

## THEORY-DRIVEN APPROACH FOR FACILITATION OF PLANNING HEALTH PROMOTION OR OTHER PROGRAMS

Huey-tsyh Chen  
Department of Health Behavior  
School of Public Health  
University of Alabama at Birmingham  
Birmingham, Alabama

**Abstract:** This article revises and extends Chen's (1990) theory-driven framework to address program development. The theory-driven approach to program development is useful for evaluators to facilitate stakeholders in strengthening program plans before implementation. Using this approach, evaluators are able to assist stakeholders in systematically developing a program theory for what they are proposing to do in a program. The theory-driven approach can ensure that crucial components and steps are systematically incorporated into the program plan. This article discusses in detail strategies and techniques for applying the theory-driven approach to program planning and development. It also provides two concrete examples of health promotion programs to illustrate such application.

**Résumé:** Le présent article révisé et élargit le cadre axé sur la théorie proposé par Chen (1990) visant l'élaboration de programmes. La méthode axée sur la théorie dans l'élaboration de programmes permet aux évaluateurs d'aider les intervenants à renforcer les plans relatifs au programme avant sa mise en oeuvre. Grâce à cette méthode, les évaluateurs sont en mesure d'aider les intervenants à élaborer, de façon systématique, une théorie pour ce qu'ils se proposent de faire dans un programme donné. La méthode axée sur la théorie peut permettre de s'assurer que les composantes et les étapes cruciales soient systématiquement intégrées au plan du programme. Cet article présente une discussion détaillée des stratégies et des techniques d'application de la méthode axée sur la théorie à la planification et à l'élaboration des programmes. Il fournit également deux exemples concrets de programmes de promotion de la santé qui illustrent cette application.

---

Corresponding author: Professor Huey T. Chen, School of Public Health, University of Alabama at Birmingham, RPHP 227, 1530 3rd Ave S., Birmingham, AL, USA 35294-002; <hchen@bmu.dopm.uab.edu>

The theory-driven approach has found increasing application in evaluating programs. These applications cover a variety of areas, especially in health promotion programs such as family caregiver empowerment (Heflinger, Bickman, Northrup, & Sonnichsen, 1997), nursing intervention (Sidani & Braden, 1998), child and adolescent mental health services (Birleson, Brann, & Smith, 2001), school accreditation (Turnbull, 1999), drug prevention (Donaldson, Graham, Piccinin, & Hansen, 1995), work site health promotion (Donaldson et al., 1995), teen pregnancy and parenting (Sielbeck-Bowen, 2000), community initiatives (Connell, Kubisch, Schorr, & Weiss, 1995; Fulbright-Anderson, Kubish, & Connell, 1998), diabetes intervention (Tudor-Locke, Myers, & Roger, 2001), and HIV prevention (Chen, 2001). Furthermore, the scope of applications has expanded from outcome and implementation stages to the program planning stage (Centers for Disease Control and Prevention, 1999; Clapp & Early, 1999; Friedman, 2001; Sielbeck-Bowen, 2000; Tudor-Locke et al., 2001). Such applications have partly resulted from growing awareness that program implementation and effectiveness are affected by the quality of program planning. In addition, in terms of utilization of evaluation results, the earlier that program evaluation strategies and techniques are incorporated into the planning stage, the easier it is for program directors and implementers to apply evaluation feedback in improving programs. It is much easier for program staff to modify a program during the planning stage. Once a program is established and on its way to becoming routine, enacting substantive change can be difficult, even if evaluation results strongly indicate the need for modification.

In spite of its promise, the strategies and issues in applying the theory-driven approach in program planning have not been formally and systematically discussed. For example, it is well known that evaluators need to clarify stakeholders' program theory, but it is less clear on what methods can or should be used. Similarly, different theorizing techniques are available for evaluators to use, but the trade-offs in using these options have not been discussed. Furthermore, facilitating the stakeholders in clarifying or developing their program theory requires evaluators to take on additional roles. What are these roles and how do they relate to traditional assessment?

This article explores and addresses the following issues:

- extending and revising the Chen (1990) conceptual framework of a program theory of the program planning and development process

- discussing strategies and steps in applying the theory-driven approach in program planning and development
- using two health promotion programs as concrete examples for illustrating such an application.

### CONCEPTUAL FRAMEWORK OF PROGRAM THEORY FOR PROGRAM PLANNING AND DEVELOPMENT

An intervention program is usually based on a set of explicit or implicit assumptions about what actions need to be taken in order to attain program goals and a rationale for why these actions will achieve the intended goals (Chen, 1990). More specifically, some of these assumptions are prescriptive in nature and address issues such as the goals the program should pursue, the target group that should be selected, the intervention or treatment that is needed, and how to implement the program. A systematic relationship of prescriptive assumptions in a program is called an “action model.” The other assumptions are descriptive in nature, for example, describing why the intervention or treatment would lead to goal attainment. The systematic relationship, in causal chains, of the assumptions underlying a program is called a “change model.” Literature in program theory (e.g., Bickman, 1990; Birckmayer & Weiss, 2000; Lipsey, 1993; Weiss, 1997) has focused on the change model, but both action and change models are essential for a program. If the action model of a program cannot actually be implemented in practice, the integrity of the program is damaged. If the change model of a program is invalid, the program cannot activate the necessary causal mechanism to attain its goals.

The quality of the action model and the validity of the change model underlying a program can determine the effectiveness of a program. A systematic combination of the action and change models is called program theory. In general, program theory is a specification of what must be done to achieve the desired goals and address other important impacts that may also be anticipated, in addition to addressing how these goals and impacts would be generated. The original framework of program theory proposed by Chen (1990) was mainly for evaluation purposes, but it can be extended to program planning and development.

Program stakeholders, such as program designers, decision-makers, and implementers, are responsible for developing and managing a program. They may have a lot of ideas and information on the

assumptions underlying a program, but these ideas and information are very often fragmented and incomplete. Evaluators can assist stakeholders in clarifying their ideas into a systematic program theory. By asking the stakeholders appropriate questions, evaluators are able to help stakeholders to think through what they are proposing to do and why. The evaluator is able to probe and ask focused questions to ensure that the stakeholders have clearly identified the problem to be addressed, the factors or determinants that influence the problem, the intervention or treatment proposed to address the determinants, the necessary activities needed for implementing the intervention/treatment, and the outcome measures that will be used to determine if the problem was resolved. The evaluators' job in this case is to clarify stakeholders' program theory or assist them in developing their program theory. The facilitation process consists of the following procedures:

1. *Specify the overall goals or purposes of the program.* Goals are the desirable ends for a program to achieve, such as reducing crime or promoting health. At the beginning, stakeholders and evaluators need to discuss and specify the overall goals that the program will attempt to achieve or the problem that the program will attempt to solve, for what target group, and in which geographic area or region.

2. *Specify the change model.* Once the overall goals are set, stakeholders and evaluators can work on the causative model of a program. The change model consists of three elements:

- (a) *Outcomes.* Goals are often stated in an attractive but vague way in order to build coalitions, attract support, and obtain grants. However, in designing the program and devising implementation strategies, program goals need to be stated in measurable terms, which are called outcomes or outcome measures. Without outcomes, it is difficult to understand the exact content and meaning of the goals, to conceptualize the problems and formulate strategies to deal with them, or to assess the effectiveness of the program. Furthermore, program staff and other stakeholders also need outcomes in order to understand how their daily activities are related to program goals and in what direction the program is moving.

- (b) *Determinants.* In order to attain an outcome, the cause of a problem and the leverage or mechanism to make a change need to be identified. More specifically, each program must identify a leverage

or mechanism upon which it can develop a treatment or intervention. This assumption is that, once the program has activated the identified leverage or mechanism, its goals will soon be achieved. Naturally, what is identified as the leverage or mechanism is often related to the program designers' understanding of the cause of the problem faced. The cause is also changeable. There have been program designers, for example, who believe that school students' poor performance arises from a lack of parental involvement and that parents are the appropriate focus for a program to improve student performance. These program designers saw in parental involvement the leverage or mechanism to help students perform better; for them it followed that, if the program activated parental involvement, school performance would improve. With a leverage or mechanism identified, they could move on to figuring out how parents could be encouraged to care about school and trained to help children complete homework assignments. The leverage or mechanism is called the intervening variable, mediating variable, or determinant, and for this article the latter term has been chosen. The accuracy of the assumptions about the determinants for a particular problem can affect the effectiveness of the program. However, stakeholders tend to skip over the issue of determinants while planning the program. Evaluators could be helpful in clarifying, fine-tuning, or developing stakeholders' views of the determinants of a program.

(c) Intervention or treatment is the core activity in a program attempting to affect a determinant. Since the intervention or treatment is the driving force in a program, the consumers need to receive or be exposed to the intervention or treatment in order to bring about the change. Evaluators can help stakeholders to clarify the exact nature of the intervention or treatment in terms of components, strength, and duration. For example, a treatment program for persons committing domestic violence may consist of 10 weekly, three-hour, therapist-led group sessions to address the identified determinants of the problem. It is very helpful for stakeholders to provide information about where the idea of the proposed intervention originated. The idea for the intervention or treatment could come from previous experience, similar programs, research, social science theory, or a hunch. Knowing the source of the idea facilitates the process of fine-tuning the proposed intention or treatment and the program as whole.

3. *Specify the action model.* The action model is a blueprint of organized activities that support the delivery of the intervention to

the target group. A well-thought-through action model can enhance the implementation and ensure the integrity of the intervention service delivery. More specifically, an action model consists of the following elements:

(a) Organizing an implementation system. The implementation system is an organizational and inter-organizational arrangement for coordinating resources and staff for planning and implementing a program. One of the important issues to be considered in this system is identification of the kind of organizations suitable for implementing the program. The program needs to ensure that the organizations selected to implement the program have the capability or a history of working with the target population and have culturally sensitive staff to deliver the services. Other important issues in this system include who is qualified to deliver services and which organizations and agencies to collaborate with in order to deliver services.

(b) Defining, reaching, and screening target group(s). A program needs to define the target group(s). If the service is in high demand, the program needs to establish eligibility criteria and screen applicants to assure that only eligible clients are enrolled for services. The program also needs to develop effective strategies to reach the target population. A program would be regarded as a failure if the program serves the wrong target group or fails to reach enough people in the target group. Evaluators can help stakeholders clearly lay out eligibility criteria and strategies for reaching and screening the target group.

(c) Motivating clients and removing barriers to participation. A program needs to have strategies in place not only to enroll clients, but also to motivate them for participating in and accepting the program. Stakeholders and evaluators need to identify potential barriers, such as lack of childcare or transportation or stigma attached to participating in the program, and set up strategies to address the barriers.

(d) Designing intervention, delivery mode, and setting. The intervention proposed in the causative model is the fundamental force for producing change. In reality, the intervention is not a stand-alone activity. In actual implementation, the intervention is delivered through a delivery mode and carried out in a specific setting. The delivery mode refers to the channels that implementers use to deliver service to clients, such as phone conversations, brochures,

magazines, face-to-face contact, small groups, mail, or electronic media. The setting refers to the place in which the service delivery takes place (such as an office, home, street, or hospital) or the climate or atmosphere of the interaction (such as authoritarian, friendly, formal, or informal). In designing a program, it is important not only to design the intervention, but also to consider the appropriate delivery mode and setting to complement the intervention. An inappropriate delivery mode or setting can ruin a potentially effective intervention or treatment. A clear delineation of the delivery mode and setting for a particular intervention can reduce confusion in subsequent implementation.

(e) Contextual support for intervention. Contextual support refers to a supportive environment that facilitates the intervention or treatment processes. This includes support from family members, friends, or community. Clients are more likely to participate and stay in a program if there is strong support from their family and friends for participating in the program. In addition, in some programs, it is extremely important to have community support in order to survive. For example, establishing a program such as a halfway house for ex-offenders or a soup kitchen for the homeless could provoke strong objections from neighbours. Programs of this type need to build community support before implementation.

4. *Fine-tune and diagram program theory.* Evaluators and stakeholders may often need to reassess the process of clarifying stakeholders' program theory by utilizing Procedures 1 to 3 a few times in order to reach a version of program theory that is realistic and practical.

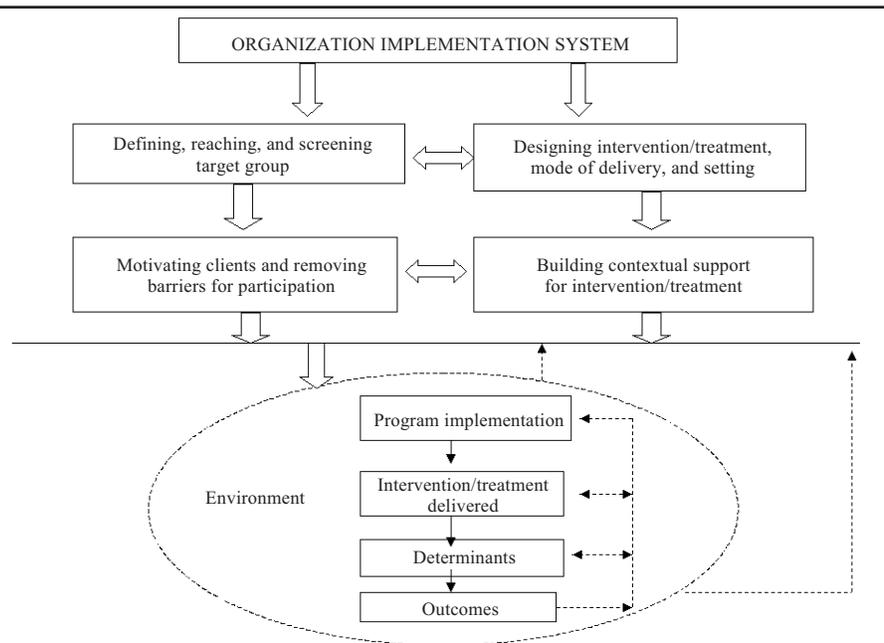
The summary of a program theory is usually presented in a diagram. The diagram of a program theory is illustrated in Figure 1.

The top of Figure 1 is the action model. A program must organize an implementation system to implement the program. That includes defining, reaching, and screening the target group for the program, as shown on the left. The program could also motivate clients and remove the barriers to participation. As shown in the top right of the figure, the implementation system needs also to develop the intervention and its related mode of delivery and setting. It would be even better if the implementation system could also build contextual support for carrying out the intervention. The bottom of Figure 1 is the change model. This portion of the figure indicates that the

program as shown in the action model needs to be systematically implemented in an environment, such as a community or society. The result of the implementation is that the intervention is delivered to the target group, hopefully as intended. As shown in the bottom of the figure, when the intervention is delivered, the operation of a change model is expected to kick in. The intervention is supposed to causally change the determinant, which in turn, will causally affect the outcomes.

It is important to point out that the wide-shafted arrows in the figure refer to an event or action taken before another event or action. For example, the double arrow from the implementation system to the target group means that the implementation system is created first in order to reach the target group. The relationship between activities is different from the causal relationships shown in the causative model, presented as a single-shaft arrow, which indicates an event or variable causally affecting another variable. For example, the arrow from the intervention to the determinant indicates that a change in the intervention would lead to a change in the determinant, which, in turn, is expected to achieve the desirable goals.

**Figure 1**  
**Conceptual Framework of Program Theory**



It is also important to point out that the causal processes in the change model are constrained or moderated by their external environment and by how the program is implemented. For example, the effect of an intervention on a determinant may depend on the quality of the implementers. Furthermore, the dotted-line arrows in the figure indicate evaluation feedback for program improvement. For example, the dotted-line arrow from the implementation to the action model indicates evaluation information as to whether the action model is implemented, as it should be. This information is useful for improving the program.

The conceptual framework as illustrated in the figure clearly highlights the dynamic and complex nature of a social or action program. Any one of the elements in program theory could be problematic and may lead to overall program failure. For example, if a program fails to reach the target group or too few clients are willing to participate in the program, the program as a whole is considered a failure. Similarly, if the program chooses a wrong determinant or the intervention fails to activate the determinant, the program will fail to achieve its goals. The collaborative program theory development is a strategy for stakeholders to ensure that the program is well thought through and that potential problems are identified and addressed for program enhancement, successful implementation, and effectiveness in reaching goals.

#### ISSUES AND STRATEGIES FOR APPLYING THE THEORY-DRIVEN APPROACH

Evaluators need to be familiar with the following issues and strategies in order to apply the theory-driven approach for program planning and development purposes:

##### Reviewing the Existing Documents and Materials

To start the process, evaluators need to review the existing documents or materials related to the program, such as brochures, pamphlets, grant applications, and memos. Such review not only provides evaluators with general information about the program, but also can shorten the time required for the subsequent interviews with stakeholders. It may also be helpful for the evaluators to visit a program site to become familiar with a program, if the program is already implemented.

### Evaluators' Role in Program Planning

Two important questions for evaluators participating in a program planning working group are what role should the evaluators play in the group, and how can evaluators contribute? A program theory is the stakeholders' program theory. In using the theory-driven approach for program planning, the evaluators' roles are as facilitator and consultant, with the task of assisting stakeholders in developing their program theory. As facilitators, evaluators use their skills and knowledge of program evaluation during meetings to help stakeholders clarify, articulate, and develop their views and ideas of the program theory. Having different backgrounds, interests, and concerns, the members of a planning group could spend a lot of time loosely discussing issues without reaching any agreement or consensus. As a facilitator during meetings, an evaluator can outline the important issues to help stakeholders contribute their experience, thought, and expertise to the discussion, after which the evaluator can synthesize the discussions and build support.

The evaluators can also be helpful in the role of consultant. Being a consultant means that when stakeholders seek advice on evaluation-related issues, evaluators can draw on their experience and expertise to provide suggestions and options for stakeholders to consider. The consultant role implies that evaluators should avoid imposing their own values on stakeholders. It also means that evaluators should not refrain from speaking out or presenting their ideas for discussion with stakeholders, especially when they have a good idea to offer.

### Selecting a Participatory Mode for Working with Stakeholders

As stated earlier, program theory is stakeholders' theory, and therefore, evaluators need to work with representatives from multiple stakeholder groups in the theorizing process. Broad-based participation in the formulation of program theory avoids design blindness and confusion in implementation (Friedman, 2001). In general, the development of program theory with inputs from multiple groups enhances stakeholders' feeling of ownership and utilization of the program theory. There are two general participatory modes that evaluators can use to assist stakeholders in developing program theory: the intensive interview format and the working group format. Stakeholders and evaluators need to make a decision in the very beginning on which format to use.

### Participatory Modes

*Intensive Interview Format.* In this format evaluators have individual, intensive interviews with representatives from each key stakeholder group to get their views on issues related to the program theory. Based upon these interviews, evaluators then formulate an initial draft of the program theory. The draft is then sent to the participants and other key stakeholders for comments before finalization. Evaluators could also bring the representatives together in a meeting to fine-tune and finalize the program theory.

*Working Group Format.* In a working group format, a working group composed of representatives from key stakeholder groups develops the program theory. Ideally, the members of the group include representatives of those heavily involved in designing or providing crucial input into formulating the program, those who will implement the program, other key constituencies who have a strong influence on the direction of the program, and a facilitator. For a small program, this means a few persons. For a large program, there is a temptation to include many persons in the meetings. The problem is that too large a group might discourage full participation and require many more sessions to finish the work. Usually, it is a good idea to keep the size of the group to not more than 15 persons.

Often, in a small group, the atmosphere of discussion is casual, and an evaluator can serve as both facilitator and consultant. In a large group, especially if the group members are highly diverse and vocal, it is difficult for an evaluator to serve as both facilitator and consultant at the same time. It usually requires at least two evaluators in the meeting — one serving as facilitator, the other as consultant.

### Choosing a Participatory Format

There are pros and cons to each participatory format. The intensive interview format is more efficient, as it is easier to arrange meetings and complete tasks with fewer people involved in each meeting. Intensive interviews often provide a more comfortable and secure setting for participants to talk and provide evaluators more opportunity to probe stakeholders' view than the working group mode allows. The potential limitation of this format is that some stakeholders may complain that they only participate in part of the theorizing process. This is especially a problem for a large program with many

powerful stakeholders. The working group format has the advantage of showing that the program theory is developed in an open and inclusive manner, which may increase stakeholders' buy-in. However, this format often takes longer to finish than the intensive interview format. Furthermore, it is possible that a few highly vocal stakeholders could dominate the meetings. This problem might be alleviated if the facilitator can, at the beginning of the meetings, set rules for discussion that encourage full participation. However, a more serious problem with the working group format is that some stakeholders, such as those persons who may be lower on an organizational chart, may not feel comfortable expressing their opinions and may simply echo what the high-ranking officials say. As a result, the program theory may only reflect the views of those in authority. If this is a concern, the intensive interview is a better choice.

### Selecting a Theorizing Procedure

#### Theorizing Procedures

There are two general procedures to facilitate stakeholders in developing program theory: forward reasoning and backward reasoning.

*Backward Reasoning Procedure.* The backward reasoning approach starts developing a program theory from a change model and then goes step-by-step back toward the action model. Because this is in the opposite direction to the sequences shown in Figure 1, it is called backward reasoning. The theorizing approach discussed in the beginning of this article is the backward reasoning procedure.

*Forward Reasoning Procedure.* Forward reasoning formulates a program theory by following the same sequence as the logic flow specified in Figure 1: that is, action model first, then change model. More specifically, aiming at general program goals, this approach starts from the question of what kind of implementation system is needed for the program. This approach is then used to address the following questions: What target group needs to be reached and how will they be reached? Does the program need to remove barriers for clients? What kind of intervention for the target group is proposed and under what setting and delivery mode? Should the program designers seek contextual support for the intervention, and how should it be done? After the action model is completed, evaluators and stakeholders can develop a change model by asking the following questions in sequence: What determinants will be affected by

the intervention? What outcomes will be achieved by changing these determinants?

#### General Guide to Selecting a Theorizing Procedure

Although both backward reasoning and forward reasoning procedures can accomplish the task in formulating program theory, there are circumstances that favour one procedure over the other. The rule of thumb for selection is as follows:

(a) Generally speaking, when the focus of the program is on the change model and stakeholders are not heavily trained in social science methodology, the backward reasoning procedure is a good choice. The backward reasoning procedure starts the discussion from the domain of goals for a program, which is a subject that stakeholders enjoy discussing and that helps to break the ice. The subsequent questions, such as what are the causes of the problem, what intervention is needed, and how to design the intervention, fall well within the stakeholders' thinking.

(b) When the major focus of a program is the prescriptive model, the forward reasoning approach is better. The reason is that the prescriptive model specifies the critical programming steps related to service delivery. It is easier to use the forward reasoning procedure to clarify or develop the stakeholders' views of what needs to be done first and identifying what are the subsequent steps throughout the entire service delivery.

(c) When stakeholders and evaluators believe that unintended outcomes are an important issue for the program, the forward reasoning procedure is better. Because the backward reasoning procedure starts with a goal or a result and looks for ways to achieve that goal or result, the procedure is very likely to ignore unintended outcomes. On the other hand, the forward reasoning procedure starts from building the implementation system for reaching the target group and delivering the services and moves forward. Thus, the forward reasoning procedure has the advantage of identifying potential unintended effects. The evaluator can facilitate the discussion of unintended effects and how to deal with them, if they are not desirable.

(d) Forward and backward procedures are not mutually exclusive. If evaluators and stakeholders want the best of both worlds, they can apply the backward procedure first and then apply the forward

procedure to compensate for the weakness of the backward procedure. For example, if an evaluation focuses on both prescriptive and causative models, they could use the forward reasoning procedure to construct prescriptive theory, and the backward reasoning procedure to construct causative theory, then integrate them together as an overall program theory. In addition, there might be a situation in which evaluators and stakeholders find it difficult to proceed using one procedure, so they may switch to the other procedure to continue the discussion.

#### Preparing a Rough Draft for Facilitating the Discussions

In order to be useful, the development of program theory may need to meet a deadline, which is usually much shorter than desirable. It is time consuming to prepare, schedule, and execute interviews and meetings and compile the results for comments. This is especially true if every element and issue needs to be raised, discussed, and decided from scratch in the working group meetings or interviews. One strategy to shorten the process requires that evaluators, using the existing information related to the program, prepare a rough draft of the program theory for discussion. The rough draft specifies which parts of the program theory are available from the existing information, which parts are not clear, and which need intensive discussions. The rough draft provides a basis for stakeholders' comments and suggestions. The rough draft should be distributed to members of the working group or individuals to be interviewed for review before the meeting. With the rough draft, the discussions should be more focused and the comments and discussions more specific and useful. However, it is important to note that evaluators need to inform stakeholders that the purpose of developing the rough draft is just to speed up the process in order to avoid any potential misunderstanding that evaluators are pushing their own personal agenda.

#### UTILIZATION OF THE THEORY-DRIVEN APPROACH

The conceptual framework of program theory indicates the important elements and mechanisms that stakeholders need to pay attention to while developing a program. Evaluators can use the framework to facilitate or assist stakeholders in building a program and ensure that important issues are well thought through. The likelihood of the success of a program is increased not only by ensuring

that the crucial elements are in place but also ensuring that the program has selected the appropriate determinants and goals. More specifically, program theory is useful for the following aspects of program planning and development:

*Planning a New Program.* Stakeholders can benefit from having input from evaluators while formulating the program. Collaborative program theory development can serve as a framework for evaluators to assist stakeholders in developing a high quality program plan or “blueprint” that systematically outlines the direction in which the program is supposed to move, explains why the program activities are meaningful and are expected to work, serves as a basis for management to allocate resources and make other decisions, facilitates coordination among different units, guides the program staff’s day-to-day operation, and provides insight into how individual efforts fit into overall program activities.

*Clarifying the Existing Program.* It is not unusual to find an existing program in which stakeholders are unable to concisely describe the intervention or treatment, there is a lack of a systematic set of realistic goals that are actually being pursued, and program staff have difficulty explaining how their activities relate to program goals. These types of problems indicate serious flaws in the design of the program.

Program theory provides a framework that evaluators can use to facilitate various stakeholder groups in working together effectively to create a model of the program on which they can agree. Program theory systematizes stakeholders’ views and ideas about how the program is supposed to operate and why program activities lead to the attainment of program goals. Since issues of concern to stakeholders are formally discussed and taken into consideration in the development of a program theory, program theory not only encourages stakeholders to commit to and support the program, but also strengthens the consensus concerning program missions and the means to achieve them.

*Facilitating Communication about the Program.* The program director and staff need to communicate about the program with people inside and outside the program. The commonly used, lengthy, narrative descriptions of programs are time-consuming to read and make it difficult for people to figure out what the program is about or discuss an issue in a meaningful context. Program theory, devel-

oped through the collaborative process, provides a concise and understandable summary of the program that can facilitate communication about a program.

*Providing a Foundation for Program Evaluation.* Program theory can provide stakeholders and evaluators with an idea of what areas of the program need to be evaluated and what types of evaluation are required.

#### EXAMPLES OF APPLYING THE THEORY-DRIVEN APPROACH FOR PROGRAM PLANNING AND DEVELOPMENT

##### Designing a Physical Activity Intervention Program for Individuals with Type 2 Diabetes

In designing a physical activity intervention for individuals with Type 2 diabetes, Tudor-Locke et al. (2001) apply the conceptual framework of program theory to ensure that critical elements of the program were identified and included in the model. The critical elements of program theory underlying the program are illustrated in Table 1.

**Table 1**  
**Program Theory Underlying the First Step Program** (Adapted from Tudor-Locke, et al., 2001)

Problem	Critical Inputs	Mediating Processes	Expected Outcomes	Extraneous Factors	Implementation Issues
<ul style="list-style-type: none"> <li>• Sedentary population</li> <li>• High attrition from structured vigorous exercise program</li> <li>• Available guidelines vague, not well understood by program deliverers or recipients</li> </ul>	<ul style="list-style-type: none"> <li>• Self-structured</li> <li>• Moderate intensity</li> <li>• Walking</li> <li>• Follow-up contact</li> <li>• Individualized</li> <li>• Acceptable self-monitoring and feedback tools</li> <li>• Self-selected incremental goals:               <ul style="list-style-type: none"> <li>- Decision balance sheets</li> <li>- Self-contracts</li> <li>- Relapse planning</li> <li>- Readability, comprehension of materials</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Social cognitive theory               <ul style="list-style-type: none"> <li>- Self-efficacy</li> <li>- Outcome expectations</li> </ul> </li> <li>• Trans-theoretical model</li> </ul>	<ul style="list-style-type: none"> <li>• Short-term physical activity (walking)</li> <li>• Intermediate-term               <ul style="list-style-type: none"> <li>- Cardio-respiratory fitness</li> <li>- Cardio-vascular risk factors</li> <li>- Well-being</li> <li>- Glycemic control</li> </ul> </li> <li>• Long-term complications prognosis</li> </ul>	<ul style="list-style-type: none"> <li>• Characteristics               <ul style="list-style-type: none"> <li>- Participant</li> <li>- Intervener</li> <li>- Setting</li> </ul> </li> <li>• Social support               <ul style="list-style-type: none"> <li>- Peers</li> <li>- Professionals</li> <li>- Personal networks</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Recruitment, screening</li> <li>• Documentation, tracking</li> <li>• Follow-up contact</li> </ul>

Table 1 contains the major components discussed in Figure 1. For example, the elements of critical inputs, mediating processes, and expected outcomes in Table 1 are similar to the elements in the change model in Figure 1. The remaining elements (problem, extraneous factors, and implementation issues) are covered in the action model of Figure 1. The authors reported that the application of the theory-driven approach in the planning process enhanced the soundness and defensibility of the program. In addition, the program theory developed from such an application provided useful guidance for subsequent implementation and evaluation.

### Planning an HIV Prevention Program

Like many other articles in program theory, Tudor-Locke et al.'s (2001) article did not give any hint of strategies and steps used in their study leading to the completion of the program theory. These issues may be technical, but are important for further advancing the theory-driven approach. Another example is needed to demonstrate strategies and techniques used for clarifying stakeholders' program theory. The example used here is a federal government program announcement that supported the development and implementation of effective HIV prevention programs for African-American populations. The announcement included a section that described how community-based organizations should develop their program. The major required activities included:

- Developing program activities that are consistent with applicable State and local comprehensive HIV prevention plans or adequately justify addressing other priorities.
- Providing or assisting high-risk clients in gaining access to HIV counselling, testing, and referrals for other needed services.
- Conducting health education and risk reduction interventions for persons at high risk of becoming infected or transmitting HIV to others.
- Assisting HIV-positive persons in gaining access to appropriate HIV treatment and other early medical care, substance abuse prevention services, STD screening and treatment, reproductive prenatal health services, partner counselling and referral services, psychosocial support, mental health services, TB prevention and treatment, primary HIV prevention such as health education and risk reduction services, and other supportive services. High-risk

clients who test negative should be referred to appropriate health education and risk reduction services and other appropriate prevention and treatment services.

- Incorporating cultural competency and linguistic and developmental appropriateness into all program activities and prevention messages.

Developing program theory for the program activities in this announcement not only serves program planning and development needs, but also provides a basis for designing an evaluation to be conducted in the future. In constructing program theory, a working group was formed, consisting of a programming manager, three programming staff, and two evaluators. In order to facilitate discussion, a rough draft, developed from the announcement and previous interviews with programming staff, was distributed during the meeting. Because of the announcement focus on programmatic issues, the working group decided to apply the forward reasoning procedures as described in the previous section. After the meeting, a revised version of the program theory for the required program activities in the announcement was developed as illustrated in Figure 2.

**Figure 2**  
**Program Theory of an HIV Prevention Program Serving Minority Populations**

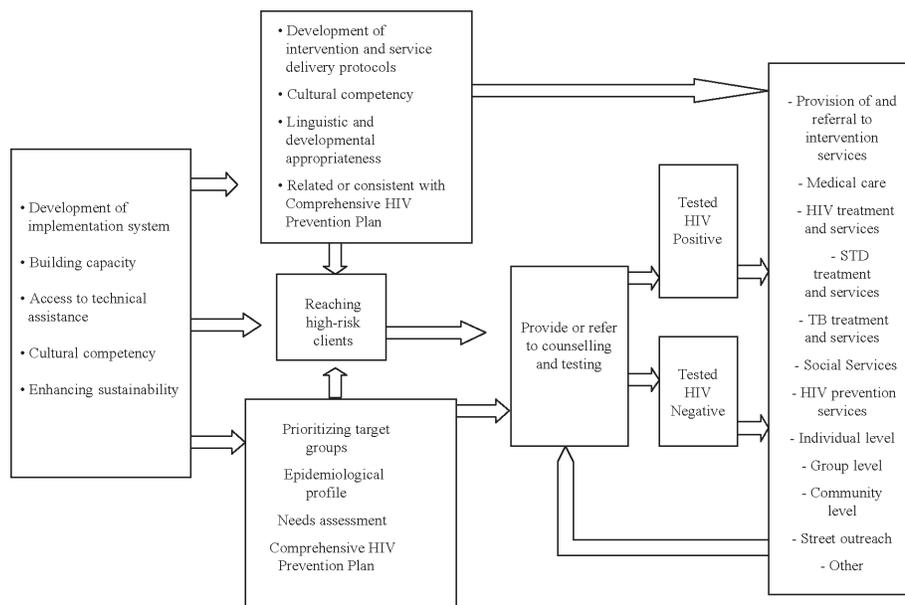


Figure 2 covers only part of the general conceptual framework provided in Figure 1 because of the limited focus of the announcement. The announcement emphasized issues related to the action model. In other words, this example does not illustrate the development of the portion of the change model of program theory. In this case, program designers were interested mainly in planning the required program activities. The program theory of Figure 2 was found by the working group to be useful in the following areas:

(a) The conceptual framework of program theory identifies critical elements and their relationship in a program. Participants found the conceptual framework was very useful in facilitating their understanding and communicating about the essential spirit and issues of the program requirements.

(b) By looking into assumptions underlying a program, the theory-driven approach helped to reveal which assumptions underlying a program may need to be further re-examined or discussed or what additional actions need to be taken to strengthen the program. For example, Figure 2 facilitated an interesting discussion on issues related to service routes. The announcement emphasized providing prevention services before knowing the clients' HIV status. Figure 2 furthered the discussion on what it would take to facilitate community-based organizations (CBOs) switching to an alternative route to provide prevention and other services.

(c) In applying the theory-driven approach, stakeholders were able to identify which components were addressed in this program or other programs. The conceptual framework of program theory was found to be useful in linking the program activities with related activities in other announcements. For example, there were separate announcements proposed on serving capacity building and coalition development needs for CBOs. The program theory illustrated in Figure 2 indicated that the coalition development and capacity building programs were linked to the elements (shown in Figure 1) of designing the intervention or treatment, mode of delivery, and the setting of the CBO activities. The clarification of the linkage issues facilitated the development of a conceptual framework for providing systematic guidance on future funding activities.

(d) The program theory facilitated the discussion between programming staff and evaluators about what kind of information in these elements would be most beneficial to them and timelines for having such information.

(e) The program theory also provided information about new areas that decision-makers and program designers can focus on in future programming. Those components specified in Figure 1 but not included in Figure 2 are potential areas for future attention. For example, Figure 2 suggests that future programming and announcements should consider issues related to motivating clients and removal of barriers to participation as well as how to build contextual support for interventions.

(f) After the program theory was formulated, it was easy for stakeholders and evaluators to agree upon the focus and strategy of evaluation. The program theory served as a basis to develop indicators and an evaluation design for evaluating the program.

## CONCLUSION AND DISCUSSION

In efforts to facilitate the application of the theory-driven approach in the planning process, this article expanded Chen's (1990) conceptual framework of program theory for evaluators to use in this area. This article offered detailed strategies and principles used in the theory-driven approach to guide evaluators in clarifying stakeholders' program theory. Two concrete examples were used to illustrate how a program theory is developed and how the program theory strengthens the overall quality of program planning.

The application of evaluation strategies and approaches to program planning is in a pioneering stage. A lot of theoretical and practical issues still need to be discussed and resolved. The author is currently working on two such issues. The first issue is whether or not it is appropriate for evaluators participating in program planning and development to evaluate the same program. The answer to this question may depend upon the nature of involvement (Chen, forthcoming). If evaluators are members of the program planning team responsible for designing the program, then evaluators' ability to make independent judgements of the merit of the same program is questionable due to the potential conflict of interest. In this case, the evaluators may conduct formative evaluation for program development purposes, but this is not appropriate for assessing the merit of the program. However, if the evaluators' role is as facilitator or consultant for clarifying stakeholders' program theory, they are not key members of the program planning team, making decisions in program planning. In this case, it is not a problem for evaluators to assess the merit of the same program. As a matter of fact, such

involvement may enhance evaluators' understanding of the nature of the program and stakeholders' views and needs, which, in turn, would increase the relevancy and usefulness of the evaluation. However, in order to alleviate the concern about objectivity, it is critical for the evaluators to explicitly state how the decisions and judgement were made so that objective persons can scrutinize the evaluation.

The second issue is mainstreaming evaluation. The usefulness of evaluation approaches for program planning as illustrated in the last section and other literature raises a hope of organizational adoption of evaluation approaches. Only through organizational adoption can evaluation be widely utilized in day-to-day program activities. However, the path from an evaluation demonstration to an evaluation adoption is long and complex. Taking the demonstration shown in the last section as an example, in order to have an organizational adoption of program theory as a planning tool, the following steps need to happen as a minimum: evaluators need to convince managers and project officers of the worthiness of such an organizational adoption; top management must provide strong and continuous support for such an adoption; evaluators need to develop an evaluation protocol with project officers' involvement and feedback; project officers need to be trained with the protocol; project officers need to write program announcements based upon the conceptual framework of program theory; the grantees, such as community-based organizations, need to be informed, trained, and assisted in fulfilling the new requirements; and project officers need to manage grant activities based upon the new framework and requirements. Each of these tasks is highly challenging, but an organizational adoption would need to go through all these steps (Chen, 2001). In this issue of mainstreaming evaluation, the author's research agenda is to examine knowledge and skills that would help evaluators navigate through political and bureaucratic arenas to promote greater utilization of evaluation.

#### ACKNOWLEDGEMENTS

The author is grateful for useful comments provided by anonymous reviewers and Robert Kohmerscher.

## REFERENCES

- Bickman, L. (Ed.). (1990). *Using program theory in evaluation. New Direction for Program Evaluation*, 33. San Francisco: Jossey-Bass.
- Birleson, P., Brann, P., & Smith, A. (2001). Using program theory to develop key performance indicators for child and adolescent mental health services. *Australian Health Review*, 24(1), 10–19.
- Brickmayer, J.D., & Weiss, C.H. (2000). Theory-based evaluation in practice: What do we learn? *Evaluation Review*, 24(4), 407–431.
- Centers for Disease Control and Prevention. (1999). *Evaluating CDC-funded health department HIV prevention programs*. Atlanta, GA: Author.
- Clapp, J.D., & Early, T.J. (1999). A qualitative exploratory study of substance abuse prevention outcomes in a heterogeneous prevention system. *Journal of Drug Education*, 29(3), 217–233.
- Connell, J.P., Kubisch, A.C., Schorr, L.B., & Weiss, C.H. (Eds.). (1995). *New approaches to evaluating community initiative. Vol. 1: Concepts, methods, and contexts*. Washington, DC: The Aspen Institute.
- Chen, H.T. (1990). *Theory-driven evaluations*. Beverly Hills, CA: Sage.
- Chen, H.T. (2001). Development of a national evaluation system to evaluate CDC-funded health department HIV prevention programs. *American Journal of Evaluation*, 22(1), 55–70.
- Chen, H.T. (forthcoming). *Practical program evaluation handbook: Assessing and improving program planning, implementation, and effectiveness*. Thousand Oaks, CA: Sage.
- Donaldson, S.I., Graham, J.W., Piccinin, A.M., & Hansen, W.B. (1995). Resistance-skills training and onset of alcohol use. *Health Psychology*, 14(4), 291–300.
- Friedman, V.J. (2001). Designed blindness: An action science perspective on program theory evaluation. *American Journal of Evaluation*, 22(2), 11–181.
- Fulbright-Anderson, K., Kubish, A.C., & Connell, J.P. (Eds.). (1998). *New approaches to evaluating community initiatives. Vol. 2: Theory, measurement, and analysis*. Washington, DC: The Aspen Institute.

- Heflinger, C.A., Bickman, L., Northrup, D., & Sonnichsen, S. (1997). A theory-driven intervention and evaluation to explore family care giver empowerment. *Journal of Emotional and Behavioral Disorders*, 5(3), 184–191.
- Lipsey, M.E. (1993). Theory as method: Small theories of treatments. In L.B. Sechrest & A.G. Scott (Eds.), *Understanding causes and generalizing about them. New Directions for Program Evaluation*, No. 57 (pp. 5–38). San Francisco: Jossey-Bass.
- Sielbeck-Bowen, K. (2000). Development of local program theory: Using theory-oriented evaluation to make a difference. *Field Method*, 12(2), 129–152.
- Sidani, S., & Braden, C.J. (1998) *Evaluating nursing interventions*. Thousand Oaks, CA: Sage.
- Tudor-Locke, C., Myers, A.M., & Roger, N.W. (2001). Development of a theory-based daily activity intervention for individuals with Type 2 diabetes. *The Diabetes Educator*, 27(1), 85–93.
- Turnbull, B. (1999). The mediating effect of participation efficacy on evaluation use. *Evaluation and Program Planning*, 22, 131–140.
- Weiss, C.H. (1997). How can theory-based evaluation make headway? *Evaluation Review*, 21(4), 501–534.

**Dr. Huey T. Chen** is a professor at the University of Alabama at Birmingham. He worked at the University of Akron until 1997 and joined the Centers for Disease Control and Prevention (CDC) of the United States as chief of an evaluation branch. Dr. Chen has contributed to the development of evaluation theory and methodology, especially in the areas of program theory and theory-driven evaluations. Recently, he has been working on a systematic conceptual framework and strategies that benefit evaluation practitioners in understanding tradeoffs among evaluation options at different program stages and how to choose an option as a basis for designing an evaluation that best serves stakeholders' needs.

