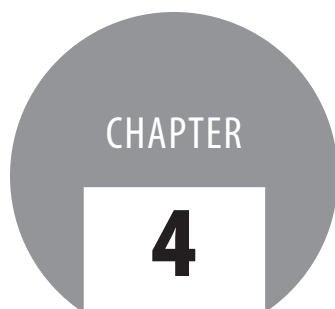




Foundation in Theory and Research: Increasing Awareness and Enhancing Motivation

OVERVIEW

This chapter describes key theories and research that help readers understand the important role of motivation in food choice and nutrition-related behavior change. It also describes how each theory can be translated into effective nutrition communication and education. It focuses on motivation to act and the key role of beliefs, feelings, and attitudes in providing *why-to* nutrition education.

CHAPTER OUTLINE

- Increasing awareness and enhancing motivation
- The health belief model
- The precaution adoption process model
- Theory of planned behavior
- Self-determination theory
- Translating behavioral theories into educational strategies for why to take action
- Summary

LEARNING OBJECTIVES

- At the end of the chapter, you will be able to:
- Describe key theories that help nutrition educators understand motivation for health and nutrition behaviors, in particular the health belief model and the theory of planned behavior
 - Describe how these theories have been used in research to investigate determinants of food choice and nutrition-related behaviors
 - Discuss how theories and research have been used in nutrition education programs to increase awareness and enhance motivation
 - Demonstrate understanding that the major task of nutrition education is to use theory to identify and design strategies to address potential mediators of change
 - Identify implications for designing nutrition education to increase interest, enhance motivation, promote active contemplation, and facilitate formation of intentions to take action
-

■ INCREASING AWARENESS AND ENHANCING MOTIVATION: WHY TO TAKE ACTION

People's food choices and eating patterns develop over a lifetime and are embedded in many aspects of their lives. Many people may not be entirely satisfied with how they are eating, but their patterns generally work for them, given their life circumstances and the trade-offs they need to make. Given the many competing desires and priorities in people's lives, health is not always uppermost. The first crucial step in making specific changes is for individuals to become aware of a need to change and to see what's in it for them to do so. When aware, interested, and motivated, people are more ready for information and skills that assist them to take action.

Research suggests that the adoption and maintenance of health behaviors are a process involving two main phases: a decision-making or deliberative phase, and an action or implementation phase (Schwarzer 1992; Abraham & Sheeran 2000). This means that nutrition education programs should consist of both a motivational pre-action phase or component and a postdecision action and maintenance component. It is recognized, of course, that humans are thinking, feeling, and acting wholes, so motivation or willingness to take action and the ability to act are closely related, each enhancing the other. It may be that for many individuals, problems with getting started and maintaining action rather than motivation or forming intentions prevent them from engaging in recommended healthful behaviors. Nevertheless, thinking about the behavior change process as two phases or components helps with the conceptualization and design of nutrition education programs.

Why take action? This chapter focuses on the first phase or component. It examines what nutrition behavior research and theory have found about how individuals become aware, interested, and motivated. Armed with that knowledge, nutrition educators can design programs to assist individuals move from not even considering action to thinking about it.

Cultural and social psychological beliefs are important here. People's beliefs, values, feelings, attitudes, and perceptions of social and cultural norms influence their health behaviors. These cognitive-motivational factors come from cultural, social, family, or personal sources. Prior life experiences, life stage, personality, family structure, and sociodemographic and historic factors also influence individuals' behavior. These, of course, are not modifiable by educational means. However, these factors affect *current* beliefs, attitudes, or self-identities that influence behavior, and these *can* be addressed by nutrition education.

Cultural Context

Consideration of cultural context is important in planning nutrition education. All humans are cultural creatures. People experience culture from the moment they are born; for example, in some cultures girl babies get pink clothes and boy babies, blue. Culture is concerned with shared knowledge and shared meanings, where *meanings* implies some complexity of belief or knowledge and a connection of values or feelings with beliefs (D'Andrade 1984). Cultural knowledge and values develop over time for the group or society in ways that help to promote its survival (LeVine 1984). Food, which is essential to survival, is not surprisingly very much part of culture. Culture defines what people should or should not eat and prescribes how to prepare food; where, when, and with whom it should be eaten; who does the shopping and cooking; and whose opinions are most important in the choice of family meals (Rozin 1982; Sanjur 1982; Kittler & Sucher 2001).

Differences in cultural values about health in general can also influence dietary practices. For example, some cultures, such as mainstream

American culture, emphasize personal responsibility or self-help in promoting individual health or preventing illness, whereas others may believe that chance or fate is more important. Although mainstream culture may emphasize personal choice in matters of food and eating, others emphasize the role of family in decisions related to food and health. Some view health from a biomedical viewpoint; others, experiential or psychosocial (Chesla et al. 2000). Some of these differing cultural norms are shown in **Table 4-1**.

Interactions of Culture and Social Psychological Factors

Children acquire their culture's beliefs and values both directly and indirectly (Spiro 1984). Direct influence occurs when the child is told explicitly about "facts," norms, values, and so forth about the culture (e.g., "We don't eat pork"). Indirect acquisition occurs through observing what other people do (norms), whether in interpersonal settings or

TABLE
4-1

Comparison of Some Common Cultural Values
Relevant to Dietary Behavior

Mainstream American Culture	Other Cultural Groups
Health and illness are located in the person.	Health and illness are long-term, fluid, and continuous expressions of relationships between an individual and others.
Illness is caused by natural etiological agents such as genes, viruses, bacteria, and stress.	Illness is caused by quasi-natural agents such as weather or various states of one's blood (e.g., thin, weak, or bad), or by violations of religious or moral expectations, emotions such as envy or jealousy, or punishment for misconduct.
Personal responsibility for health; importance of sense of control.	Chance, fate, and God influence health, illness, and healing.
Nutritional health is the result of deficiencies and imbalances in food components and nutrients in food.	Health is the result of the balance of forces in the body, such as hot-cold; imbalances cause illness, and health can be restored by balancing of hot and cold foods.
Self-help.	Societal or community obligation to assist.
Emphasis is on individualism/privacy.	Welfare of the group, interpersonal harmony are important.
Time is highly important.	Personal interactions are highly important.
Future orientation.	Past or present orientation; tradition is important.
Interactions emphasize directness and openness.	Interactions emphasize indirectness, importance of "face."
Informality and egalitarianism.	Status, formal relationships are important.

through media such as television, and making inferences from norms and cultural artifacts about the values of the culture. For example, if families within a culture spend a lot of time preparing healthful food (norms) and enjoying it, or if their kitchens are equipped for making healthful foods (artifacts), children growing up in that culture are likely also to value healthful food. Anthropologists suggest that this outcome is likely in part because there is a tendency for the descriptive understanding of one's culture—how things are—to become fused with a normative understanding—how things should be. LeVine (1984) comments, “The fusion of what is and ought to be in a single vision . . . gives distinctive cultural ideologies their singular psychological power, their intimate linkages with individual emotion and motivation” (p. 78).

Given these definitions and observations, culture can be seen as connected intimately with the intra- and interpersonal cognitive-motivational factors in food choice that are discussed later in this chapter. That is, the beliefs, attitudes, and values to be discussed are the same ones under discussion here; culture may be considered their primary source. The relation of culture to the food and physiological factors discussed in earlier chapters has been explored by Rozin (1982), who describes how mild social pressure may maintain the consumption of initially unpalatable foods until preference becomes internalized by liking for the taste, as with chili, or by other factors, such as addiction to coffee.

Social pressure of this kind tends to be consistent with the beliefs, values, and practices of the culture or subculture (e.g., adolescents, ethnic groups). However, cultural and social influences are distinguishable to some degree through the concept of internalization. Culture involves beliefs and values that are internalized or believed in widely among members of the group; as children acquire these beliefs and values, they become acculturated. Deutsch and Gerard (1955) distinguish two kinds of social influence: with *normative* social influence, people conform to others' wishes to gain social acceptance. Conformity to the family's wishes is of some importance earlier in life; later, the key reference group consists of peers. With *informational* social influence, people learn about reality from what others say and do. This learning, then, also influences people's values, attitudes, and actions.

Culture “Out There” and “In Here”

Researchers point out that culture “out there” is interpreted by the family and passed down to their children as family cultural traditions (Triandis 1979; Ventura & Birch 2008). Children in turn filter these family cultural traditions through their own personal experience with food to develop their own interpretations of their culture (Rozin 1982). Likewise, traditional cultures of immigrants and subcultures are interpreted by communities and families to varying degrees. Individuals filter these family and community interpretations of traditional culture through their own experiences with food and mainstream culture to create their own personal or family interpretations of their traditions and cultures. These interpretations result in different degrees of acculturation to mainstream culture, which need to be considered in nutrition education (Satia et al. 2002).

For example, some cultures believe that foods have “hot” and “cold” (or yin and yang) qualities and must be eaten to balance hot and cold body conditions to maintain health. However, individuals within a culture differ in the strengths of their beliefs about this interpretation of health and consequently on the extent to which these beliefs influence their health behaviors. Knowledge about the strength of these beliefs for a given audience can be useful in planning nutrition education (Liu & Contento 2004). Likewise, fate in some cultures is an important determinant of health behaviors. Again, members of the culture may

differ considerably in the strength of this belief. For other subcultures—where religiosity, racial pride, sense of time, and sense of community are important—individual differences exist and individual cognitive-motivational factors remain very important (Kreuter et al. 2003). In the case of breastfeeding, although cultural and family expectations are very important, individuals *still* differ in their opinions about these expectations (Bentley, Dee, & Jensen 2003).

All these considerations help nutrition educators recognize that individuals *internalize* the beliefs, norms, and values of their culture, and it is these personal interpretations that are powerful in people's lives (Triandis 1977). Some of these internalized cultural beliefs, norms, and values can be considered to be determinants of behavior and can be included as constructs in the theories and models described in this chapter, which can then be addressed in nutrition education research and activities directed at individual change.

Acculturation and Social Psychological Determinants to Study Food-Related Behaviors

Degree of acculturation may modify the social psychological mediators of diet-related behavior. Thus, a study of Chinese Americans examining health beliefs used the lens of culture and found that the social psychological mediators derived from theory were useful for all study participants, but were more predictive of behavior among those who were more acculturated (Liu & Contento 2004). A study of Latino adolescents found that gender and acculturation significantly modified the social psychological theory-based predictors of behavioral intention to eat a healthful diet (Diaz et al. 2009). Other cultural values may need to be more specifically addressed in nutrition education.

Understanding Motivations for Health Behavior Change

Centuries ago, the Greeks described both *logos* (reason) and *pathos* (emotion) as important in the human experience and key bases for ac-



Attitude-change theories can help develop nutrition education activities to motivate students in group settings.

Box 4-1 The Role of Theory

Theory in nutrition education provides a conceptual map, derived from evidence, to help us understand how the various influences on food- and nutrition-related behavior change are related to each other and to the behavior itself. These influences or potential mediators of change in the real world are thus “constructs” in the conceptual maps or theories.

mediators of behavior change = constructs in theories

Some theories were developed to explain behaviors undertaken for health reasons (e.g., health belief model). Other theories are needed to understand food choices and dietary behaviors undertaken for a variety of reasons in addition to health (e.g., theory of planned behavior). Still other theories are needed to understand how individuals can translate attitudes and intention into long-term dietary change (e.g., self-regulation models, social cognitive theory).

tion. Social psychological theories address both aspects of human motivation. Some theories were developed because researchers were studying health-related behaviors specifically, whereas others were investigating other social behaviors (such as consumer behaviors, including food choice) not necessarily related to health. Thus, the health belief model was developed specifically to understand and predict health behaviors. Its main constructs—perceived threat, perceived benefits, and perceived barriers (described in greater detail later in this chapter)—have proved to be very important and are widely used in interventions. However, the model does not help nutrition educators understand food choices and dietary behaviors that are undertaken for a variety of reasons other than health. For such understanding, other related social psychological theories prove very helpful.

These social psychological theories focus on beliefs, attitudes, and motivations and are very useful for designing nutrition education activities to increase interest and assist people to acquire the motivation to move from nonaction to the intention to take action on food- and nutrition-related issues. They are useful for group settings as well as mass media health communication campaigns. (See **Box 4-1**.)

Why Focusing on Motivation Is Important

Research shows that those who develop strong and stable intentions are more likely to be motivated to take action on their intentions. Most people have intentions for many health-related behaviors, but the intentions are not always very strong—as seems to be the case for Alicia and Ray, who you met in Chapter 3. People want to eat more healthfully, be more active, or get more sleep. But, for any given action, there also are many beliefs and emotions that can compete with the intention to eat more healthfully (cake is tasty but fattening; walking is healthy but takes time and effort). Thus, it is not always easy for people to develop strong and stable motivations or intentions.

Acting on these weak health intentions is made even more difficult in the face of strong environmental forces to act otherwise, from television advertising or the conveniently located less-than-healthy foods

at work to family members who have other needs and tastes. Thus, a motivational component in nutrition education is important for a wide range of people:

1. Those who are not aware of the importance of specific food-related actions that they could take to protect their health
2. Those who are aware but are uncommitted to taking action
3. Those with weak intentions, whom nutrition educators can stimulate to reexamine their intentions and assist to develop stronger intentions
4. Those who were taking action but have not maintained their motivation to do so.

The theories described in this chapter can help us as nutrition educators understand how to help our audiences reflect on their decisions and develop strong intentions for targeted behaviors or actions.

THE HEALTH BELIEF MODEL

In simplest terms, the health belief model states that people's beliefs influence their health-related actions or behaviors. The health belief model is a framework for understanding individuals' psychological readiness or intention to take a given health action. It was one of the earliest conceptual models to address health behavior specifically and is the most well-known theory in the field of public health. It is used widely around the world.

The model was developed in the 1950s by social psychologists working in the Lewin tradition, who were interested in using social science to solve practical public health problems (Becker 1974; Rosenstock 1974). They were committed to building theories for long-term use and not merely to solving practical health problems one at a time. The model is intuitively appealing, easy for nonpsychologists to understand and apply, and inexpensive to implement. Its commonsense constructs (beliefs) are clearly stated, manageable in number, and easily measured in a variety of ways, from interviews to surveys. The model focuses health professionals' attention on modifiable factors influencing behavior. (See **Box 4-2**.)

Box 4-2 The Health Belief Model in Practice

The health belief model proposes that readiness to take action is based on the following beliefs or convictions:

- I am susceptible to this health risk or problem.
- The threat to my health is serious.
- I perceive that the benefits of the recommended action outweigh the barriers or costs.
- I am confident that I can carry out the action successfully.
- Cues to action are present to remind me to take action.

Constructs of the Model

The model proposes that people’s likelihood of taking a specific health-related action is primarily motivated by the following perceptions, considerations, or beliefs:

- *Perceived severity*: The construct of perceived severity refers to our beliefs about the seriousness of contracting an illness or other health-related condition. It may include an evaluation of the personal medical consequences (such as pain, disability, or death) or social consequences (impact on work, family life, and so forth) of the health condition.
- *Perceived susceptibility*: Perceived susceptibility is our belief about the possibility or likelihood of *personally* contracting this illness or health-related condition.
- *Perceived threat or risk* is the combination of perceived severity and personal susceptibility. These perceptions together result in our psychological state of readiness to take action.
- *Perceived benefits*: Perceived benefits are our opinions of whether a particular action or behavior is useful or effective in reducing the risk or threat of getting the condition. The behaviors may be eating fruits and vegetables to reduce cancer risk or safe food handling practices to reduce foodborne illness.
- *Perceived barriers*: Perceived barriers are our perceptions of the difficulties of performing the behavior, which can be psychological as well as physical. These may include perceptions of the cost and inconvenience of eating fruits and vegetables or the perception that some fruits and vegetables may not be agreeable. The barriers or obstacles may also be environmental, such as perceptions of the lack of availability and accessibility of healthful foods or options for physical activity. We tend to weigh costs of action against the benefits of action before taking action, even if we are not always conscious of doing so. Changing these beliefs through nutrition education, such as by increasing the perceived benefits and decreasing perceived barriers, should increase the likelihood of our taking a given health action.
- *Self-efficacy*: The health belief model was originally developed to explain simple health behaviors such as vaccinations or screen-

ings, and hence did not include the influence of other people in the environment or the role of perceived skill or ability to perform the behavior (called self-efficacy). The role of self-efficacy has now been added to the model to explain long-term behaviors such as dietary behaviors. Self-efficacy is the confidence we have that we can perform the behavior (such as selecting, storing, or preparing fruits and vegetables).

- *Cues to action*: External events, such as the illness of a friend or family member or news stories on a scientific study about the issue, or internal events, such as personal symptoms and pains, are cues that remind us to act. These cues may influence our perceived threat for the condition and increase the likelihood that we will take action.

The model also postulates that demographic variables such as age, sex, and ethnicity indirectly influence behavior through their impact on perceived threat or perceived benefits and barriers. Likewise, sociopsychological variables such as personality, socioeconomic status, and peer and reference group pressure also influence behavior indirectly through their impact on perceived threat or perceived benefits and barriers.

Overcoming Optimistic Bias

Based on this model, then, making people aware of threat or risk is an important task of nutrition education. Indeed, studies have found that many people are falsely optimistic about their diets (Shim, Variyam, & Blaylock 2000). Many think that their diets are appropriately low in fat when in fact their diets are high in fat (Glanz, Brug, & van Assema 1997). Nutrition educators can use risk appraisals and self-assessments to elucidate personal risk information. Such personalized feedback counters people’s tendency to be optimistically biased and encourages them to make changes in their dietary behaviors based on their true risk. A review of studies found that knowing personal risk may indeed spur lifestyle changes (McClure 2002).

A summary of the model is shown in **Figure 4-1**. An example of how this theory was used in developing educational materials for those with HIV/AIDS (Hoffman et al. 2005) is described in **Nutrition Education in Action 4-1**.

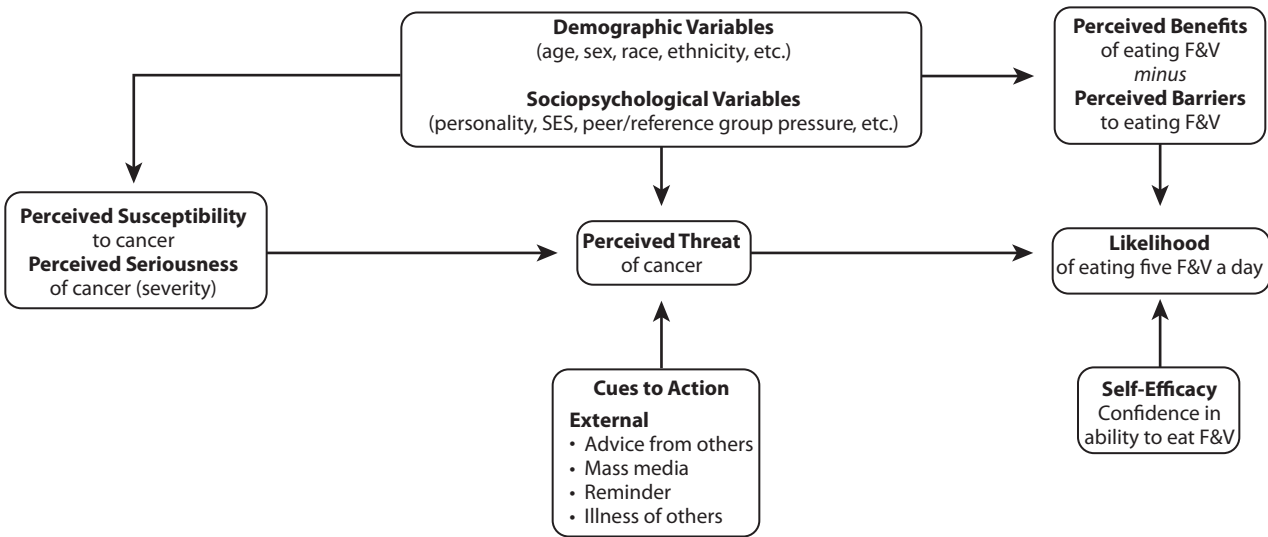


FIGURE 4-1 Health belief model.
(F&V = fruits and vegetables)

NUTRITION EDUCATION IN ACTION 4-1

Use of the Health Belief Model in the Development of Food Safety Materials for People with HIV/AIDS

Theory Construct/Determinant or Mediator of Behavior	Application to Food Safety Materials
Perceived susceptibility	Provided statistics and stated that people living with HIV/AIDS are more at risk for foodborne illness
Perceived severity	Stated that a foodborne illness can result in long-term health problems and even death
Perceived benefits	Provided positive, action-oriented effects of properly preparing and eating food safely; gave information on how to act, what to do
Perceived barriers	Gave enough information on food preparation and pathogens to correct misinformation; gave information to assist in properly preparing; gave reassurance
Cues to action	Gave explanations for issues brought up in discussion groups, for example, why some foods are risky, how to reduce risk for some foods by reheating, and substitutes for risky foods
Self-efficacy	Provided positive, action-oriented food selection and handling tips designed to reduce anxiety, and guidance in performing food safety actions to prevent foodborne illness

Source: Modified from Hoffman, E. W., V. Bergmann, J. Armstrong Schultz, P. Kendall, L. C. Medeiros, and V. N. Hillers. 2005. Application of a five-step message development model for food safety education materials targeting people with HIV/AIDS. *Journal of the American Dietetic Association* 105:1597–1604. Used with permission of the American Dietetic Association.

Evidence from Research and Intervention Studies

Because the health belief model is concerned with beliefs and concerns that can be changed through the means of communication or education, the model has been used as a framework to guide a variety of health behavior and nutrition education investigations.

Research Studies Using the Model

In a comprehensive review of 29 prospective and retrospective health belief model–related investigations undertaken during the decade following the publication of the health belief model in 1974, Janz and Becker (1984) found that the beliefs that were the most powerful determinants in predicting health behavior across all studies were as follows: perceived barriers to taking action (significant in 91 % of studies), perceived benefits of taking action (81 %), perceived susceptibility to the condition (71 %), and perceived seriousness of the condition (59 %).

- One study found that the health belief model was a moderately good predictor of fat intake, accounting for about 30% of the variance in behavior between groups (Shafer, Keith, & Schafer 1995). This model included the construct of self-efficacy, with items stated in terms of difficulty or perceived barriers: “Even though I know that my way of eating is not good for me, I just can’t seem to change my habits.” In another study of individuals’ likelihood to reduce their fat intake to reduce heart disease risk, *perceived barriers* also emerged as most important, followed by self-efficacy (Liou & Contento 2001).
- In a study with older adults, the *perceived threat* of foodborne illness was important, but safe food handling behaviors were most strongly influenced by the cues to action from news stories or labels on food packages (Hanson & Benedict 2002).
- A study found that for wives the costs of, or barriers to, a healthy diet in terms of expense, time, unpleasantness, and confusion about recommendations had a significant effect on fat intake,

whereas for their husbands, perceived threat of disease and self-efficacy had a significant effect (Shafer et al. 1995).

These studies show that although most health belief model constructs are important mediators of dietary behavior, their relative importance differed by study, most likely reflecting the specific behavior in question and the nature of the particular groups of people in the different studies. The specific beliefs may also differ by cultural heritage. For example, one study found that barriers to eating healthfully among African Americans included the social and cultural symbolism of certain foods along with taste and expense (James 2004).

These studies show that a sense of threat or perceived risk of disease (e.g., heart disease) *and* perceived benefits of taking action are important. Benefits in this context are effective responses or actions individuals can take to reduce the threat or avoid the danger—actions such as eating a healthier, low-fat diet or eating organic foods. Hence the term *response efficacy* is also used. An understanding of barriers to action and a feeling of *self-efficacy* in overcoming barriers are also paramount.

Intervention Studies Using the Model

Numerous intervention programs based on the health belief model have been developed and implemented in the public health arena, including dietary change. Indeed, the constructs of *benefits* and *barriers* are widely used in interventions. You shall see later that they are similar to constructs in other theories, such as the pros and cons of change in the transtheoretical model, and beliefs about outcomes (or *outcome expectations*) in the theory of planned behavior and social cognitive theory. What the health belief model adds is the construct of perceived risk, which is regarded as the motivational factor that initiates the psychological readiness to take action. How the main constructs of the health belief model can be converted into practical activities is shown in **Table 4-2**. A few example intervention studies are described next.

TABLE
4-2

Health Belief Model: Major Concepts and Implications for Nutrition Education Interventions

Construct of Theory/Mediator of Behavior Change	Definition	Applications to Practice
Perceived severity	Beliefs about the seriousness of the consequences of a health condition	Provide messages about the serious personal impacts (medical and social) of conditions such as heart disease or diabetes.
Perceived susceptibility	Chances of experiencing a risk or getting a condition	Provide messages or activities to personalize risk for individuals based on family history or behavior through self-assessment tools.
Perceived benefits	Beliefs that a given action is effective in reducing risk	Provide messages about benefits of engaging in a behavior to reduce risk based on scientific evidence on the efficacy of the behavior to reduce risk and other benefits, such as taste or convenience.
Perceived barriers	Beliefs about the psychological or tangible costs or obstacles to taking the action	Identify and reduce perception of barriers to engaging in the action. For example, fruits and vegetables can be inexpensive if eaten in season and can be filling. Correct misconceptions.
Self-efficacy	Confidence in one's ability to carry out the action	Messages that provide guidance on how to make behavior or action easy to do.
Cues to action	Strategies to activate readiness to take the action	Provide reminders about the behavior: posters, community billboards, and media campaigns.

Group Interventions

Older Adults: One study focused on increasing consumption of whole-grain foods by older adults (Ellis et al. 2005). The program was delivered in congregate meal sites and consisted of five sessions that addressed variables or constructs of the health belief model as follows:

- *Perceived susceptibility and severity:* Emphasizing the health conditions that occur frequently in older people that are associated with low intake of whole grains
- *Perceived benefits:* Describing the potential benefits in terms of decreasing the risk of certain health conditions
- *Perceived barriers:* Providing information on how to overcome barriers; taste testing many different whole-grain foods to overcome the barrier of taste
- *Self-efficacy:* Demonstrating and reinforcing during the sessions various ways to include whole-grain foods, teaching label reading skills, and correcting misinformation about the labeling of whole grains
- *Cues to action:* Recipes, tip sheets, and other handouts to provide continuing cues to action at home

The program resulted in increased frequency of eating whole-grain foods. The participants' knowledge improved (although it was high to begin with), and they believed more strongly than before that whole-grain foods would reduce risk of disease.

University Employees: Likewise, an eight-session program with university employees that focused on perceived risk for cardiovascular disease and cancer, perceived benefits to taking action, and perceived barriers resulted in significant behavioral change in terms of reduced intakes of calories, fat as a percentage of calories, saturated fat, and cholesterol (Abood, Black, & Feral 2003). Intakes of fruits and vegetables also increased but did not reach significance.

Social Marketing Campaigns: Two social marketing campaigns based on the health belief model are described here: one, called Project LEAN

(Low-Fat Eating for Americans Now), was a national campaign designed to promote low-fat eating and emphasized the perception of risk. The other, called Pick a Better Snack, was designed to increase fruit and vegetable consumption among low-income groups in Iowa and emphasized the positive message of how to reduce barriers. Adding group education enhanced the effectiveness of the media campaign. These two campaigns are described in **Nutrition Education in Action 4-2** and **Nutrition Education in Action 4-3**.

Take-Home Message about Health Belief Model

- When people experience a personal threat about a health condition they will likely take action, but only if the benefits of taking action outweigh the barriers, actual and psychological. Having the ability to take action also is crucial.
- You will find this theory especially useful for designing nutrition education activities to enhance awareness and motivation to take action to reduce risk of a health-related condition.

THE PRECAUTION ADOPTION PROCESS MODEL

In its simplest terms, the precaution adoption process model (PAPM) describes how people come to the decision to adopt a new precautionary behavior through a series of stages from unawareness, through decision making, to action and maintenance.

The goal of PAPM is to explain how individuals come to the decision to take action about a risk and how they translate that decision into action (Weinstein 1988; Weinstein & Sandman, 1992). The model proposes that behavior change proceeds through a series of stages, starting with individuals being unaware of a health- or food-related risk (e.g.,

NUTRITION EDUCATION IN ACTION 4-2

The Project LEAN (Low-Fat Eating for Americans Now) Campaign

This national social marketing campaign was designed to promote low-fat eating: Project LEAN (Samuels 1993). The program consisted of several components to heighten public awareness about the risk of diets high in dietary fat, especially saturated fat:

- Media campaign
- Participation of chefs and food journalists in demonstrations to show health professionals how to help the public appreciate the taste of low-fat foods
- Community programs and private voluntary organization activities to reinforce the message

Theoretical Framework

Dietary fat was chosen because of its health risks and because surveys showed it was a concern of the public. A series of 10 focus group interviews revealed that knowledge of sources of fat was high. However, convenience, habit, and taste were major obstacles. It was decided that the media component would consist of a national public service advertising campaign based on the health belief model and sponsored by the Advertising Council.

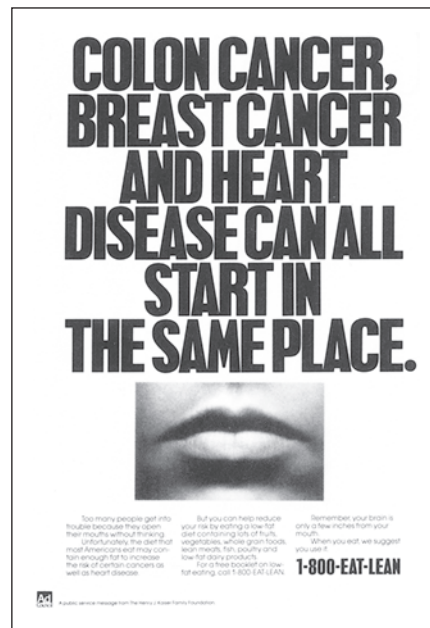
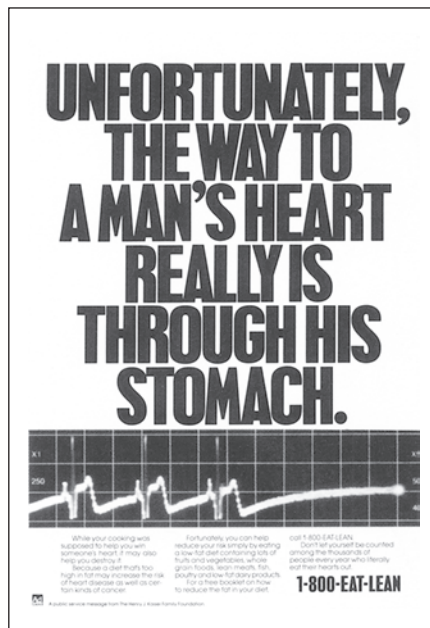
Motivational Messages

Given that lack of motivation was considered the major obstacle to eating lower-fat foods, the campaign consisted of two components: motivational messages to enhance the sense of perceived risk (why to change) and a toll-free hotline (1-800-EATLEAN) that people could call to receive a booklet that provided information on effective actions individuals could take to reduce the risk, including recipes (how to change). The 15- and 30-second television spots used a Hitchcock-like, humorous approach to emphasize the impact of fat in the diet. The public service print advertisements are shown here.

Evaluation

The messages were broadcast through various channels, including television, radio, newspapers, and media events. It was estimated that the public service advertising component reached 50% of the viewing audience, and the print publicity more than 35 million readers. The hotline received more than 300,000 calls, and numerous local campaigns were implemented.

Source: Samuels, S. E. 1993. Project LEAN: Lessons learned from a national social marketing campaign. *Public Health Reports* 108:45–53.



Public service advertisements for Project LEAN.

NUTRITION EDUCATION IN ACTION 4-3**The Pick a Better Snack™ Campaign**

The *Pick a better snack* campaign was developed by the partners in the Iowa Nutrition Network to increase fruit and vegetable consumption among children in Iowa by promoting a switch from high-fat, low-nutrient snacks to nutrient-dense, low- or no-fat fruits and vegetables. Intended audiences were low-income parents, providers of early childhood education, and schools, as well as children themselves. The campaign included monthly classroom lessons that featured the fruits and vegetables most available or seasonal that month, as well as simple graphics with colorful fruits and vegetables that were used on recipe cards, posters, grocery-store signage, bookmarks, brochures, and billboards.

Theoretical Framework

In terms of theory application, the *Pick a better snack* campaign originated from formative research, with the health belief model as the foundation. Social marketing research and materials from other states were reviewed, and campaign themes were selected for testing. Focus groups were then held. They included groups of low-income mothers, fathers, and child-care providers to determine their perceptions about motivations, benefits, barriers, and information channels. *Pick a better snack* was selected as a key message because it emphasized a simple action that can lead to increased consumption of fruits and vegetables.

- *Perceived benefits:* The focus was on the benefit that fruits and vegetables “taste good.” The audience already knew the fact that

fruits and vegetables are also good for your health. In the school component, students tasted different fruits and vegetables in monthly classes to increase familiarity with and enjoyment of the sensory-affective aspects of these foods.

- *Perceived barriers:* Messages through the mass media focused on making eating fruits and vegetables easy to do. Recipes were provided where appropriate.

Examples of messages are as follows:

- Bananas: Peel. Eat. (how easy is that?)
- Tomatoes: Slice. Eat. (how easy is that?)
- Apples: Wash. Bite. (how easy is that?)

Evaluation

Two communities were selected for implementation of intense media efforts in early 2003 to determine which strategies would best reach the targeted low-income audience. Media buys were secured for billboards, bus signs, radio, and local shopper newspapers. Surveys were conducted in Food Stamp offices ($n = 600$) and with customers in the front of grocery stores in low-income neighborhoods ($n = 500$). Surveys indicated that the most effective implementation channels were billboards, schools, television, grocery stores, and Women, Infants, and Children (WIC) offices. Among survey respondents, 51% recalled hearing or seeing the campaign messages, 25% reported they were starting to eat more fruits and vegetables, and 36% were thinking about eating more fruits and vegetables because of *Pick a better snack*. Surveys of elementary age students ($n = 1455$) receiving the classroom component showed a statistically significant improvement in attitudes toward fruit and vegetable snacks among these children.

More detailed information about the program, its partners, and its funding sources (Supplemental Nutrition Assistance Program Education and other sources) can be found on the *Pick a better snack* website, <http://www.idph.state.ia.us/pickabetersnack/default.asp>.

Source: Logo and graphics used with permission of Iowa Department of Public Health and Iowa Department of Education, Bureau of Nutrition Programs and Transportation.

osteoporosis, heart disease), and then becoming aware but unengaged and believing that the risk may apply to other people but not to themselves. Here, they have an *optimistic bias*. Individuals who reach the decision-making stage are engaged with the issue and are considering their response, such as whether to take calcium supplements or whether to reduce their saturated fat intake as a precaution. They can choose to take action or not to act. If they decide to act, they then initiate the behavior. The model is shown in **Figure 4-2**.

The model is especially useful in helping nutrition educators understand that those not currently taking action on an issue that health

professionals think is important are not all the same. Some are not taking action because they have not heard about the threat or issue. Media messages are important here in helping people become aware of a threat and the precautions they can take. However, there also is a group that is aware but unengaged, believing the precaution does not apply to them personally. An optimistic bias is in operation. For this group, engagement in the action may require targeted communications about risk or some personal experience that makes the issue salient or relevant to them. There are still others who may feel that they just do not have the confidence (self-efficacy) or skills to engage in the behav-

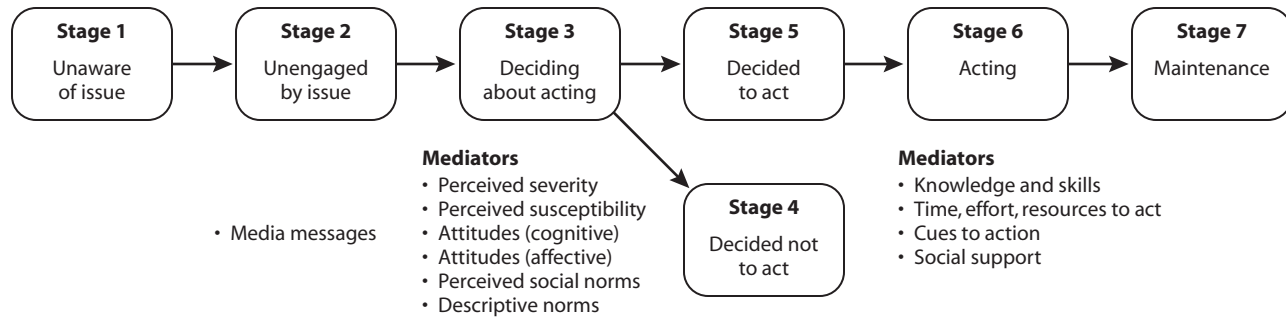


FIGURE 4-2 Stages of the precaution adoption process model.

ior, so there is no point trying. Finally, among those who are not taking action are those who have thought about the issue but have rejected taking action. They may be quite well informed, or they have tried the behavior many times before (e.g., dieting) and have given up. This is a difficult group to reach.

At the point of deciding whether to take action, the many mediators from the health belief model and theory of planned behavior are important in facilitating a decision: perceived susceptibility and threat in terms of the health or food issue; perceived benefits to taking action; attitudes, including worry and fear; perceived social norms; and the behaviors and recommendations of others (descriptive norms).

Once the decision has been made, taking action then requires time, effort, resources, detailed how-to knowledge and skills, social support, and cues to action. Nutrition education has an important role here.

THEORY OF PLANNED BEHAVIOR

In its simplest terms, the theory of planned behavior states that people's behaviors are determined by their intentions, which in turn are influenced by attitudes, social norms, and perception of control over the behavior.

The theory of planned behavior (Ajzen 1991; Fishbein & Ajzen 1975), with its emphasis on attitudes, was developed to try to understand a number of social behaviors such as participation in community organizations or attendance at college or church. It has been found to be very useful for understanding food choice and voluntary health and dietary behaviors. Like other social psychological theories based on expectancy-value considerations, the theory assumes that people make decisions in a reasonable manner. Despite its name, the theory does not imply that behaviors are necessarily rational, planned, or appropriate from an objective point of view—only that they make sense to the person. For example, eating a large piece of chocolate cake to feel good is rational from the cake eater's point of view, whatever the nutritional merits of the act.

Understanding underlying reasons for action. The theory of planned behavior permits nutrition educators to discern these underlying reasons for action and understand a given group's own reasons that motivate the behavior. The theory does not specify what these beliefs are, only which categories of beliefs or which constructs to explore. It is thus a

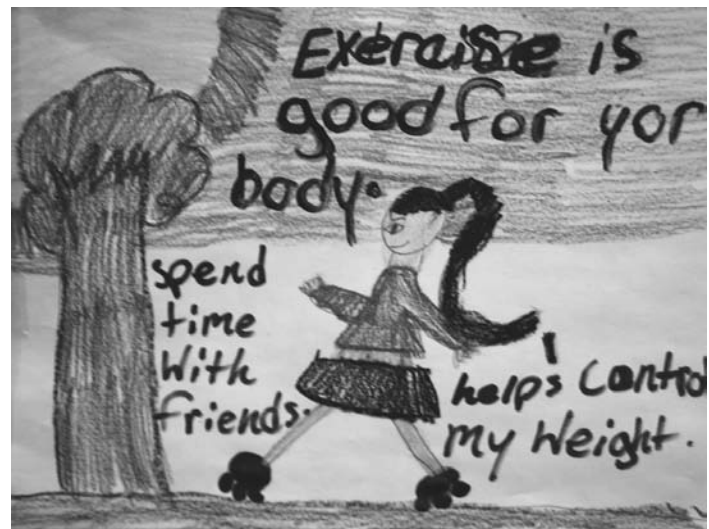
content-free model that can be used with a variety of health behaviors and groups. The actual beliefs must be obtained from the groups themselves, using open-ended elicitation interviews or other means.

Neither does the theory imply that people consciously and systematically go through all the processes described here every time they act. Obviously, many health-related behaviors have become automatic or habitual, such as smoking or eating cereal at breakfast. However, the theory does suggest that the attitudes and beliefs underlying these behaviors can be brought to awareness and hence changed. It is thus important for nutrition educators to understand the nature of attitudes and beliefs, how they are formed, and how they might be changed.

A summary of the model is shown in Figure 4-3, and how the main constructs of the theory can be used in nutrition education practice are described in Table 4-3.

Behavior

The theory of planned behavior calls for the behaviors to be stated specifically: the more specifically the behavior is stated, the more predictive the theory is of the behavior. Questions regarding very specific behaviors are "How many times do you eat fruit as part of your noon



The theory of planned behavior allows us to understand what motivates us to exercise.

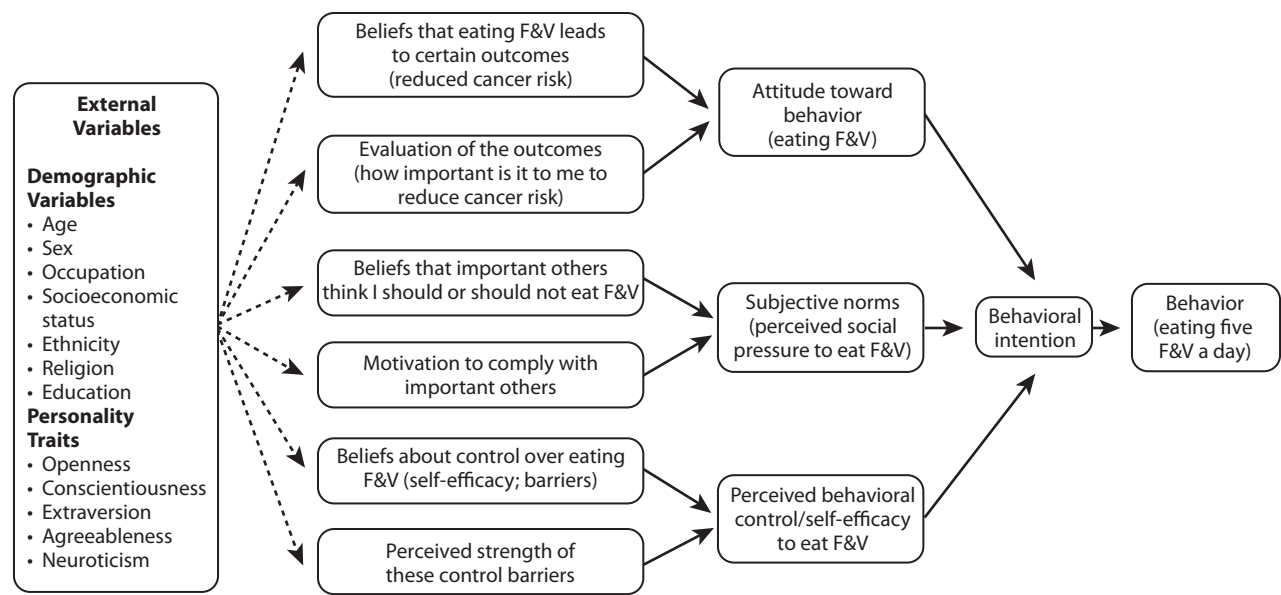


FIGURE 4-3 Theory of planned behavior: Example of behavior of eating fruits and vegetables.
(F&V = fruits and vegetables)

TABLE
4-3

Theory of Planned Behavior and Extensions: Major Concepts and Implications for Nutrition Education Interventions

Construct of Theory/Potential Mediator of Behavior Change	Definition	Applications to Practice
Behavioral intentions	Perceived likelihood of taking a given action	Lead group through decision-making activities to assess personal positive and negative expectations (pros and cons) of change and commitment to try the new behavior.
Attitudes	Favorable or unfavorable judgments about a given behavior	Messages and images can show healthful behavior in positive light.
Outcome expectations (basis of cognitive attitudes)	Beliefs about the outcomes of performing the behavior	<i>Enhance positive expectations:</i> Provide messages or use strategies in groups to enhance people's expectations about taste, health benefits, and convenience of eating F&V, including through tasting, preparing, or cooking them. <i>Decrease negative expectations:</i> F&V can be inexpensive if eaten in season and can be filling; correct misconceptions.
Affective attitudes (experiential attitudes)	Emotional response to the idea of performing the behavior	Provide opportunities to experience and enjoy healthful food through food tastings or food preparation and cooking experiences accompanied by eating the food prepared with others. Explore anticipated regret if action is not taken.
Subjective norms (injunctive norms)	Beliefs that people who are important to the group either approve or disapprove of them performing a behavior	For adolescents, show that eating F&V is cool; use peer or valued models to encourage eating F&V.
Descriptive norms	Beliefs about other people's <i>attitudes</i> or <i>behaviors</i> in regard to the behavior	In groups, collect or give data showing that many teens do eat F&V and/or value health; correct misconceptions.
Perceived behavioral control	Perceptions of how much control people have over the behavior, whether there are environmental barriers to action	Provide messages that eating F&V can be easy and convenient (e.g., for bananas: "Peel, eat; how easy is that?"). Provide information on how to prepare F&V to carry to school or work.

Note: F&V = fruits and vegetables.

day meal each month?” (Conner & Norman 1995) and “How often do you eat vegetables each week?” However, many studies state behaviors more generally, reflecting practical considerations, such as “eating a low-fat diet” or “eating a healthy diet.” In the area of diet or physical activity, frequency questionnaires or behavioral checklists are often used to measure behaviors. In cross-sectional studies, behaviors and the determinants of the behaviors (described later in this chapter) are measured at the same time, whereas in prospective studies determinants are measured first, followed by the behavior some time later, such as the next day, or two or four weeks later, as specified.

Behavioral Intention

The theory of planned behavior proposes that we are more likely to engage in a behavior, such as eating low-fat foods or engaging in physical activity, if we intend to do so. That is, when we make plans to do something, we are more likely to do it than if we do not. This most immediate mediator of behavior change is called *behavioral intention* (BI). This state of mind can be stated simply as “I intend to eat more fruits and vegetables” or “I intend to eat fewer high-fat snacks in the next month” (on a scale from “definitely do not” to “definitely do”). Sometimes intentions are stated in terms of how likely a person is to engage in an *expected action*, such as “How likely are you to eat organic foods in the next week?” (Sparks, Shepherd, & Frewer 1995). It has been suggested that *desires* (“I would like to eat fruit as part of my midday meals”) may be either a precursor to behavioral intention or another way to state behavioral intention.

Research evidence has found that reported intentions are reliably and moderately correlated with a range of health actions (Armitage & Conner 2001) and hence are a key mediator of behavior or indicator of level of commitment or motivation. Individuals are certainly not likely to engage in a behavior if they do *not* intend to do so. Intention is in turn determined by attitudes, social norms, and a sense of control over the behavior.

Attitudes

Attitudes are favorable or unfavorable judgments about a given behavior, such as “Eating fruits and vegetables would be good/bad, enjoyable/unenjoyable,” often rated on a 5- or 7-point scale.

Attitudes have both a *cognitive/evaluative component*, also called *instrumental attitudes*, such as how good or bad for health it would be to lose weight, and an *affective component*, also called *experiential attitudes*, such as how good or bad a person would feel about him- or herself losing weight. Both components influence intentions (Trafimow & Sheeran 1998; Ajzen 2001).

Cognitive/Evaluative Component (or Instrumental Attitudes)

Attitudes are strongly influenced by our beliefs about the outcomes or consequences of our actions and how important these consequences are.

Beliefs About Expected Outcomes or Consequences of Behavior

We do what fulfills a value that has meaning for us. These values can be quite immediate or more enduring, quite personal or all-pervasive and global. The immediate, or instrumental, values are beliefs and expectations that a behavior (such as eating fruits and vegetables) will lead to certain outcomes and are usually called *outcome beliefs* or *outcome expectations* (OEs). Examples are “Eating fruits and veg-

etables will increase how much energy I have”; or “will reduce my risk of cancer” and “if I eat this food, I will feel comforted or it will relieve my depression.” These beliefs are really *reasons* why to engage in the behavior.

Expected outcomes or reasons for a given action or behavior are of two general kinds: health outcomes based on scientific evidence, and personally meaningful outcomes including social and self-evaluative outcomes:

- *Health outcomes* are based on the scientific evidence on diet and health or diet and disease relationships, such as between eating calcium-rich foods and bone health, breastfeeding and the health of the infant, antioxidants in food and cancer, and so forth. For example, those who believed that there was a connection between diet and cancer risk decreased their intake of fat over a three-year period (Kristal et al. 2000).
- *Personally meaningful outcomes* might be taste, convenience, preparation/cooking needs, cost, good value for money, contribution to personal appearance, having more energy, and so forth. Expected outcomes can be positive (e.g., good taste) or negative (e.g., high cost), as well as cognitive (e.g., “Eating fruits and vegetables will decrease my risk of cancer”) and affective (e.g., “Eating fruits and vegetables will make me feel good about myself”).
- *Larger, global end goals* might include such values as family cohesion, empowerment of communities, support of local farmers, or conservation of resources (discussed later).

Value of Outcomes to Individuals

Our judgments about how desirable (for example, from “not desirable” to “very desirable”) the outcomes of a behavior are also influence whether we take action.

Motivation

$$\text{motivation} = \text{beliefs about expectations} \times \text{values}$$

Motivation to initiate a behavior thus depends on our beliefs about both the *expected outcomes* and the *value* to us personally of future outcomes from the behavior. Future events cannot serve as determinants of behavior in the present. However, their representations in our minds in the present can have powerful causal impacts on present action. That is, we want to maximize positive outcomes such as health, taste, or not wasting food and minimize negative outcomes of engaging in food or nutrition behavior, such as cost or inconvenience.

Attitudes and Their Underlying Beliefs

Attitudes toward a behavior can be considered our summaries of our decision-making processes about the behavior. We come to judge whether we are positively or negatively inclined toward a given behavior, such as eating at fast food restaurants or breastfeeding, based on *underlying beliefs* about the outcomes of the behavior and how much we value these outcomes. It has been found that attitudes and their underlying beliefs are often quite interchangeable in studies: they often yield the same predictive power (Schwarzer 1992). Thus, beliefs about expected outcomes of behavior are major mediators of behavioral intention (through attitude formation) and hence are motivators of behavior.

In designing nutrition education interventions, nutrition educators can then design activities to address directly people’s specific expectations about the outcome of the behavior, such as taste, cost, or convenience. These are often abbreviated OE for *outcome expectations*.

Affective Component: Emotions and Enjoyment of Food (or Experiential Attitudes)

Although the cognitive component of attitudes based on beliefs about outcomes of a behavior is a major motivator of behavioral intention, the affective component of attitudes, reflecting people's feelings or emotions about performing the behavior, is also a powerful—some would say more powerful—motivator of dietary behaviors (Salovey & Birnbaum 1989). People's emotions and feelings reflect their more enduring values and "hot buttons." Affective beliefs or feelings are more likely to be derived from direct experience, such as physiological reactions to food (e.g., taste, smell, sight, or fullness of food) and familiarity through frequent exposure. *Emotions* have been described as a state of arousal involving both conscious thought and physiological or visceral changes. The result of this internal process of emotion is a feeling toward a food, behavior, object, or situation.

Food Preferences and Enjoyment

Sensory-affective responses to food powerfully influence food choice and dietary behavior (Rozin & Fallon 1981). Consumers consistently rate taste preferences or liking as a leading motivator of their dietary choices. It was also demonstrated in a study using the theory of planned behavior to study the choice of low-salt breads (Tuorila-Ollikainen, Lahteenmaki, & Salovaara 1986). The theory predicted 38% of buying intentions and 21% of actual selections. However, the individuals were also given a taste test and asked to rate breads in terms of "liking." When this rating of liking was included in the theory, the values were improved to 52% and 32%, respectively. In fact, liking was by itself the best predictor of the behavior.

Anticipated Positive Feelings

Feelings and emotions about involvement in a behavior also contribute to attitudes. For example, our attitudes toward losing weight may be motivated not only by our belief that it will make us healthier or look better (the cognitive aspect of attitudes) but also that it will make us feel good about ourselves because we are able to take control of our lives. Helping children enjoy eating more vegetables may make parents feel good about themselves.

Anticipated Regret

Anticipated regret or worry about the consequences of acting or failing to act also has been shown to be a mediator of preventive health behavior. A study showed that anticipated regret influenced the intention to eat junk foods (Richard, van der Pligt, & de Vries 1996). Another example might be our anticipated regret or worry that regularly eating foods high in saturated fat may increase our risk of getting heart disease later.

Relationship Between the Cognitive/Thinking and Affective/Feeling Components

The cognitive and affective components of attitudes are inextricably linked to each other. Studies have found that when beliefs and feelings are consistent with each other, both are equally good at predicting attitudes and behavior. However, when they are not consistent, feelings are primary (Ajzen 2001). For example, one study found that positive affective reactions to fast food, convenience, and self-serving thoughts overrode cognitive analyses of the longer-term health risks associated with frequent fast food consumption (Dunn et al. 2008).

Individuals may differ in their tendency to base their attitudes on beliefs or feelings. In studies on social issues, the attitudes of those identified as "thinkers" were better predicted by their beliefs than by

their feelings, whereas the reverse was true for individuals identified as "feelers" (Ajzen 2001). In a parallel fashion, attitudes toward some foods or issues (e.g., specific foods such as chocolate) may be based largely on feelings, whereas attitudes toward others (e.g., eating foods produced through gene biotechnology) may be based largely on reasoning and the evaluation of scientific information.

Strong and Stable Attitudes

Studies have shown that strong attitudes toward foods are more predictive of behavioral intentions than are weak attitudes (Sparks, Hedderley, & Shepherd 1992). Information that is personally relevant to people leads to the formation of stronger attitudes. Stronger attitudes are less susceptible to change. Stable attitudes are also more predictive of dietary behaviors. For example, stable attitudes were predictive of eating a low-fat diet three months later (Conner et al. 2000) and of eating a healthier diet six years later (Conner, Norman, & Bell 2002). More stable attitudes are also more resistant to persuasion.

The downside of these findings is that nutrition education is less likely to change strong and stable attitudes toward less nutritious foods or diets. The upside is that once people form strong and stable attitudes toward more healthful food practices—through nutrition education, for example—these are likely to last and to be predictive of behavior.

Conflicting Attitudes: Ambivalence

The coexistence of both positive and negative beliefs about outcomes of behavior may cause ambivalence (Armitage & Conner 2000b; Ajzen 2001). This is especially true for food choices and dietary behaviors. For example, individuals may believe that eating fruits and vegetables is desirable because doing so reduces the risk of cancer, but fruits and vegetables may also be expensive and inconvenient to carry around or eat. Animal products may taste good, but individuals may have concerns about animal welfare issues.

Ambivalence may also result from a conflict between the cognitive component (chocolate cakes are fattening) and the affective component of attitudes (I love the taste of chocolate). The relative strengths of these thoughts and feelings influence whether a person takes action. For example, greater ambivalence about eating meat, vegetarianism, or vegan diets resulted in weaker associations between attitudes and intentions (Povey, Wellens, & Conner 2001). The same was found for ambivalence about eating chocolate (Sparks et al. 2001). Ambivalent attitudes are weak and are more susceptible to persuasive communication.

Subjective Norms (Perceived Social Pressure)

Subjective norms, or perceived social pressure, are our beliefs that most people who are important to us either approve or disapprove of us performing a behavior (e.g., "People who care about me think that I should/should not breastfeed"). These also are called *injunctive norms* (other people's injunctions).

Subjective or injunctive norms are in turn determined by the following:

- *Normative beliefs*: The strength of our beliefs that specific important people approve or disapprove of the behavior ("My close friends/parents think that I should/should not eat meat").
- *Motivation to comply*: The strength of our desire to comply with these people's opinions ("How much do you want to do what your friends think you should do?"). This strength may range from "not at all" to "very much." Because individuals' motivations may be related to the approval of a range of specific others, the variety of

people (e.g., peers, family) whose approval is important for the particular behavior (e.g., eating fruits and vegetables or drinking soda) and the particular population (e.g., teenagers) must be assessed to design effective nutrition education.

Descriptive Norms

It has been shown that *descriptive norms* can be as important as injunctive ones in motivating health behaviors (Sheeran, Norman, & Orbell 1999). Descriptive norms include beliefs about other people's *attitudes* toward the behavior in question (group attitude), such as attitudes of individuals' personal or social network toward drinking soda, and perceptions of other people's *behavior* (group behavior), such as how many in an individual's social circle drink soda. This construct captures the strong impact of social or cultural attitudes and practices.

Are Attitudes or Subjective Norms More Important?

Individuals differ on the relative weight they place on attitudes and on the opinions of others. These relative weights also differ across behaviors. For example, subjective norms may be more important in cultures that are more collectivist in nature, whereas attitudes may be more important in individualistic cultures (Ajzen 2001). Some food behaviors (such as eating low-fat foods) may be more influenced by attitudes, whereas others (such as breastfeeding) are more influenced by social norms. (See **Box 4-3**.)

Perceived Behavioral Control

We also act in accordance with our perceptions of how much control we have over the behavior, or *perceived behavioral control* (PBC). This theory construct also includes the notion of whether we can overcome barriers or can perform the behavior. For example, healthier foods may not be easily available in the local grocery store, or people may not know how to cook. Perceived behavioral control influences both intention and behavior, probably because *perception* of control is likely to increase our effort to successfully carry out an intention and because perception of control may reflect *actual* control (refer to Figure 4-2).

Box 4-3 Theory of Planned Behavior in Practice

The theory of planned behavior proposes that individuals are likely to take a specific action if they *intend* to take that action. Intention to take action is based on the following beliefs and feelings:

- I believe that taking this action will lead to outcomes I desire.
- I perceive that the positive outcomes of taking this action outweigh the negative outcomes.
- I have positive feelings about taking this action, and taking action will make me feel good about myself.
- People important to me think that I should take this action and their opinions are important to me.
- I am confident that I can carry out the action, despite difficulties.

Perceived Behavioral Control and Self-Efficacy

Perceived behavioral control is similar to the self-efficacy construct of social cognitive theory (Armitage & Conner 1999, 2001). Self-efficacy is generally defined in terms of *personal competence or confidence* in being able to carry out a given behavior ("I am confident that I could successfully eat five fruits and vegetables a day if I wanted to") whereas perceived behavioral control includes the notion of *perceived difficulties*, including personal resources and external barriers. Many researchers, however, consider the terms to be interchangeable (Ajzen 1991, 1998; Bandura 2000; Fishbein 2000), with some using the term *self-efficacy* (Fishbein 2000) in models and others, its complement, *barriers* (Lien, Lytle, & Komro 2002; Kassem et al. 2003). Examples are "I am confident that I can eat fruit at work even if it is not readily available" and "I can avoid eating attractive, high-fat foods, even at a party."

Extensions of the Theory of Planned Behavior

Research has led to investigations of possible extensions of the theory of planned behavior by incorporating mediators of behavior that reflect on the self, such as moral norms and self-identity. In the area of food and nutrition, these mediators have been found to make some additional independent contribution to the prediction of behavior.



Participating in a community urban farming project improves youths' attitudes toward food and nutrition.

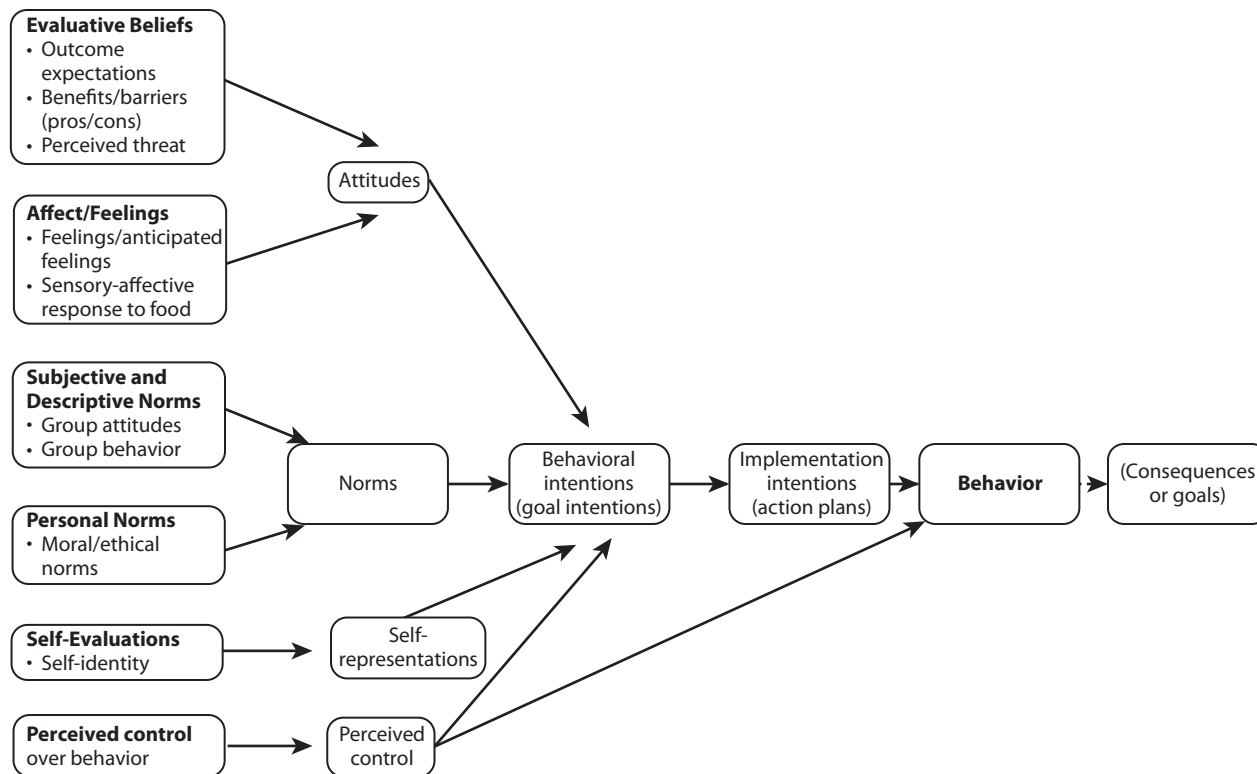


FIGURE 4-4 Extended theory of planned behavior.

Source: Based on Abraham, C., and P. Sheeran. 2000. Understanding and changing health behaviour: From health beliefs to self-regulation. In *Understanding and changing health behaviour from health beliefs to self-regulation*, edited by P. Norman, C. Abraham, and M. Conner. Amsterdam: Harwood Academic Publishers.

Figure 4-4 summarizes the many constructs of the extended theory of planned behavior and how they are related to and predict behavioral intentions and behavior.

Personal Normative Beliefs: Perceived Moral or Ethical Obligation

A number of researchers have found that *personal normative beliefs* are important (Armitage & Conner 2000b). An example might be “I feel I should breastfeed my baby.” Studies have shown that *moral and ethical considerations* make some contribution to prediction of behavior, such as parents giving milk to their children (“I feel it is my moral obligation to feed my child milk/healthful foods”) (Raats, Shepherd, & Sparks 1995). A review has found that moral norms are important in bridging the intention–behavior gap (Godin, Conner, & Sheeran 2005). A related concept is perceived personal responsibility, such as “I feel that I have a responsibility to buy organic foods to improve the health of the natural environment,” which was found to be related to behavior (Bissonette & Contento 2001).

Self-Identity

Related to the focus on personal norms are other thoughts we have about ourselves, including self-concept or self-identity, which refers to the relatively enduring characteristics people ascribe to themselves (Sparks 2000). These *self-referent factors* have been shown to contribute some to the prediction of behavior: “I think of myself as someone who is

concerned about environmental issues” or “green issues” or “a health-conscious consumer” (Sparks et al. 1992; Sparks et al. 1995; Bissonette & Contento 2001; Robinson & Smith 2002). Individuals’ identities in food choice tend to be both stable and dynamic over time and were shaped by life experiences (Bisogni et al. 2002).

Ideal-self versus actual-self discrepancies, resulting in disappointment, sadness, or depression, and *ought-to-be self versus actual-self discrepancies*, resulting in fear and anxiety, have been studied in other domains (Abraham & Sheeran 2000). In nutrition, surveys of consumers often reveal these kinds of considerations when individuals think about their diets. For example, one survey found that people’s predominant emotions about their diets were guilt, worry, helplessness, anger, and fear: “I feel like a bad mom. I know that my kids should have better things to eat” (IFIC Foundation 1999). These considerations are especially strong relative to weight issues.

From “I Wish” to “I Will”: Implementation Intentions (Action Plans)

Personal experience suggests, and research confirms, that behavioral intentions are not sufficient to initiate difficult behaviors such as dietary change. Our intentions or wishes are more likely to be carried out if they are first translated into *implementation intentions*, specifying exactly when, where, and how we will undertake the particular behavior (Armitage 2006; Garcia & Mann 2003). These are called *action plans* in other theories. The general behavioral intention may be to eat five fruits

and vegetables a day. However, to make that a reality, we need to make more specific plans, such as “I will have a midmorning snack of fruit and add one vegetable to my lunch each day this week.”

Note, however, that setting an implementation intention for a healthy behavior (e.g., eating more fruit for a snack) by itself does not necessarily drive out a habit that might be counter to this intention (e.g., eating fatty snacks and sweets) (Verplanken & Faes 1999).

Habits, Routines, and Behaviors Without Conscious Planning

Many behaviors appear to occur without much thought. We do not seem to consciously and systemically go through a decision-making process based on beliefs, peer pressure, or sense of control every time we make a choice. We develop routines or habits that seem to be automatic responses to situations and are often the driving force in behavior. Indeed, for many behaviors, past behavior has been shown to be a good predictor of future behavior (Triandis 1977; Ajzen & Madden 1986; Conner et al. 2000; Ajzen 2001; Nilsen, Bourne, & Verplanken 2008). This is especially true of frequently performed behaviors, such as eating behavior (Kumanyika et al. 2000).

Motivations and Cues

Research suggests that when we repeatedly perform a behavior in a particular situation, both the overall motivation, such as our liking for cereal in the morning, and the instructions for its implementation—preparing the cereal—may become integrated in our thinking about the situation. Thus, both the motivation and the cues are automatically triggered in memory when we are faced with the same situation (e.g., eating cereal in the morning) (Fazio 1990).

Time and Circumstances

We may use reasoned processes under certain circumstances, and habitual or automatic processes in others (Fazio 1990). For example, we may use deliberate processes when the behaviors are perceived to have serious personal consequences, such as choosing whether to breast-feed a baby. However, when consequences are perceived not to be very serious, as is the case of many everyday food choices, automatic processes occur. The time available to make a decision may also be a factor. When there is very little time to make a decision, such as may occur in supermarket purchases, spontaneous processes may be more important than reasoning processes are. For example, roughly 65% of supermarket decisions are made in the store and, of those that are unplanned, 67% are due to retail displays and other manufacturing factors (Abratt & Goodey 1990). Marketing practices, such as the ambiance in restaurants or how food is described on menus, also can influence individuals without their being conscious of it (Wansink 2006; Cohen 2008).

Habit Versus Intention

Intention and habit may be competing with each other. However, studies show that although past behavior is predictive of eating a low-fat diet, stable intentions can also be powerful, if not more so, in mediating future behavior (Conner et al. 2000; Conner & Abraham 2001). Thus, targeting both intentions and perceived control over the behavior is likely to influence future behavior *despite* past behavior. Nutrition education can assist individuals to make specific plans or make personal policy decisions about their habitual patterns to make them more healthful, such as to eat whole-grain cereals for breakfast each morning rather than high-sugar cereals. There is evidence that current habit strength can significantly predict healthful eating, such as of fruit (Brug et al. 2006).

Evidence for the Theory from Research and Intervention Studies

Research on Food Choice and Dietary Behaviors

The theory of planned behavior has been studied extensively and rigorously in the social psychology field and used widely to understand health issues, including food choice and dietary and physical activity behaviors (Godin & Kok 1996). The effectiveness of the theory may depend on how specifically the behavior is defined as well as on the nature of the group being studied.

A few specific studies are described here to indicate the range of behaviors and groups with whom the theories have been used. As noted earlier, the theory is content-free: it does not specify what the specific beliefs are, only which constructs to explore, because the actual beliefs differ by group and by behavior. (See **Box 4-4**.) Here are a few studies as examples.

Box 4-4 Understanding Jason and His Friends Using the Theory of Planned Behavior

Jason is a 25-year-old salesperson in a clothing store. To determine the reasons, insights, or feelings that would motivate Jason and individuals like him to think seriously about why to take action now about eating more fruits and vegetables, you would have to conduct some interviews. From these, the reasons or outcome expectations, attitudes or feelings, and larger values or hot buttons in the following list might emerge. Modify and add to the following list those that you think would be powerful for Jason and his friends:

- *Attitudes:* Their attitude toward eating fruits and vegetables is positive, but weakly so.
- *Outcome expectations:* There are competing beliefs or outcome expectations about eating fruits and vegetables: these foods are known to be healthful, but they don't taste as good as other foods, they are not convenient to eat during the day, and they are expensive.
- *Social norms:* Jason and youth like him are busy, vibrant young people who do things together—eating fruits and vegetables is not one of them! It is just not part of their mind-set.
- *Values or hot buttons:* They feel they are now adults, able to make their own choices. Eating fruits and vegetables seems like what “good children” do. They are no longer children.
- *Self-identity:* They do not see themselves as “health-conscious eaters.” They know people like that and don't want to be like them.

Nutrition education for this group thus needs to address all these determinants that are potential mediators of behavior change, helping Jason and his friends to see “what's in it for me” to eat fruits and vegetables.

Studies with Adolescents

Studies with adolescents have examined a variety of behaviors:

- In a study of “eating a healthful diet” (defined in terms of calories, fat, and fruit and vegetable consumption), results showed that the constructs of the theory of planned behavior together predicted 42% of intention and 17% of behavior (Backman et al. 2002). All three constructs of the theory of planned behavior were good predictors. The underlying outcome beliefs that were most important were as follows: like the taste of healthful foods, feel good about self, tolerate giving up liked foods, and lose or maintain a healthy weight.
- For soft drink consumption, which is a very specifically defined behavior, the predictions by the constructs of the theory of planned behavior were high: 64% for intention and 34% for behavior (i.e., soda consumption) (Kassem et al. 2003). The strongest predictors of soda consumption were *attitude* and the subjects’ underlying outcome beliefs (feel healthy, become hyper, gain weight, quench thirst), followed by *perceived behavioral control* (availability at home and school, money) and *subjective norms*.
- One study examined the role of an expanded theory of planned behavior on buying or eating local and organic foods by adolescents (Bissonette & Contento 2001). It found that behavior was best predicted by *behavioral intention*, *beliefs about outcomes*, and *perceived social influences*. Also significant were *perceived responsibility* for buying and eating organic foods and *self-identity* for buying and eating local food.

Studies with Adults

Numerous studies have also been conducted with adults both with the general population and those at risk of chronic disease:

- In an adult population, the importance of eating vegetables, health benefits, convenience, and the taste of vegetables (*outcome expectations*) were highly associated with eating vegetables in a variety of situations in one study (Satia et al. 2002).
- In a longitudinal study of young adults, all psychosocial factors assessed among young adults appeared predictive of one or more eating behaviors reported eight years later (Kvaavik et al. 2005).
- For those at risk of diabetes, the theory of planned behavior was found to be useful in explaining the diet and physical activity intentions (Blue 2007).
- In a study of self-care behavior in persons with type 2 diabetes, it was found that participants reported high *perceived behavioral control* in relation to medication taking, but low perceived control in relation to exercise and dietary behaviors (Gatt & Sammut 2008).
- *Cultural beliefs*. Theory constructs can incorporate cultural beliefs (Blanchard et al. 2009). One study found that barriers included the *outcome beliefs* that to eat healthfully meant giving up part of their cultural heritage and trying to conform to the dominant culture. Friends and relatives (*social norms*) were also not supportive of dietary changes (James 2004).

Table 4-3 shows how the constructs of the theory can be applied to nutrition education practice.

An example of how the constructs of the theory of planned behavior were used to explain milk consumption in a sample of pregnant women enrolled in, or eligible for, the Women, Infants and Children program is shown in **Nutrition Education in Action 4-4** (Park & Ureda 1999). Nutrition

educators can use their understanding of these beliefs or motivations as the basis for designing nutrition education programs that are relevant to such women.

Intervention Studies

Using the theory of planned behavior to develop interventions involves two stages. In the first stage, nutrition educators can use the theory to identify which of the constructs or mediators of behavior are relevant for the target group and thus should be addressed. They obtain such information by extensive open-ended interviews or focus groups, or both, to gain insight into the factors important to the group with respect to food or physical activity. In the second stage, nutrition educators design the message content based on these relevant beliefs. If the model is used in a strict way, with all the variables, then both of these stages can be quite labor intensive and time-consuming. However, numerous interventions have used the key elements of the theories with some success, focusing on outcome beliefs, social norms, and self-efficacy.

Group-Based Interventions

- A review of two studies with preschoolers directed at increasing fruit and vegetable intakes found that the potential mediators of change were preference for fruit (expected outcomes), parental facilitation of vegetables, and family rules for eating and availability at home of vegetables (behavioral control) (Tak, Te Velde, & Brug 2008).
- A middle school intervention designed to improve behaviors related to obesity prevention found that students significantly decreased the frequency of sweetened beverages, packaged snacks, and eating at a fast food restaurant. They also decreased their screen time. Their outcome beliefs and overall self-efficacy, but not their attitudes, became more positive (Contento et al. 2007).
- A school-based weight gain prevention intervention for adolescents based on the theory of planned behavior and accompanied by environmental supports positively influenced several measures of body composition among both girls and boys (Singh et al. 2007).
- A gardening program that was effective in improving youth fruit and vegetable consumption found that perceived behavioral control was predictive of behavior in girls (Lautenschlager & Smith 2007).

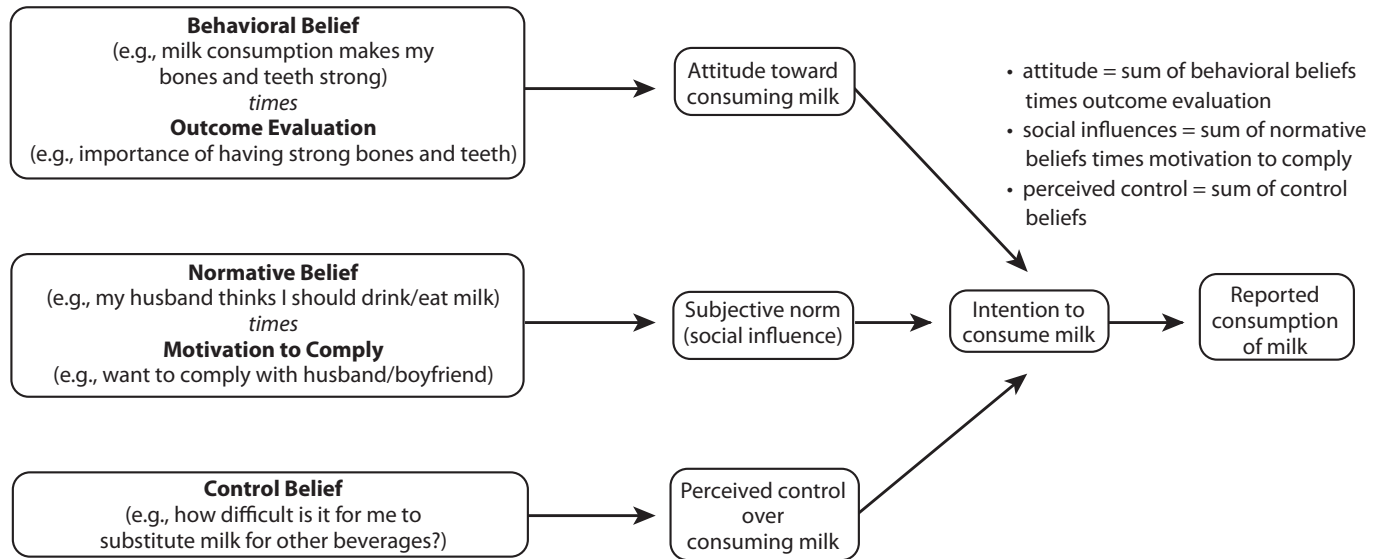
Media-Based Interventions

Mass media campaigns often have drawn on expectancy-value theories to develop messages that are motivating. Such messages are in essence “arguments” or reasons for the behavior, providing information on expected outcomes, including perceived benefits. Here are several examples:

- The 5 A Day fruits and vegetables national program in the United States also used outcome beliefs (or reasons for taking action) for its main message: eating five servings of fruits and vegetables daily can improve health. National monitoring data showed a modest increase in consumption (Potter, Finnegan, & Guinard 2000).
- A media campaign called “1% or Less” encouraged people to switch from higher-fat milk to milk with 1% or less fat (Booth-Butterfield & Reger 2004). The campaign targeted behavioral beliefs and found significant effects on intention, attitudes, and behavioral beliefs; these were related to changes in self-reported milk use.

NUTRITION EDUCATION IN ACTION 4-4

Using the Theory of Planned Behavior to Understand Milk Consumption Among Pregnant Women Enrolled in the Women, Infants and Children (WIC) Program



Target Audience and Behavior

- **Audience:** Pregnant women enrolled in, or eligible for, the WIC program
- **Behavior:** Consumption of milk and of milk used in cooking or added to cereal, quantified as the number of cups per day

Theory Constructs/Mediators

- **Behavioral intention:** "How likely is it that you will drink at least 2 cups of milk a day (including milk from milk-containing foods) for the next month?" and "How often do you plan to drink/eat milk for the next month?"
- **Outcome expectations:** Fifteen belief items, such as taste, provides my baby with necessary nutrients, makes me fat, quenches my thirst, makes me feel great, good for my skin and hair.
- **Normative beliefs:** Six items, such as my best friend, mother/parents, sister/brother, or nurse/WIC staff/nutritionist think I should drink milk.

- **Beliefs about control:** Twelve items such as able to buy/get whenever I want, difficult to drink milk.

Results

The following beliefs were among the most predictive of milk consumption:

- **Behavioral beliefs:** Taste, provides my baby with necessary nutrients, quenches my thirst, makes me feel sick/upsets my stomach, makes my bones and teeth strong, causes constipation
- **Social influence:** None significant
- **Control beliefs:** Able to buy/get whenever I want, able to drink 2 cups per day, able to keep milk fresh, kept at home for me

Source: Park, K., and J. R. Ureda. 1999. Specific motivations of milk consumption among pregnant women enrolled in or eligible for WIC. *Journal of Nutrition Education* 31(2):76–86. Diagram used with permission of the Society for Nutrition Education.

- A brief telephone-delivered message followed up by three mailings compared beliefs regarding individuals' personal responsibility and social responsibility to eat five fruits and vegetables (Williams-Piehotra et al. 2004). Both types of messages increased intake substantially, with the social message slightly more effective over a longer term.

Other Potential Mediators of Food Choice and Dietary Behavior Change

Global Values and Hot Buttons

Values are an important basis for action. The social psychological theories described so far posit that individuals are motivated to take action if the action will lead to outcomes or goals they value (Lewin et al. 1944). These goals about certain immediate ends, such as taste, seeming cool, losing weight, or being liked by one's friends are called *outcome expectations*, as noted. Other goals are more global and are called *terminal* or *end-state values*. These are often set by a person's culture or subculture and are relatively enduring.

Global Values of Rokeach

A widely used set of end-state values is that of Rokeach (1973): an exciting life, a world of beauty, inner harmony, a sense of accomplishment, social recognition, national security, a comfortable life, pleasure, a world at peace, equality, family security, freedom, happiness, mature love or sexuality, salvation, self-respect, true friendship, and wisdom. He does not include health as a value because he believes that health was important for everyone and thus did not differ among people. However, health has been incorporated in the list of values by others.

Global Values of Kahle

Marketers often use Kahle's list of values (Kahle 1984; Andreasen 1995): self-respect, sense of accomplishment, self-fulfillment, fun and enjoyment in life, security, being well respected, a warm relationship with others, and excitement. Other lists include additional values such as novelty, independence, or sense of belonging.

Other Basic Values

The needs for competence, autonomy, and sense of being related to others are seen as basic values, common to all cultures, in self-determination theory (Deci & Ryan 2000).

Other values may also be important, such as family cohesion, empowerment of communities, support of local farmers, social justice, or conservation of resources. For example, a study with adults found that individuals who cleaned their plates felt they did not want to waste food because it was linked to a larger value of not wasting resources (Pelican et al. 2005). Values may also differ by age group, so values for children, teens, and adults may differ.

Notice that these values are based on people's emotions or deepest feelings about themselves or the world around them. Consequently, they are sometimes referred to as people's *hot buttons* in the mass media literature.

Personal Meanings Given to Food

Out of our values and specific past experiences may emerge very personal meanings we attach to the foods we eat. Foods may be eaten because they are comfort foods that remind us of positive childhood experiences or because we want to use them to manage feelings. For example, a study with teenagers found that although they knew that eating sweets might be unhealthy, bad for their teeth, or fattening, it was also a way

to deal with frustration, stress, or anger (Spruijt-Metz 1995). Eating junk food or skipping lunch was a way to assert their independence and personal will and to challenge (parental) authority and test boundaries. Nutrition educators must explore and consider these personal meanings of food when they plan nutrition education programs.

Take-Home Message about Theory of Planned Behavior

- People are likely to take action if they expect the action will lead to outcomes they desire, thus improving their attitudes; if other people they value think it is a good idea; and if they feel they have some control over taking action. Developing specific implementation plans can help them translate intention to action.
- You will find this theory especially useful for designing nutrition education activities and mass media programs to increase awareness of issues and enhance motivation for action. The theory is also useful for designing strategies to help people set specific plans to implement their intention to take action.

SELF-DETERMINATION THEORY

In its simplest terms, self-determination theory proposes that individuals have innate psychological needs for autonomy, competence, and relatedness, which, when satisfied, enhance their autonomous motivation and well-being. The enhancement of growth and well-being requires the satisfaction of these basic needs and supportive social conditions.

Self-determination theory (SDT) is a general theory of human motivation, which begins with the assumption that people are active organisms, with innate tendencies toward psychological growth and development, who strive to master ongoing challenges and to integrate their experiences into a coherent sense of self. The theory focuses on the degree to which human behaviors are volitional or self-determined—that is, the degree to which people are able to reflect on and engage in actions with a full sense of choice (Deci & Ryan 1985, 2000, 2008; Ryan & Deci 2000). For example, self-determined individuals choose to behave in a manner that reflects their autonomy. Their behavior is not to achieve an external reward or escape aversive stimuli in the environment.

Components of the Theory

This natural human tendency toward growth and development requires ongoing (1) satisfaction of basic psychological needs and (2) supports from the social environment to function effectively.

Basic Psychological Needs

Basic psychological needs are a natural aspect of human beings that apply to all people, regardless of gender, group, or culture. These are innate, universal, and essential for health and well-being. To the extent that the needs are satisfied people will function effectively and develop in a healthy way, but to the extent that they are thwarted, people will not function optimally or in a healthy way. According to Deci and Ryan, three psychological needs motivate the self to initiate behavior and specify “nutriments” that are essential for psychological health and well-being of an individual: the need for competence, need for autonomy, and the need for relatedness to others (Deci & Ryan 2000, 2008).

- *Need for competence:* The need for competence refers to the need to experience ourselves as capable and competent in controlling the environment and being able to reliably predict outcomes.
- *Need for autonomy* (or self-determination): The need for autonomy refers to our need to actively participate in determining our own behavior. It includes the need to experience our actions as result of autonomous choice without external interference.
- *Need for relatedness:* The need for relatedness refers to our need to care for and be related to others. It includes the need to experience authentic relatedness from others and to experience satisfaction in participation and involvement with the social world.

Different Types of Motivation: Autonomous and Controlled

The degree to which individuals are self-determined depends on the degree to which these needs are met and how individuals handle pressures from the environment. Different *types* of motivations have been described based on the degree to which motivations are autonomous or controlled.

Autonomous motivation is when individuals initiate an activity or behavior for its own sake because it is interesting and satisfying in itself, as opposed to doing an activity to obtain an external goal. The individuals experience a full sense of choice and fully endorse the activity. Intrinsic motivation is a prototype of this experience. People engage in behaviors because of passion, pleasure, and interest. Autonomous motivation is not the same as independence, which means to function alone and not rely on others. Independent action can be undertaken autonomously and yet include engagement with and relying on others because it is satisfying. In contrast, people may be independent because they feel pressured to be independent or because they do not like being engaged with or dependent on others. In both cases, the motivation is not autonomous.

Controlled motivation is when individuals engage in activities in response to external pressure or to achieve an external goal. These pressures and goals are extrinsic motivators, which can often undermine intrinsic motivation because they are experienced as controlling.

Amotivation is when individuals have no motivation or intention to engage in a particular action or behavior. This may result from not valuing the behavior or outcome, not believing that the behavior will lead to desired outcomes, or not feeling competent to engage in the behavior.

Continuum of Motivations

Internalization and integration refers to the process by which individuals internalize and actively attempt to transform externally driven motivations (extrinsic motives) and feeling controlled into personally endorsed values and thus assimilate and integrate ways to regulate behaviors that were originally external. Based on the degree of autonomy and control, motivations can be aligned along a continuum ranging from being highly controlled by external motivators to autonomous motivation based on intrinsic motives (Ryan & Deci 2000, Deci & Ryan 2008):

- *External regulation:* On one end of the continuum is external regulation, which refers to doing something for the sole purpose of achieving a reward, avoiding a punishment, or living up to external expectations.
- *Introjected regulation:* Introjected regulation refers to partial internalization of extrinsic motives. However, these motivations are still somewhat alien to the person, who feels controlled by them.

Individuals feel guilt, shame, and self-criticism when they fail and pride and self-aggrandizement after success.

- *Identified regulation:* Next on the continuum is identified regulation. Individuals accept the importance of the behavior for themselves and accept it as their own. They identify with the value of the activity and willingly accept responsibility for the behavior. They engage in the behavior with a greater sense of autonomy and thus do not feel pressured or controlled by external factors to do the behavior.
- *Integrated regulation:* Further along the spectrum is integrated regulation, when individuals have identified with the values and meanings of the activity or behavior to the extent that it becomes fully internalized and autonomous (Deci & Ryan 2008). The behavior is personally relevant and meaningful. This is the means through which externally motivated behaviors become truly autonomous or self-determined.
- *Intrinsic motivation:* At the far end of the spectrum is intrinsic motivation, where individuals engage in the behavior because it is interesting and satisfying. They experience positive feelings from the behavior itself.

External and introjected ways of regulating behavior are clearly controlled by external motivators and may be described as forms of *controlled motivation*. Identified, integrated, and intrinsic modes of regulating behavior are forms of *autonomous motivation*. Use of integrated regulation bears some resemblance to intrinsic motivation because both are accompanied by a sense of volition and choice. However, the integrated mode of regulation is based on the person, though having fully integrated the value of the behavior, still wanting to achieve some other outcome whereas intrinsic motivation is based on interest in the behavior itself.

Energy and Vitality

Deci and Ryan (2008) define vitality as energy available to the self either directly or indirectly from basic psychological needs. This energy allows individuals to act autonomously. Deci and Ryan point out that many theorists have posited that self-regulation depletes energy, but SDT researchers have proposed and demonstrated that only controlled regulation depletes energy. Autonomous regulation can actually be vitalizing (e.g., Moller, Deci, & Ryan 2006).

Facilitating Internalization and Integration

Both autonomous motivation and well-internalized forms of extrinsic motivation are associated with more positive human experience, performance, and health consequences. Extrinsic motivation is more likely to become intrinsic when individuals feel competent (able to perform a behavior), have a sense of autonomy (where they have choice and control), and experience relatedness or connection to others.

Support for Autonomy

Studies show that self-determined behavior is enhanced by (1) providing individuals with a meaningful rationale so that they understand why the specific behavior or activity is important, (2) acknowledging the individuals' feelings and perceptions about the behavior so that they feel understood, and (3) supporting their experience of choice and minimizing the use of pressure to do the behavior while at the same time pointing out discrepancies between individuals' behaviors and their stated desires.

Research and Interventions Using Self-Determination Theory

Some studies have been conducted with self-determination theory in the health domain:

- *A study with urban adolescents* found that perceived autonomy and competence in physical education were interrelated and functioned as a whole for enhancing leisure-time physical activity intentions and behaviors (Shen, McCaughtry, & Martin 2008).
- *Another study with school children* found that extrinsic goals (pressure to lose weight) negatively predicted whereas intrinsic goals positively predicted self-determined motivation to be active, which in turn positively predicted quality of life and exercise behavior (Gillison, Standage, & Skevington 2006).
- *A test of SDT in school physical education (PE)* found that need satisfaction predicted intrinsic motivation, which in turn linked to adaptive PE-related outcomes. In contrast, need satisfaction negatively predicted amotivation, which in turn was positively predictive of feelings of unhappiness (Standage, Duda, & Ntoumanis 2005).
- *An obesity-prevention curriculum for middle school youth* called Choice, Control, and Change, which is designed to enhance autonomous motivation focused on dietary behaviors that youth had control over (such as sweet drinks and packaged snacks). The intervention provided a meaningful rationale for healthy behaviors through inquiry-based science activities, and guided goal setting where youth selected which goals to work on, promoting autonomy. Results showed that youth improved their food choices and increased their sense of competence and autonomy (Contento et al. 2007).
- *Diabetes patients* who perceived that they received autonomy support from their health care providers showed increased autonomous motivation, competence, and improved blood glucose levels (Williams, Freedman, & Deci 1998).
- *Providing choice to patients with eating disorders* during the first few weeks of inpatient treatment reduced the drop-out rates (Vandereycken & Vansteenkiste 2009).

Take-Home Message about Self-Determination Theory

- All people have an innate tendency toward growth and development. Maintenance of this tendency requires ongoing satisfaction of basic needs for competence, autonomy, and relatedness to others and a supportive social environment.
- Nutrition education needs to focus on supporting autonomous motivation by providing a meaningful rationale for behavior, acknowledging participants' feelings so that they feel understood, and supporting their experience of choice.

■ TRANSLATING BEHAVIORAL THEORIES INTO EDUCATIONAL STRATEGIES FOR WHY TO TAKE ACTION

Translating theory into practical strategies is a crucial process for the effectiveness of the nutrition education intervention. This section lists the mediators of behavior change derived from theory along with potential practical, theory-based educational strategies that nutrition educators might use to address them. You would only select those strategies that operationalize the theory-based potential mediators of change that are a

part of the intervention model you have chosen. The process of linking mediators of behavior change with educational practice is the central focus of this book and is described more fully in Part II.

Translating the Health Belief Model into Educational Strategies

The health belief model emphasizes the importance of enhancing awareness of perceived susceptibility and severity (together they constitute perceived threat or risk) of a condition by assessment of individual behaviors or community practices so as to have a clear understanding of the situation. It also emphasizes the role of perceived benefits and barriers in whether individuals will actually take action on their sense of threat. The following strategies are useful for operationalizing mediators from the theory.

Awareness of Risk, Concern, or Need

Nutrition educators can design interventions to increase the salience of specific issues of concern or perceived risk related to personal health, community practices, or the sustainability of food system practices. People need enough knowledge of potential concern to warrant action but not so much as to paralyze them from action. They need accurate perceptions and understandings of their own behaviors or community practices in relation to the risk or concern. Effective strategies and specific activities for this mediator might involve the following:

- *Increasing the salience of issues and problems:* Nutrition educators can use trigger films, striking national or local statistics, pictures and charts, personal stories, and other strategies to make salient issues of concern, such as the increase in obesity rates, how much of school lunches are thrown away, the portion sizes of food products, the prevalence of bone loss or metabolic syndrome in adolescents, or the rate of loss of farm land.
- *Providing self-assessment compared to recommendations:* Individuals can complete checklists, food frequency questionnaires, or 24-hour food intake recalls and compare intakes to a standard, such as MyPyramid servings, to give themselves an accurate picture of their intake. They can also complete checklists to see how "green" their food shopping practices are (e.g., where the food comes from, degree of packaging). Such personalized feedback helps counteract optimistic bias and encourages individuals to consider changes in their dietary behaviors based on their true risk.
- *Making a community assessment of practices:* Information about community food practices could provide a true picture of the extent of risk or severity of an issue. Nutrition educators can use existing data or surveys, formal and informal.

Fear-Based Communications

The use of fear-based communications in health promotion activities to increase perceived risk has been the subject of some debate and discussion. Fear and threat are conceptually distinct: *fear* is defined as a negative emotion accompanied by a high level of arousal, whereas *threat* is a cognition. They are, however, intricately related, such that the higher the threat, the greater the fear experienced.

Reviews of studies have found that, overall, fear appeals have a moderate effect on changing attitudes, intentions, and behavior (Leventhal 1973; Witte & Allen 2000). It may also be that some individuals are more likely than others to respond to appeals based on threat. Strong fear appeals produce high levels of perceived seriousness and susceptibility

and are more persuasive than low or weak fear appeals—the stronger the fear aroused by a fear appeal, the more persuasive it is. However, fear appeals result in two competing responses that interfere with each other: an adaptive response to deal with the risk or danger, or a maladaptive response of denial or defensiveness.

Effective Use of Fear

Fear appeals are effective only if people also feel that they can do something to protect themselves. Thus, fear appeal messages can be effective in bringing about behavior change when they do the following: (1) depict a significant and relevant threat, but only when the messages also (2) clearly specify that there are effective strategies in which people can engage to reduce the threat or fear, and that (3) these strategies appear easy to accomplish. Nutrition educators need to provide specific instructions on exactly when, where, and how to take action.

For example, a campaign providing cancer risk information should be accompanied by information on actions people can take to reduce the risk, such as eating more fruits and vegetables, increasing physical activity, and getting regular checkups with physicians. It is important for nutrition educators to consider the social contexts of individuals and explore these with the intended audience in formative research (Salovey, Schneider, & Apanovitch 1999).

Perceived Benefits and Barriers

Explore Benefits and Barriers

In group settings, nutrition educators can help participants understand the benefits of taking action. For breastfeeding, these might include health of the baby, convenience, mother–child bonding, and so forth. Also nutrition educators must identify barriers, such as pain of first breastfeeding, embarrassment in public situations, or wishes of others in the family. These can be identified through presentations or group discussion. These theory constructs can also be explored through the media, such as the campaign to eat five fruits and vegetables a day.

Gains and Losses

How messages are framed in terms of gains and losses may be important. For example, there is some evidence that health communications about the need for people to get checkups (e.g., mammograms) are more persuasive if they are framed in terms of guarding against health losses (breast cancer), but that to get people to adopt preventive actions, communications are more effective if they are framed in terms of health benefits or gains.

Case Study Using the Health Belief Model

Alicia has learned that her mother had a heart attack. This is a cue to action. She decides to attend a nutrition education session—which happens to be based on the health belief model. The session outline is shown in **Case Study 4-1**.

Translating the Theory of Planned Behavior into Educational Strategies

The theory of planned behavior emphasizes the importance of attitudes (which are based on beliefs), social norms, and perceived control over being able to take action. These factors influence people's decision making and intention to take action. If the individuals choose to take action, making specific implementation intentions or action plans can help translate intentions into action. The following strategies are useful for operationalizing mediators from the theory.

Analyze Behaviors and Practices

Use of the theory in nutrition education begins by identifying the food or health issue and behaviors or practices that will be the focus of the nutrition education program. Individuals and groups need to be clear about their own behaviors and community practices in relation to a given issue. Nutrition educators can obtain this information using existing literature or data or can obtain the information from the groups with interviews, behavioral checklists, 24-hour dietary or physical activity recalls, and so forth. These should be specific, such as eating vegetables, breastfeeding, snacks, beverages, breakfast, shopping at a farmers' market, walking, playing basketball, and so forth.

Understand Behavioral Intention

Nutrition educators can use survey instruments, interviews with key individuals, focus groups, or group discussion to estimate the degree to which the members of the audience are ready to take action. Following this, they investigate and address the determinants of intention to engage in the behaviors or practices, as described in the following subsections.

Attitudes and Beliefs About Taking Action

A major task in enhancing motivation is to design activities that focus on beliefs about the potential desirable outcomes of behaviors, such as the benefits of eating healthful foods or sustainable or “green” food choices. Such beliefs are powerful motivators of behavior through their impact on attitudes, intentions, and formation of goals.

Identify Relevant Beliefs and Attitudes

The first step is to identify which *beliefs* and *attitudes* are relevant to the recommended nutrition- or food-related behavior in the given group through a thorough needs analysis. Nutrition educators can identify these beliefs and attitudes by surveys, focus groups, interviews, or other methods. This is a crucial step and is similar to market research in the social marketing process.

Select Potential Mediators of Change for the Group

The nutrition educator can then select a series of key beliefs determining intentions as intervention targets. The relative importance of different beliefs, or reasons for action, will differ depending on the behavior and the group or audience. For example, in the case of eating fruits and vegetables, being cool may be important for teenagers, improving the health of the baby may be important for pregnant women, reducing cancer risk may be important for men, and ease of preparation may be important for women. In focus groups before the 5 A Day campaign was launched, the benefits of feeling better, health, and weight control were determined to be most salient to consumers. Despite scientific evidence, the stated benefit that eating fruits and vegetables would “cut my risk of getting cancer in half” was not considered credible or relevant to their eating choices (pollution and genetics were more important) (Loughrey et al. 1997), affirming the importance of identifying motivating beliefs and attitudes from the target audience before designing an educational program.

Design Messages: The Elaboration Likelihood Model (ELM)

Nutrition educators then convert these beliefs about valued outcomes to be achieved from the recommended behavior (such as breastfeeding or eating fruits and vegetables) into messages for the mass media or into educational activities for groups. The elaboration likelihood model

CASE STUDY 4-1

The Case of Alicia: Nutrition Education Using the Health Belief Model

Alicia, you recall, is a 19-year-old high school graduate who works as a receptionist in a busy dentist’s office. She grabs a quick lunch each day—something filling. She doesn’t cook much and so tends to snack and eat fast food. Her mother recently had a heart attack and was hospitalized. Alicia was alarmed. Until now she had not thought much about her health or her diet. In her view, medical conditions were caused by biology, mostly, or luck. Now she wants to learn more about

the condition and whether and how she might prevent such an attack in herself. This is a “cue to action” in the health belief model. The staff in the office told her about educational sessions offered by the nearby community clinic.

One session was called “Eat Right for Your Heart.” Alicia decides to attend. Here is a sample of what the session might be like. Note that it focuses on specific behaviors—eating snacks and fast foods.

“Eat Right for Your Heart”

Potential Mediator of Change	Nutrition Education Activities
Perceived susceptibility	Self-assessment: As they come in, participants are asked to write down everything they ate and drank in the past 24 hours. Then, they are to circle the foods that are high in fat.
Perceived severity	The instructor shows the group some examples of popular fast foods and snacks. Then, she asks a volunteer to come up and measure out, with estimates provided by the group, how many teaspoons of fat (from a container of solid cooking fat) they think is in each snack. <i>Alicia and the others are shocked at the amount of fat in the food items.</i>
	The instructor then conducts a demonstration using a plastic tube to represent a blood vessel. She pours some “blood” through—it moves quickly through the tube. Then, she places some of the solid fat in the tube, and the blood now trickles through. She discusses this as illustrating the impact of a dietary pattern with large amounts of snacks and fast foods that are high in saturated fat. <i>Alicia and the others are moved by the visual demonstration and their perceived risk of disease is heightened.</i>
Perceived benefits of taking action	The instructor provides the evidence showing that eating a healthy diet low in saturated fat and high in whole grains and fruits and vegetables can reduce risk of chronic disease. <i>Alicia is now very concerned about her diet and thinks she will do something about it.</i>
Perceived barriers	The group reviews their dietary recalls and discusses barriers to reducing the number of unhealthy snacks they eat.
Overcoming barriers	The group brainstorms ways to reduce the number of unhealthy snacks and fast food items they eat and substitute with healthier snacks, such as fruits and vegetables or whole-grain snacks and healthier options at fast food restaurants.
State likelihood of taking action	The instructor asks group members to write down one action they will take to reduce their consumption of unhealthy snacks and fast foods and replace them with healthier ones. <i>Alicia is pleased that there are some actions she can take to protect her heart. She decides that she will take fresh fruit or bagged baby carrots to work each day. She thinks that she will also commit to a second behavior: she will select a healthier option at least once a week when she goes to fast food restaurants.</i>

(ELM) proposes that individuals will process messages through either a central route or a peripheral route (Petty & Cacioppo 1986):

- *Central or mindful route:* The effectiveness or persuasiveness of nutrition educators’ messages about the perceived benefits or desirability of the outcomes of the recommended behavior (breastfeeding, parents feeding their children healthy foods), whether delivered through group educational activities, mass media messages, or brochures and newsletters, depends on many factors, chief among them being whether the messages are constructed in such a way as to induce individuals to *think*

about the messages or *elaborate* on them. In this “central processing” of the message, individuals understand and evaluate the benefits or other outcomes of behavior in light of their own established beliefs and attitudes. Beliefs and attitudes changed by this route are well thought out and become integrated into individuals’ belief or attitude structure, such as “It is desirable for me to eat more locally grown foods because it will support local farmers.”

Individuals are more likely to think about the message if they judge it to be personally relevant and there are few barriers to in-depth processing of the message; that is, when the message is

easy to understand, people have time to think about it, and there are not many distractions.

- *Peripheral or mindless route:* When the health message is difficult to process or does not seem relevant, individuals tend to judge the message by more superficial aspects, such as the attractiveness or credibility of the source or the associations of the food with other desirable attributes, such as a picture of a slender, attractive woman. This is the “peripheral,” or “mindless,” route to changes in beliefs and attitudes.

Attitudes and Feelings

One important way to increase motivation to eat healthful food is to provide opportunities for individuals to experience and enjoy healthful food, for example, through food tastings or food preparation and cooking experiences in groups accompanied by eating the prepared food together. These food experiences need to be long term to have full impact. Repeated experiences and familiarity are more likely to lead to positive sensory-affective responses to new foods. Indeed, an intervention study found that after 16 weeks eating lower-fat foods, individuals’ reported desires to eat low-fat foods increased and their desires to eat high-fat foods decreased (Grieve & Vander Weg 2003).

When appropriate, groups can explore their feelings about food, understand these feelings, and seek ways to enjoy substituting less healthful with more healthful foods. In addition, because people’s feelings and emotions are closely related to their deeply held values, emotion-based messaging has been proposed as a way to build on people’s values and hot buttons, such as about being a good parent (McCarthy & Tuttelman 2005).

Anticipating positive feelings and anticipated regret is important. Nutrition educators can help the group members explore how they would feel about themselves for taking the recommended action—would they feel good about themselves? Would they anticipate regret if they did not take action?

Misconceptions

Misconceptions should also be identified through formal or informal assessment and addressed at this time. Very often individuals do not initiate behaviors because of erroneous beliefs about expected outcomes, such as the belief that whole grains and beans are difficult to digest. The 5 A Day campaign found that many of those surveyed believed people needed only one or two fruit and vegetable servings a day. Consequently, the need for five a day became a central message.

Social Norms and Social Expectations

Nutrition educators can make groups with whom they work aware of the influence of social norms on their behaviors through group activities identifying what important others think that they should be doing (e.g., perceptions of the spouse’s or partner’s approval or disapproval of breastfeeding). In addition, educators can use materials, films, posters, and statistics to indicate how individuals similar to the group are engaging in the healthful behaviors, such as other WIC women breastfeeding, teenagers drinking water, and so forth (descriptive norms).

Personal Norms, Moral Norms, or Internal Standards

Nutrition educators can explore the group’s personal norms or internal standards and sense of responsibility through various values clarification activities. Individuals can reflect on and evaluate the importance of health in their lives and make choices about the values they wish to place on health. Moral issues can also be explored.

Beliefs About Self-Efficacy and Control: Barriers and Difficulties

Beliefs about self-efficacy or control over the behavior are important in the motivational phase of decision making about diet as well as in the postdecisional phase when individuals are attempting to carry out the behavior. In the motivational phase, self-efficacy can be seen as the mirror image of perceived barriers or difficulty in taking action. It involves recognition of the need for skills to take action. In group settings, nutrition educators can elicit perceptions of the barriers to taking action from group members, and then share and discuss ways to reduce those barriers. In mass media approaches and materials, difficulties can be addressed in the messages themselves. For example, a statewide program placed a series of messages on billboards about eating fruits and vegetables. These included pictures of bananas with the message “Peel, eat; how easy is that!” and tomatoes with the message “Slice, eat; how easy is that!” (<http://www.idph.state.ia.us/pickabettersnack/default.asp>).

Beliefs About the Self

Many other related beliefs are also potential mediators of behavior change, such as perceived responsibility or moral obligation and personal meanings given to food and eating. Nutrition educators should identify and address these needs in the nutrition education activities where they are relevant and salient for a given audience. Such beliefs can be identified for a given group in a personal setting or through surveys, or information may be found in the published literature.

The educational strategies used also depend on the channel and on the behavior. Active methods of self-exploration and understanding are likely to be most effective. One strategy might be facilitated group dialogue (Norris 2003) (see Chapter 17). This is similar to motivational interviewing for individuals (Rollnick, Miller, & Butler 2007). Films, discussions, or debates of the pros and cons of the behavior may be useful here. Self-presentations such as self-identity or social identity can be explored. Ideal-self versus actual-self discrepancies and ought-to-be self versus actual-self discrepancies can be explored through activities that bring to awareness these discrepancies, and strategies can be provided for handling them.

Habits or Routines

Many behaviors appear to occur without much thought. As we have seen, this results from the frequent pairing of foods and the situations in which they are consumed. Such habits or routines are also important motivators of behavior. Nutrition education can be directed at bringing such attitude–situation cues to awareness so that individuals can choose to change behaviors if they wish. Nutrition education activities can be designed to bring the less positive habits or routines (e.g., being a couch potato) to consciousness so that they can be considered and replaced by more positive habits or routines. Because these may require more effort (e.g., exercising regularly), nutrition educators can design tip sheets, checklists, or activities to assist individuals to develop these new routines.

Decision Making and Resolving Ambivalences

Nutrition educators can help the group explore the benefits and costs of taking action as well as not taking action. This can be done verbally as a group or through an activity where individuals write out the pros and cons. In addition, educators can help group participants explore their own values by providing the group with a series of value statements

CASE STUDY **4-2**

The Case of Maria: Nutrition Education Using the Theory of Planned Behavior

Maria is a 23-year-old who works in a construction company office. She eats lunch each day from a mobile vendor who sells hotdogs, hamburgers, and sandwiches and drinks a soda pop or two each day for a quick pick-me-up. She has a 4-year-old daughter who goes to a Head Start program. She and her husband are divorced. She knows that she and her daughter should eat more fruit each day, but they both like sweets and soda, which are cheap and convenient. Pamphlets at

Head Start encourage parents to provide healthy snacks and drinks for children at home. She wants to be a good mother and she is becoming concerned about her daughter’s teeth; her daughter also is getting a little chubby. She sees that there will be a session for moms offered at the site titled “Give your child the smile of a lifetime—healthy snacking.” Notice that it is on a specific behavior.
Here is a sample of what the session might be like:

“Give Your Child the Smile of a Lifetime—Healthy Snacking”

Potential Mediator of Change	Nutrition Education Activity
Beliefs about outcomes of current behavior	The participants are asked to write down everything their child ate and drank in the past 24 hours (Head Start provides menus for foods/drinks offered there). Then, they are to circle the drinks high in sugar and snacks high in sugar and fat.
Beliefs about outcomes of current behavior	The instructor brings out a variety of popular sugared drinks. Then, she asks a volunteer to come up and measure out, with estimates provided by the group, how many teaspoons of sugar (from a container of sugar) they think is in each drink. <i>Maria and the other parents are shocked at the amount of sugar in drinks and the number of calories. She always thought that liquids had no calories.</i> The instructor then shows the group a chicken bone that she has let sit in a glass of soda pop for several days. The bone is rubbery and soft compared to a bone placed in water. She points out that the same can happen to teeth, particularly when children take a sweetened drink to bed with them in a bottle. <i>Maria and the other parents are again surprised that sweetened carbonated drinks could have such an effect.</i> The instructor then shows participants various packaged snacks. She asks them to read the label to find out how much sugar is in each. Again, she has volunteers measure out the amount of sugar in each. <i>Maria takes note of the calories in the cookies and packaged snacks she and her daughter often eat.</i>
Beliefs about positive outcomes of potential behavior (potential motivators or mediators of change)	The instructor provides the evidence showing that drinking water and milk instead of sugared drinks and eating low-fat dairy products in the context of a healthy diet including whole grains and fruits and vegetables can help children develop strong bones and maintain a healthy weight. She shows pictures of strong bones and children with beautiful teeth and smiles, and being active and full of energy. <i>Maria likes the pictures she sees and her attitude becomes more positive.</i>
Social norms	The instructor shows a film clip showing similar moms offering their children healthy snacks and talking about their experiences.
Perceived control over behavior, including barriers or difficulties	The group reviews the dietary recalls for their children. They discuss the difficulties in getting children to drink milk and water rather than sweetened drinks and to eat healthy snacks.
Overcoming barriers	The group discusses the authoritative parenting style, where the parent offers healthful drinks such as 100% juice, milk, and water and lets the child choose, or the parent provides several healthy snacks and lets the child choose which to eat. The group brainstorms different kinds of good (and tasty) substitutes for unhealthy snacks.
Behavioral intention/ implementation intentions	The instructor asks group members to write down at least one action they will take during the coming week to make their child’s diet healthier. She asks them to be very specific. <i>Maria feels motivated to take action. She decides that she will offer a couple of healthful snacks when her daughter comes home after Head Start each day instead of the usual less healthy ones. She decides on a second action: she will not stock soda pop in the house so that she and her daughter will only drink it occasionally. She believes her implementation plan is feasible.</i>

to which they can respond. This is to seek to elicit their ambivalences, and then assure them that this is normal.

At the end of these activities, individuals can come to closure and write out their intention with respect to the issue or behavior that is the focus of the program.

Case Study Using the Theory of Planned Behavior

Maria is a 23-year-old mother of a preschool child. She has not been interested much in health for herself but wants to make sure that her child eats well. She decides to attend a nutrition education session—which happens to be based on the theory of planned behavior. The session outline is shown in **Case Study 4-2**.

Translating Self-Determination Theory into Educational Strategies

The focus of nutrition education using self-determination theory is to facilitate internalization of motivation and autonomous enactment of behaviors. Nutrition educators can do this by providing conditions that are supportive of the basic needs for competence, autonomy, and relatedness. The processes are very similar to motivational interviewing for individuals (Rollnick et al. 2007) and facilitated dialogue (Norris 2003) described in Chapter 17.

Autonomy support involves the following:

- Eliciting the understandings and feelings of the participants through reflective listening.
- Providing individuals with a meaningful rationale for taking action.
- Providing structure for explorations.
- Helping individuals explore and resolve their ambivalences, assuring them that ambivalences are normal; expressing empathy. At the same time, point out discrepancies between their current behavior and what they say they would like to do.
- Minimizing control or pressure; roll with the resistance.
- Emphasizing choice, and providing a menu of effective options, including the option of not making a change.

SUMMARY

A major task in the thinking phase or component of nutrition education is to increase awareness and enhance motivation, promote active contemplation, and facilitate formation of intentions to take action. Several theories are useful here and research evidence provides support for use of the theories in nutrition education and physical activity programs.

Taken together, theory and research suggest that it is effective for nutrition educators to design activities that focus on helping people understand personal and community risks and the benefits of specified healthful food choices and diet- and physical activity-related behaviors;

helping participants identify potential barriers to carrying out the behaviors; and exploring ways to overcome barriers.

The Health Belief Model

The health belief model proposes that when people experience a personal threat about a health condition they will likely take action, but only if the benefits of taking action outweigh the barriers, actual and psychological. Having the ability to take action is also crucial. The health belief model is especially useful for adults who are at risk for health conditions or who are beginning to think about their health. It may be less useful for children, for whom health is not a motivator.

The Precaution Adoption Process Model

The precaution adoption process model proposes that the decision as to whether to take precautionary action in response to a risk depends on individuals' stage of awareness, which can range from unaware, to awareness without engagement, to being undecided, to active decision making. Nutrition education strategies need to differ for these different groups, who all appear to be in a pre-action phase. Mediators from other theories are helpful in explaining the active decision-making process as well as providing strategies for those initiating and maintaining the chosen precautionary action. Thus, nutrition education interventions should be tailored to the stages of decision making.

The Theory of Planned Behavior

The theory of planned behavior is useful to enhance motivation for healthful eating and active living. It states that people are likely to take action if they expect the action will lead to outcomes they desire, thus improving their attitudes; if other people they value think it is good idea; and if they feel they have some control over taking action. Developing specific implementation plans can help them translate intention to action. Both group nutrition education and media communications are useful strategies to deliver effective messages in this phase of nutrition education. Affect or feelings are particularly important in the case of food and eating. Thus, individuals should be provided with opportunity to taste and experience healthful foods and explore and understand their emotions with respect to food or being physically active. Media messages should be personally relevant to the intended audience, memorable, and easy to understand and process. Nutrition educators can help individuals set specific plans to implement their intention to take action.

Self-Determination Theory

Self-determination theory suggests that supporting individuals' basic needs for competence, autonomy, and relatedness to others can enhance autonomous motivation.

By addressing all these mediators of behavior change, nutrition education interventions can enhance motivation to act, activate decision making, and assist people to consider intentions to act.

Questions and Activities

1. The first step in making diet-related behavior changes is considered to be becoming motivated. What does it mean to be motivated? What is the main educational goal of nutrition education in this first step? How can nutrition educators best achieve this goal?
2. Describe briefly what you think are the essential features of each of the following theories in terms of how they explain health motivations:
 - a. The health belief model
 - b. The theory of planned behavior
 - c. Self-determination theory
3. Describe in your own words the following theory constructs. How are the terms related to motivation?
 - a. Outcome expectations
 - b. Perceived severity
 - c. Perceived susceptibility
 - d. Perceived benefits
 - e. Perceived barriers
 - f. Attitudes
 - g. Behavioral intentions
 - h. Subjective norms
 - i. Self-efficacy
 - j. Self-identity
 - k. Perceived behavioral control
4. Several of the constructs listed in Question 3 are similar in concept but have different names because of the different origins of the theories. Which are they?
5. Think of a health-related behavior you have been trying to change:
 - a. Write a list of the reasons you would like to make this change and also a list of the difficulties you are having trying to make the change. You can use the following space to write your answers.
 - b. Can you match up *each* of the reasons and difficulties that you listed with at least *one construct* of one of the theories described?

Reasons and Difficulties You Stated	Name of Theoretical Construct	Justification for Assignment

- c. In what ways do the theories help you understand your food choices and eating behaviors better?
6. If you were asked to design media messages for a group of young people like Jason, who you met in Box 4-4, what do you think would be one key message you would want to get across?
 7. Describe five key strategies that nutrition educators can use to enhance motivation for healthy eating and active living.

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