioners and researchers to isolate the independent and combined effects of these two strategies. These independent and potentially interactive effects (e.g. if the provision of a financial incentive moderates the effects of messaging about how engagement in a healthy behavior is consonant with values) could be determined through a 2 × 2 factorial design intervention study.

Practical considerations for delivering tailored financial incentives

To illustrate how this tailoring approach could be implemented in practice, imagine a middle aged obese man with a strong family history of T2DM who completes an annual HRA that his health insurer offers. This HRA collected information not only about his body mass index but also his goals, values, and aspirations. The HRA revealed that his primary aspiration is to be a good parent. Following the HRA, his health insurer offers him a financial incentive to achieve a weekly weight loss goal. Instead of a typical offer of a simple financial reward for achieving the weight loss goal, he receives the following tailored messaging about the financial incentive he could earn if he achieves the weight loss goal: “If you achieve your weekly weight loss goal you will receive a financial reward of \$X. What are some ways you might use this reward to pursue your goal of being a good parent, or to do something else you value? Further, achieving a healthy weight can itself help you be a good parent, for example by staying active with your children and being a good role model for them. What are some ways for you weight loss could help you be a good parent and achieve other goals you have?”

Because such tailored incentives would be a novel departure from how incentives for healthy behaviors have traditionally been delivered, this strategy would present new challenges. First, existing processes for how incentives are framed and delivered would

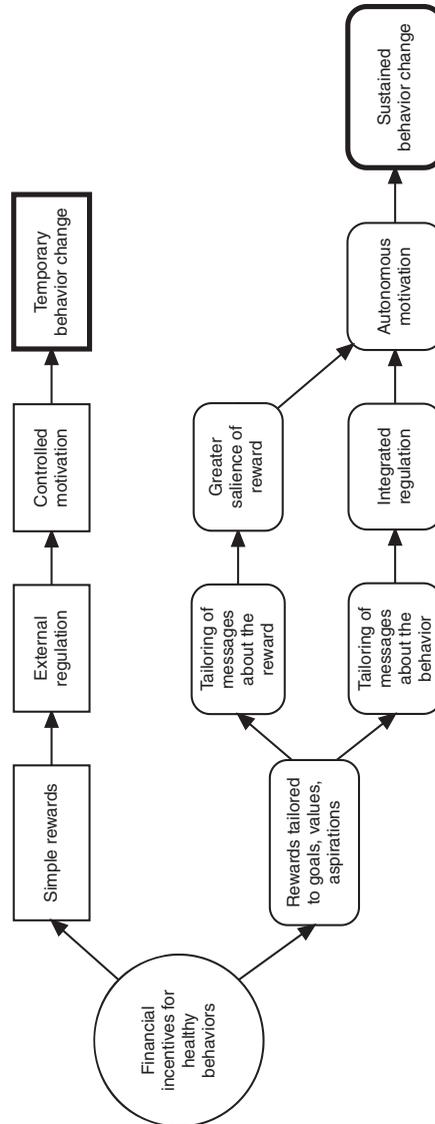


Figure 1.
Conceptual model

need to be modified. Second, and as noted earlier, measuring individuals' goals, values, and aspirations with a high degree of validity and reliability would be integral to effective tailoring. In particular, though the AI has been well studied, population-specific measures of goals, values, and aspirations may not have undergone such rigorous evaluation. Third, it is unknown how long tailored incentives would need to be delivered to achieve integrated regulation for targeted health behaviors. Thus, empirical evaluation is needed to determine the dose and duration of tailored incentives that are needed to achieve integrated regulation. These challenges are important yet surmountable, and would need to be overcome in order for tailored incentives to yield meaningful improvements in population health.

Conclusions

There is tremendous and growing worldwide enthusiasm among employers, insurers, and policymakers for incentivizing healthy behaviors. Therefore this is an especially opportune time to test ways to improve on the effectiveness of incentives in promoting sustained behaviors that can reduce employees' risk for chronic conditions. Previous efforts to improve the design of financial incentives have typically tested different incentive designs that vary the size, schedule, timing, and target of incentives (Jeffery, 2012). Notwithstanding minor differences in their details, all designs tested to date have provided a pure financial reward or penalty for engaging in a behavior or set of behaviors. Accordingly, all of these designs have exclusively promoted external regulation. It is thus not surprising that these interventions have often failed to produce sustained behavior change once incentives are stopped.

The strategy for tailoring incentives that we have laid out represents a novel departure from this previous work. Our approach would for the first time integrate key insights from behavioral economics, SDT, and tailoring into a strategy that would aim to turn an extrinsic reward for behavior change into an internalized, self-sustaining motivator for long-term engagement in risk-reducing behaviors. Historically, behavioral economics and SDT have taken very different positions on the use of financial incentives to spur behavior change, with behavioral economists trumpeting the promise of financial incentives and SDT theorists underscoring the threat that incentives could pose to autonomous motivation. Our intervention would bridge this disciplinary divide by linking the power of incentives to counter present-biased preferences with an approach that supports autonomy and integrated regulation. This combined strategy could ultimately be more effective and less likely to produce unintended consequences than financial incentives alone.

If such tailored incentives prove to be more effective than non-tailored financial rewards in promoting autonomous motivation and sustained behavior change, this strategy could transform the ways in which employers, health insurance plans, and government agencies deliver incentives. Instead of offering simple financial rewards for engaging in healthy behaviors, these stakeholders could leverage their existing wellness initiatives to more effectively promote sustained health improvements. Specifically, a small number of questions could be added to HRAs and other wellness programs to elicit individuals' goals, values, and aspirations. Then the information that accompanies financial incentives for healthy behaviors could be tailored accordingly. Because this strategy would only require a refocusing of existing health promotion programs, it would be much more likely to be rapidly disseminated and scaled than the creation of a new resource-intensive program. Further, such tailored incentives could be applied to promote sustained reduction in a variety of behavioral risk factors for chronic disease such as low levels of physical activity, unhealthy eating, and tobacco use. Because of the tremendous promise of this approach, research is urgently needed to examine its effectiveness in promoting healthy behaviors among at-risk individuals.

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