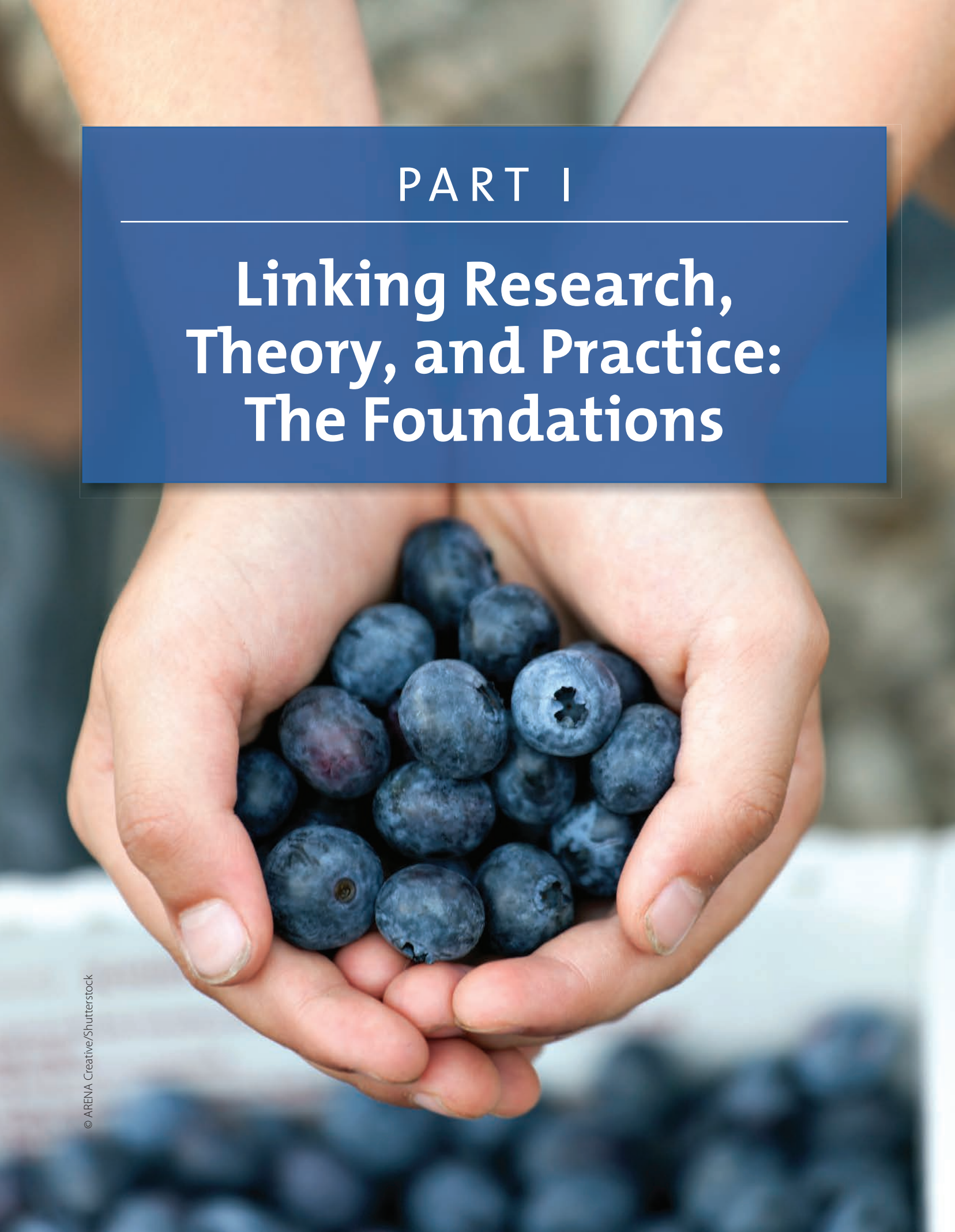

PART I

Linking Research, Theory, and Practice: The Foundations

CHAPTER 1

Nutrition Education: Important, Exciting, and Necessary for Today's Complex World

OVERVIEW

This chapter introduces the reader to the exciting field of nutrition education, why it is needed, and its aims, scope, and effectiveness. It introduces a contemporary definition of nutrition education and provides an overview of the book.

CHAPTER OUTLINE

- Introduction
- Why is nutrition education needed?
- The challenge of educating people about eating well
- Viewpoints on the aims of nutrition education
- A contemporary definition of nutrition education
- Nutrition education effectiveness
- What do nutrition educators do? Settings, audiences, and scope for nutrition education
- Nutrition education, public health nutrition, and health promotion: the roles and context of nutrition education
- Purpose and overview of this book

LEARNING OBJECTIVES

At the end of the chapter, you should be able to:

- State why nutrition education is both important and challenging to do
- Evaluate differing points of view about the purposes and scope of nutrition education
- Define nutrition education
- Describe whether nutrition education is effective
- Describe what nutrition educators do

Introduction

This is an exciting time for the field of **nutrition education**. Everyone seems to be interested in food and nutrition. Most newspapers have weekly sections on food. Restaurant guides have proliferated in print and online, and chefs are now celebrities. Cooking shows are popular on television, and in some areas entire television channels are devoted to food. The cookbook and food sections of bookstores have grown, and diet books and cooking magazines abound. Nutrition and health issues are discussed on the nightly news, and the Internet has exploded with information—websites, blogs, videos, and more. Annual surveys of supermarket shoppers show that nutrition is increasingly important as a factor in people's shopping decisions (Food Marketing Institute, 2012). School gardens have been enthusiastically embraced and urban community gardens have sprouted in many cities.

Food companies and food service providers, recognizing that *nutrition* is a buzzword that sells products, are also getting in on the act. They have created fat-free baked goods, low-fat yogurt, and a host of other products to satisfy one set of consumers, as well as low-carbohydrate products in response to another set of consumers. Reduced-sodium products sit side by side with their original, higher-salt versions. The fruits and vegetables sections of many supermarkets have doubled and tripled in size. Farmers' markets and farm stands are mushrooming and buying "local" or "organic" has gone mainstream, with even large supermarkets identifying such items for consumers. Although "sustainable food systems" is not yet a household phrase, more people understand what that means and belonging to a CSA (community supported agriculture) no longer seems esoteric. Many communities are requiring that fast food chains provide calorie information on their menu boards.

Food is also an important topic of conversation. As you have probably experienced, mentioning that you are in the field of nutrition means that people immediately have questions for you. In addition, food is not just a necessity but also, of course, one of life's great pleasures. While some eaters may be in and out of a fast-food restaurant in 10 minutes, others can spend hours discussing or eating a meal. Almost 200 years ago, Brillat-Savarin pointed out in a book on the physiology of taste that "the pleasure of eating . . . occurs necessarily at least once a day, and may be repeated without inconvenience two or three times in this space of time; . . . it can be combined with all our other pleasures, and even console us for their absence" (Brillant-Savarin 1825).

Why Is Nutrition Education Needed?

It would appear, then, that eating well should be getting easier for everyone. If the news media provide information and healthful foods abound in supermarkets, why is nutrition education needed?

THE ULTIMATE GOAL IS TO IMPROVE HEALTH AND WELL-BEING

Current eating patterns are associated with 4 of the 10 leading causes of death in developed countries such as the United States and increasingly in developing countries as well: coronary heart disease, some types of cancer, stroke, and type 2 diabetes. Obesity is on the rise in the United States and globally, carrying with it an increased risk of these chronic diseases (Flegal et al. 2012; Flint et al. 2010; Stevens et al. 2012). Indeed, a document from the Food and Agriculture Organization (FAO) of the United Nations points out that "many developing nations are now dealing with severe health issues at both ends of the nutritional spectrum. Countries still struggling to feed their people face the costs of preventing obesity and treating diet-related noncommunicable illness. This is called the 'double burden' of malnutrition" (McNulty 2013).

Within the United States, the rate of obesity has jumped in every state (see **FIGURE 1-1**). In 1990, obesity rates in most states were below 14%; now most states have an obesity rate of 20% or more. Indeed, it has been estimated that diet and other social and behavioral factors such as smoking, sedentary lifestyles, alcohol use, and accidents account for about half of all the causes of death in the U.S. (Institute of Medicine 2000).

The good news is that the fact that individual and social patterns of behavior are related to many chronic diseases means that positive changes in individual dietary and physical activity behaviors, community conditions of living, and social structures can play major roles in reducing risk of chronic disease and enhancing health. Better health provides people a better quality of life and enhanced functioning so that they are able to do the many things in life they value. By exercising control

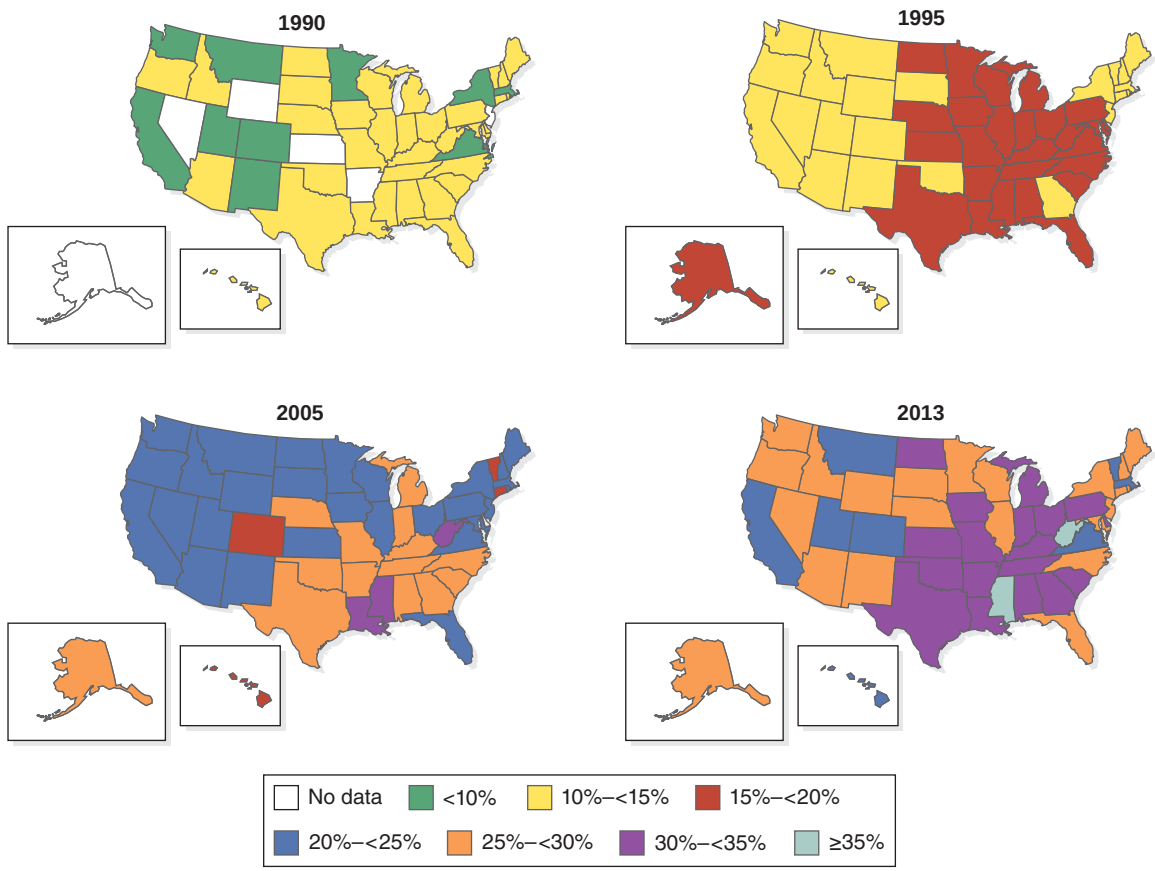

FIGURE 1-1 Obesity trends among U.S. adults, 1990, 1995, 2005, and 2013.

Reproduced from Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance Systems (BRFSS). http://www.cdc.gov/obesity/data/prevalence-maps.html

over modifiable behavioral and socio-environmental factors that affect health, people can live more healthfully as well as longer, representing a health-promoting, or "salutogenic," approach to well-being (Lindstrom and Eriksson 2005). Consequently, recommendations have been made for implementing national strategies to improve health and reduce disease (White House Task Force 2010; U.S. Department of Health and Human Services [HHS] 2010a). In the United States these are the *Dietary Guidelines for Americans* (HHS 2010b) and *Physical Activity Guidelines for Americans* (HHS 2008). A summary of the dietary guidelines worldwide by country is provided by the FAO (2014).

DIETARY AND PHYSICAL ACTIVITY PATTERNS ARE NOT OPTIMAL

Despite the abundance of food and food products, dietary intakes for many are not optimal (Krebs-Smith et al. 2010; Guthrie et al. 2013). For example, Americans today consume a little over half the recommended servings of fruits and vegetables each day and are especially short on dark green and orange vegetables (NHANES 2005–2008; HHS 2010b). Among children the situation is worse—only about 20% meet the recommendations for fruit and 4% for total vegetables, including potatoes, with only 0.2% meeting the recommendations for dark green vegetables and 1.2% for orange vegetables, eating only about 0.1 servings each. Americans eat the recommended total amount of grain products, but only a fraction of these are whole grains; thus, only 1% of people meet the whole grain recommendations. Average milk intakes have declined in the past 50 years and intakes of soda have increased over the same period, from 10 gallons to about 55 gallons per person per year. Meat consumption is high, and the quantity of total added fats and sugars is two to three times the recommended upper limits. Finally, based on the Healthy Eating Index, Americans on average score only 50% on the different components of a healthy diet (Center for Nutrition Policy and Promotion 2013). Food intake data

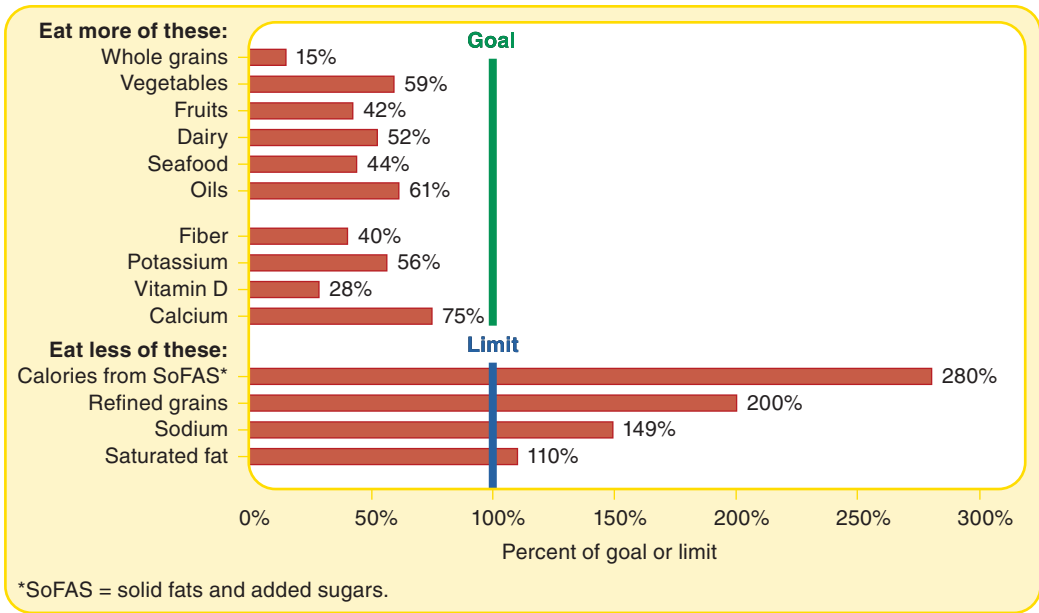

FIGURE 1-2 Americans are not eating according to health recommendations.

Reproduced from *Dietary Guidelines for Americans 2010*. U.S. Department of Agriculture and U.S. Department of Health and Human Services. www.dietaryguidelines.gov

in **FIGURE 1-2** clearly show that American eating patterns are not optimal, with most Americans eating too few of the more healthful foods and too much of the less healthful food components (HHS 2010b). Similar trends have been found in other countries, such as the United Kingdom, Netherlands, and Mexico, and indeed, increasingly worldwide, leading to global disease burden (Lock et al. 2005; Whitten et al. 2011; Van Rossum et al. 2011; Flores et al. 2010; Kearney 2010; Popkin 2009, 2010; McNulty 2013).

Physical activity patterns are likewise far from optimal. Regular physical activity reduces the risk of many health conditions and promotes health. The percentage of Americans who are meeting physical activity guidelines has increased somewhat in the past few years, but still only about half of the adult U.S. population engages in recommended levels of aerobic physical activity and only 20% met all the recommendations (Centers for Disease Control and Prevention 2013).

OUR FOOD CHOICES ARE NOT ALWAYS GOOD FOR THE PLANET

There has been increasing recognition that the kinds of diets we eat have an impact not only on our personal health, but also on our planet. This is because the foods we buy at the grocery store carry a cost not just in terms money and impact on personal health, but also in terms of the "price" the environment pays for them. The diets that are most likely to contribute to risk of obesity and chronic disease tend also to be those that require considerable resources such as fertilizers, pesticides, fossil fuels, and packaging materials to produce and get to us (this is called the ecological footprint from our foods). These diets also cause excessive greenhouse gas emissions from the fossil fuels used throughout the system that delivers foods to us (this is called the carbon footprint). Considerable amounts of water are used to get the food to us as well (this is called the water footprint). To show you how much food can vary let's compare the footprints of beef versus fruits and vegetables. For the ecological footprint, beef takes an average 54 square meters per pound compared to 1–2 for fruits and vegetables. In terms of carbon footprint, beef creates a mean of 10,000 grams of carbon dioxide equivalent compared to 220–400 for fruits and vegetables. For the water footprint, beef takes about 7,500 gallons per pound compared to 100–400 for fruits and vegetables (Barilla Center 2015). Those are enormous differences, especially considering each person eats about 1,500 pounds of food a year. In addition, our eating patterns create tons of waste in terms of the paper plates and plastic utensils we use so freely as well as the millions of plastic bottles from our drinks that we use once and throw away (Pacific Institute 2013).

COMPLEX FOOD CHOICE ENVIRONMENT

Clearly people need help making dietary choices. One challenge is that the food environment has become increasingly complex. People in previous centuries lived on several hundred different foods, mostly locally grown. In 1928, large supermarkets in the United States stocked about 900 items. By the 1980s, a typical supermarket stocked approximately 12,000 food items, taken from an available supply of about 60,000 items (Moliter 1980). Today, 40,000–50,000 different brand-name processed food items perch on many supermarket shelves, from an available supply of 320,000 in the marketplace (Food Marketing Institute 2012). In addition, about 40% of all food is eaten away from home. Even food that is eaten in the home has often been prepared, purchased, and brought in from elsewhere. Indeed, 92% of individuals consume some form of "ready-to-eat" foods in the home on a daily basis (Okrent and Alston 2012). This is increasingly the case in many parts of the world. Consumers must make choices among these options and do not always choose well, as surveys suggest (see **FIGURE 1-3**).

The criteria for food choice have also expanded. As noted earlier, the way most food is grown, processed, packaged, distributed, and consumed has serious consequences for the planet. Many consumers and professionals believe that it is important to consider these consequences in making food choices (Gussow 2006, 1999; Gussow and Clancy 1986; Clancy 1999; Pollan 2008). Others are interested in social justice concerns and want to choose foods that were produced using fair labor practices. For all these reasons, individual and community food choices have become very complex.

COMPLEX INFORMATION ENVIRONMENT

The complexity of the foods available in the marketplace makes wise selection even harder. Our ancestors readily knew the foods they were eating just by looking at them, or could learn about them from family or cultural traditions. Most of the 40,000–50,000 items in today's supermarkets bear little resemblance to the simple foodstuffs previously eaten by humans. Foods with artificial sweeteners in them are being joined by foods made with artificial fats. Some 9,000 "new" food-related items are being introduced by food processors in the United States every year (about 30 per day). Knowledge about these items cannot possibly be derived from simply looking at them, and neither can their composition and effects on the body be learned by stories and attitudes passed down through the generations.

FIGURE 1-3 Newspaper headlines highlight United States eating patterns are not all they could be.

This complex food environment demands consumers who are nutritionally literate. Yet nutritional literacy does not come easily. For packaged foods, nutrition labels are very important. Although about 50% of consumers report that they read food labels always or most of the time and another 30% do sometimes, many admit that they don't always understand what they mean (Levy et al. 2000; Ollberding, Wolf, and Contento 2010; Supermarket Nutrition 2013). Some labels on products are actually misleading—lean frozen dinners labeled as "95% fat free" can contain 30% of calories as fat; 2% "low-fat" milk also has 30% of its calories as fat. Moreover, diet books highlight low-fat diets as the ideal one year and low-carbohydrate diets the next year.

CONSUMER BEWILDERMENT AND CONCERN

No wonder consumers are bewildered. Although many Americans are concerned about their health and are indeed eating more healthful foods than they were a decade or so ago, the average person's diet is getting better and worse at the same time. For instance, mothers may buy fat-free milk for their families along with high-fat premium "home-style" ice cream, the latter because of its perceived superior quality.

These contradictory behaviors often derive from genuine confusion about what is good to eat. Although food manufacturers have responded to consumer concern about healthful food, they have introduced at least as many less healthful items as they have more healthful ones. There is considerable confusion in developing countries as well: many people exchange locally grown whole foods for imported, processed items, believing the latter to be better for health. Well-off people in such countries are thus developing the same chronic diseases as people in more affluent countries and are experiencing increased obesity rates at the same time that those who are poor are suffering from malnutrition (Popkin 2009; Kearney 2010). The FAO points out that to avoid the major economic and social burdens of these conditions, people need to know about eating the *right* foods not just more or less food. Making good food choices is important for all consumers (McNulty 2013).

All these facts suggest that people need education about food and nutrition.

The Challenge of Educating People About Eating Well

Our analysis so far seems to suggest that what consumers need is information on the nutrients in food, label reading skills, and skills in preparing foods in a healthy fashion. However, research provides evidence there is more to good nutrition than knowing which foods to eat and having those foods available. Information about nutrients is not enough. The potent influences of biological factors, cultural and social preferences, and emotional and psychological factors make the job of assisting people to eat well a demanding one. Understanding these influences and addressing them are the major tasks of nutrition education. This makes nutrition education exciting but also challenging (see **FIGURE 1-4**).

BIOLOGICAL INFLUENCES: DO WE HAVE BODY WISDOM?

Some have argued that we have an innate "**body wisdom**" that guides us to select healthful foods naturally, intuitive eating if you will, thus implying that nutrition education is not needed beyond paying attention to our body signals or mindful eating. Much of this line of thought grew out of the work of Clara Davis (1928), who studied the spontaneous food choices of infants. The infants, aged 6 to 11 months, were weaned by allowing them to self-select their entire diets from a total of 34 foods, none of which contained added salt or sugar, which were rotated—a few

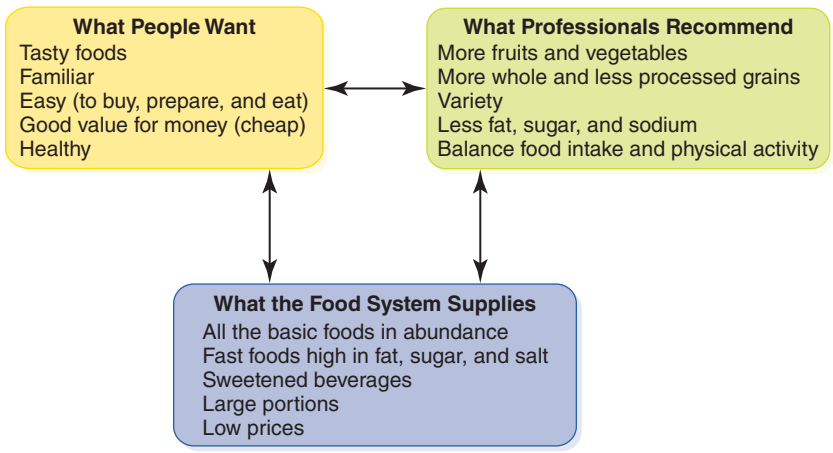

FIGURE 1-4 Nutrition education is exciting and challenging.

at a time—at each meal. Davis reported that after several months of such "spontaneous" food selection, the children's nutritional status and health were excellent. However, one should note that the 34 foods were all simply prepared, minimally processed, and nutritious whole foods, such as steamed vegetables, fruit juice, milk, meat, and oatmeal. In addition, the food items were offered by caretakers who were trained to provide no encouragements or discouragements while the children ate. Whether infants would demonstrate a similar "instinct" if they were offered tasty, energy-dense, low-nutrient food items has not been examined, but such an outcome seems unlikely given experiments in which rats exposed to such diets became obese. Neither do conditions of freedom from all outside influences exist in real-world settings. There appears to be no "safety net" biological mechanism that ensures that we will eat healthful food. Eating well needs to be learned.

Specific Tastes or "Sensory-Specific Satiety"

However, we appear to have a built-in mechanism that helps ensure that we eat a *variety* of foods, called sensory-specific satiety. As we eat more of a particular food in the course of a short time period such as a meal, we decrease our liking for the food, but our desire for other foods offered remains relatively unchanged (Rolls 2000). We know this phenomenon well: when we are too full to eat another mouthful of the entrée, we find ourselves quite able to eat dessert. Although the experience of hunger ensures that we will eat, our enjoyment of tasty foods combined with this liking for variety in tastes or *sensory-specific satiety* mechanism ensured that humans—in a "primitive" environment—would move from one food to another and thus select a balanced diet over the long term. Through the centuries, people obtained their needed nutrients mostly by getting enough calories. The key was in getting a varied diet. Yudkin (1978) argued that in the past, people could get the *nutrients* they *needed* simply by eating a variety of the *foods* they *wanted*. Today this mechanism works to our disadvantage because variety makes us eat more but variety in today's food system consists of the many, many highly processed food products that are high in calories but low in nutrients.

Our Bodies and Today's Food

Today, technology has made it possible to manipulate foods' taste or sensory properties to make them sweeter or saltier or richer tasting or more colorful at will. Processed food products are deliberately engineered to make them addictive by the addition of fat, salt, and sugar, and the array of such engineered items is vast (Schlosser 2001; Moss 2013; Lowe, Hall, and Staines 2014). Thus, technology has fully separated the tastiness of foods from their nutritional worth. In addition, current technology creates notorious hazards for energy perception. The fat content of many processed foods is not clearly evident from either the appearance of the food, its feel and taste, or the packaging and shape of the item. The energy content of a variety of similar-tasting foods can vary considerably. This means that by following our food preferences—eating a wide variety of tasty foods—we are no longer assured that we will get a nutritionally adequate diet. Indeed, such behavior increases the likelihood of overconsumption of high-fat, low-fiber diets that may place us at greater risk for a number of chronic diseases. There appears to be no biological set point for the amount of fat or sugar we will eat. Taken together, our desire to eat foods that are tasty and marketers' desire to put into the marketplace foods that cater to people's biological attraction to sugar, fat, and salt make the task of educating for a healthful diet a difficult one.

CULTURAL AND SOCIAL PREFERENCES

Cultural Context

Whatever biological predispositions humans possess operate in the context of food availability, and as Rozin (1982) notes, what is available to eat is determined not only by what is available geographically and economically, but also by what a culture dictates is appropriate to eat. Although humans worldwide eat just about everything edible, any particular group of people eats what is culturally available.

Anthropologist Margaret Mead years ago argued that traditionally, in all known societies, it was not biological mechanisms but transmission of culturally imposed eating patterns, derived from the group's experience with foods that kept humans alive. These traditional food patterns were not necessarily optimal but were nutritionally viable and enabled people to survive at least through the reproductive years (Gussow and Contento 1984). Biological preference and cultural influences are thus intertwined. What is made available by a culture comes to taste

good: *people may eat what they like, but they also come to like what they eat.* Consequently, cultural context is highly important.

Social Preferences

Today, what is available to eat in the United States is determined largely by what is mass produced by food companies and available in the supermarket. These products are highly promoted by the communication instruments of mass culture (television, advertising, Internet, and so forth), leading to consumer demand.

Studies show that taste and availability are closely followed by convenience in influencing food selection. Modern culture emphasizes convenience or quickness in preparing or obtaining foods, to fit in with today's hectic lifestyles. Many people today think of a food as available only if it can be purchased already prepared or can be prepared quickly without much effort. People have thus lost many culturally transmitted cooking skills (Gussow 1993; Cunningham-Sabo and Simons 2012). Away-from-home foods account for 32% of calories (up from 18% in the 1970s) and about half of total food expenditures (Stewart, Blisard, and Jolliffe 2006). Yet quick and convenient foods that are readily available commercially are not always the most healthful, and neither are they produced, transported, or packaged in the most environmentally sustainable manner. All these cultural and social influences can make educating about foods, nutrition, and dietary change difficult.

FAMILY AND PSYCHOLOGICAL FACTORS

People have many expectations about the food they eat: it should taste good, it should look good, it should impress friends when they serve it to them, it should be healthful, it should help them stay thin, and it should remind them of the warmth of family. The opinions of family or important others as well as moral and religious values also influence food choices.

Within the constraints of biology and culture, as people grow up they also develop individual food preferences and patterns of eating because any given individual gains a unique set of experiences with respect to food (Rozin 1982). This uniqueness stems partly from the fact that an individual's exposure to the culture is filtered through the family's interpretation of culture. For example, there is evidence that one of the major influences on the acquisition of eating patterns by children is familiarity with given foods (Savage, Fisher, and Birch 2007). Such familiarity is determined by what the family serves, which in turn reflects the family's cultural and other beliefs about food. Thus, eating patterns and dietary behaviors are influenced by many familial and psychological factors, as well as by cultural and social ones.

Eating is clearly deeply embedded in the early development of individuals and continues to be tied in with many other aspects of life. Consequently, any changes in eating behaviors may involve many other changes as well, such as family traditions, social and professional occasions that involve food, making time in busy schedules for eating well, or changing how a person handles stress. A person must be motivated to make changes and to maintain them.

SENSE OF EMPOWERMENT: INDIVIDUAL AND COMMUNITY

Even if a person is motivated, the sheer number of food products available makes decision making a daunting task for the consumer. It is also a daunting task for the nutrition educator because the consumer needs a great deal of complex information, yet in an information-overloaded society, the consumer wants or can handle only simple messages. So, the challenge for the nutrition educator is how to convert complex information into simple but accurate messages that consumers will attend to and act on.

At the same time, to understand some of the choices they have to make, people need to be able to analyze and evaluate complex information in the midst of conflicting claims. For example, are calories the most important item on a food label? Is a breakfast cereal that is high in sugar but low in fat a better choice for children? Does it make a difference whether one chooses organically produced foods or foods produced by more conventional agriculture? And what is the difference based on—impact of food on personal health, or impact of food production methods on the long-term sustainability of the food system? Thus, eaters need critical thinking skills. In addition, they need affective skills such as assertiveness, self-management, and negotiation skills that enhance their sense of competence and control over their own food choices. People also need skills in preparing healthful foods quickly and conveniently. Finally, for community as well as personal empowerment,

people need to have the skills and opportunity to identify food- and nutrition-related issues facing their communities and work with others to address these issues collectively.

MATERIAL RESOURCES AND THE ENVIRONMENTAL CONTEXT

Motivation and skills alone may not be enough. Material resources such as money and time also present challenges. Affordability of healthful food, as well as food availability, is crucial, particularly for low-income audiences. Having in one's neighborhood only convenience stores that charge high prices and carry limited supplies of healthful foods makes eating well extremely difficult. Whole grain products and fruits and vegetables are not as available as are more highly processed food items in fast food outlets, workplace cafeterias, or other places convenient to people's out-of-home activities. Some whole food items often cost more (such as fruits and vegetables) although others cost less (such as beans and grains) (Drewnowski 2012).

MARKETING, SOCIAL STRUCTURES, AND POLICY

Even the best of intentions are difficult to implement and behaviors difficult to maintain if social structures, food marketing practices, food policies, and other aspects of the food (and physical activity) environment are not conducive to health. Fast foods, made tasty and addictive by their high content of fat, sugar, and salt, are everywhere—convenient, tasty, and inexpensive—and their portion sizes are often large. Surveys have found that more than 90% of Americans are consuming food each day that was prepared away from home and are thus exposed to such foods (Okrent and Alston 2012).

In addition, the dietary pattern emphasized by marketers, shown in **FIGURE 1-5**, is very different from the dietary pattern recommended by the U.S. Dietary Guidelines (and food policy documents of international agencies such as the FAO) as likely to enhance nutritional health—one high in whole grains, fruits, and vegetables; adequate in dairy and meat; and sparing in foods that are high in fat and sugar. More marketing and advertising dollars are spent by far on promoting restaurant/fast foods (about 31%), soft drinks and other beverages (37%), and snack foods (14%) than are spent on foods in the basic food groups such as fruits and vegetables (about 0.7%), resulting in increased consumption of and demand for these items. In terms of dollars, the U.S. food industry spent about $9.65 billion in 2009 on marketing and promotions, with about $1.8 billion directed at children (Federal Trade Commission 2012). It spent $3.5 billion on beverages, of which about $520 million was directed at children, along with about $200 million on candy bars and snack foods. About $3 billion was spent on marketing restaurants/fast food. In contrast, government health-related campaigns in most countries may amount to only a few million dollars a year. U.S. children see about 13–16 food advertisements every day all year but perhaps only one advertisement per week for healthy foods, such as fruits and vegetables and bottled water (Yale Rudd Center 2013). Most people may never have the opportunity to see a nutritionist during their entire lives. Such a situation cannot result in genuinely free, informed choice.

Finally, people of all ages, particularly children, have become more sedentary in the last 30 years. People use more labor-saving devices and cars, and spend more time watching TV and using computers. People have hectic jobs and work long hours, leaving less time for physical activity. Thus, people cannot eat as many calories as they once could to meet their other nutrient needs. The issues that demand attention from nutrition educators, then, are

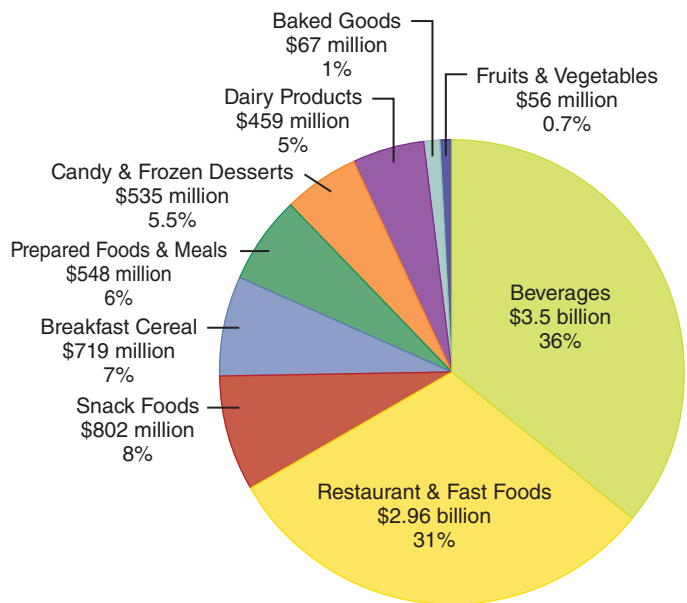

FIGURE 1-5 United States total marketing expenditures by food category.

Data from Federal Trade Commission. 2012. A review of food marketing to children and adolescents: A follow up report.

not only individual food-related behaviors and personal choice, but also external environmental factors such as material resources, social structures, food policies, and marketing practices.

Viewpoints on the Aims of Nutrition Education

We have seen that nutrition education is both necessary in today's world and challenging to accomplish. What exactly is nutrition education today and what are its aims? What impacts should it seek to achieve? Most nutrition education involves communication of food and nutrition information in some form. It is *why* and *how* information is communicated that makes a world of difference in terms of its impact on audiences and there are different viewpoints on just why and how such information should be communicated:

- Food and nutrition information is communicated in ways solely to inform.
- Food and nutrition information is communicated in ways to enhance motivation and facilitate the adoption or maintenance of individual behaviors and community practices that are conducive to health and well-being.
- Food and nutrition information is communicated to decision-makers and policymakers in order to engage them to work with us collaboratively on food and nutrition issues that are important.

INFORMATION COMMUNICATED SOLELY TO INFORM

In this viewpoint, food and nutrition information is communicated in such a way as to solely provide consumers with the information needed to make decisions about what to eat (e.g., how many grams of fiber in a product, reading food labels), rejecting the notion that nutrition professionals should also *actively promote* healthful choices. Consumers are viewed as being savvy and disliking being told what to do, lacking only in knowledge of what to eat and tips on how to do so. We are "information dispatchers."

However, most Americans believe that they are well informed about nutrition, with 73% saying they are confident that they know how to shop for healthy foods (Supermarket Nutrition 2013). The finding that despite believing themselves to be well informed they are not eating according to recommendations argues that communication of this kind of information alone is clearly not enough.

INFORMATION COMMUNICATED TO MOTIVATE AND FACILITATE BEHAVIORS CONDUCIVE TO HEALTH AND WELL-BEING

In this viewpoint, food and nutrition information is communicated in such a way that it is motivating and useful for facilitating change as well as being informative. Given that a major and urgent aim of nutrition education is to improve the health of a nation's people, and that people's health conditions are to some extent the result of individual and social patterns of behavior, nutrition education is designed to communicate science-based information in such a way that it motivates and facilitates the adoption or maintenance of individual behaviors and community practices that are conducive to the long-term health of individuals, communities, or the planet. For example, communicating science-based information on risk to individuals or communities of a health or food system condition and on the benefits of taking action can be very motivating. In addition, communicating the food- and nutrition-related skills needed by people to act on their motivations can facilitate behavior change. In this approach, the role of the nutrition educator moves from that of an "information dispatcher" to a "facilitator of change" for individuals and communities. This seems justified given the many forces in society that are not conducive to healthy eating.

COMMUNICATIONS TO INFLUENCE POLICYMAKERS

Many policymakers, government agencies, and international organizations argue that nutrition education is not effective and that policy and environmental change are needed (McKinley 1974; Dorfman and Wallack 2007; HHS, 2015). Changes include regulations and incentives for increasing accessibility and opportunities for action, for example by making foods offered in school meal programs healthier, nudging people toward healthier choices through behavioral economics principles (Hanks et al. 2012), increasing food security through agricultural policy, or increasing the number of supermarkets offering healthy foods in low-income communities. In this case nutrition

educators focus their communications on educating policymakers about the importance of policy and environmental change in order to engage them to work with nutrition educators collaboratively to improve people's health and well-being.

Nutrition education most often involves communication of food and nutrition information in some form. It is *what* and *how* information is communicated that make a world of difference as to whether it will be effective in motivating and facilitating change.

A Contemporary Definition of Nutrition Education

Taking into account these various viewpoints on nutrition education and health promotion, a contemporary definition is needed. For the purposes of this book, *nutrition education* is defined as any combination of educational strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other food- and nutrition-related behaviors conducive to health and well-being and delivered through multiple venues, involving activities at the individual, institutional, community, and policy levels.

Combination of educational strategies. Because many factors influence behavior, nutrition education needs to employ a variety of strategies and learning experiences that are appropriately directed at these multiple influences on, or determinants of, food choice and dietary behavior to motivate and facilitate dietary change. Nutrition education focuses on enhancing health and facilitating solutions.

Education is *not* synonymous with information dissemination, although the public and many in the nutrition science, biomedical, public health, and policy fields think it is. The word comes from the Latin *educare*, meaning to bring up or lead out, and can be seen as a process that not only provides information and skills, but also fosters motivation, growth, and change. In short, nutrition education uses strategies that seek to help people learn to eat well by enhancing people's motivation through effective communication as well as by improving their ability and opportunities to do so.

Designed means that nutrition education is a systematically planned set of activities. Such systematically planned nutrition education can occur through multiple venues, such as schools, communities, workplaces, and clinics, and through the mass media. A step-wise procedure for systematically designing nutrition education, called the Nutrition Education DESIGN Procedure, is described later in this book. Note that *informal*, often powerful, "nutrition education" is carried out by other institutions in society such as families, businesses, newspapers, magazines, radio and television stations, and the Internet, where the information is of varying degrees of reliability.

Facilitate is used to emphasize the fact that educators can only *assist* people to make diet-related changes: people make changes when they themselves see the need and want to do so. Motivation ultimately comes from within individuals, and actions with respect to food are voluntarily chosen in the light of individuals' values and larger life goals and situations. Education about foods and nutrition, and, where appropriate, physical activity, is about using strategies that enhance people's motivations involving effective communication and encouraging self-understanding and deliberation. Motivation is key. It is also about using strategies to facilitate people's ability to take action through increased food and nutrition knowledge and skills and critical thinking and reflection, and through an increased sense of personal agency or empowerment. Finally, it is building on assets that people bring to the issue, such as personal and cultural practices that are already health-promoting or community structures that are supportive of sustainable eating patterns.

Voluntary means recognizing and respecting that human beings have agency and free will and make choices in light of their own personal goals and values (Bandura 1997, 2001; Deci and Ryan 2000; Buchanan 2000). It means the program is conducted without coercion and with the full understanding of the participants about the purpose of the nutrition education activities. Individuals are both "the changers" and "the changed." *Voluntary* does not mean that nutrition education is limited to dissemination of information solely to inform. Health psychologist Leventhal (1973) noted that "the decision to avoid coercion does not free (health professionals) of the obligation to state facts, warn, and argue skillfully."

Indeed, it can be said that truly informed and voluntary choice can be made by consumers *only* when they

have the benefit of understanding arguments from all sides. Without the benefit of health communications from nutrition educators, consumers would receive only the arguments of the other forces in society, such as food advertising and promotion, that are providing messages persuading people to choose foods for reasons other than nutrition and health (Gussow and Contento 1984; Dawson 2014). In other words, nutrition education strategies can be designed in such a way as to integrate the health-promoting role of nutrition educators with the notion of free will and personal agency and empowerment on the part of individuals.

Behaviors are the observable food choices and other food- and nutrition-related actions that people undertake to achieve an intended effect of their own choosing and are the direct focus of nutrition education. Eating fruits and vegetables, whole grain foods, sustainably produced foods, or breastfeeding can be referred to as behaviors. Sometimes behaviors are defined broadly, such as "healthy eating and active living." The terms practices, behaviors, and actions are often used interchangeably. *Actions* generally refer to specific actions or sub-behaviors that constitute *behaviors*. Thus, the behavior of eating more fruits and vegetables may involve the specific actions of shopping for fruits and vegetables, adding orange juice at breakfast, including a vegetable at lunch, and so forth. The word *practices* is also used interchangeably with *behaviors* and *actions*, although the term *practices* tends to refer to more general and continuing patterns of behavior, such as food-related parenting practices, eating balanced meals, and being physically active.

The emphasis on actionable behaviors is at the heart of the MyPlate dietary guidance system of the United States government. Here the public is recommended to eat according to a meal pattern where half the plate is made up of fruits and vegetables, about a quarter grains, of which half should be whole grains, and about a quarter high-protein foods, accompanied by milk or other dairy (see **FIGURE 1-6**). Similar food behavior-based guidelines have been produced in other countries (Food and Agricultural Organization [FAO] 2014).

Environmental supports refer to the food, physical, social, informational, and policy environments external to a person that are relevant to the behavior or practices at issue. Taking action and maintaining a behavioral change is much more likely if the relevant environment is supportive. Promoting supportive environments

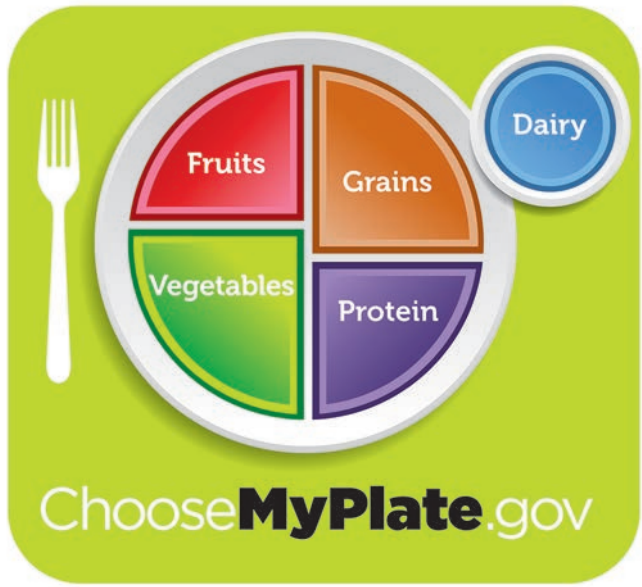

FIGURE 1-6 The United States food guide features a plate showing the recommended proportions of food groups to eat.

Reproduced from ChooseMyPlate.gov. United States Department of Agriculture. http://www.choosemyplate.gov

usually requires nutrition educators to educate a different audience—providers of food and services, key decision makers, and others with influence—and to work in **collaboration** with them to achieve food and nutrition goals (and physical activity goals, where relevant). These individuals and organizations might include community leaders and organizations, food service personnel, school principals, workplace managers, and policymakers at local, state, and national levels, as well as the media, government agencies, and nongovernmental or private voluntary organizations.

The terms **health** and **well-being** refer to both the nutritional health of individuals and an overall sense of well-being, both absence of disease and possession of positive attributes of being healthy, such as optimal functioning or high-level wellness. The concept of health and well-being can extend to include the health of the environment and sustainability of the food systems on which people depend for their food.

Multiple venues refers to the fact that systematically planned nutrition education can be delivered through multiple channels, such as group sessions and other in-person activities and through indirect activities involving newsletters, printed materials, emails, visuals, and social

media in formal settings such as schools and colleges or in nonformal settings such as community centers, food banks, workplaces, supermarkets, Supplemental Nutrition Assistance Program (SNAP) offices, Women, Infants, and Children (WIC) clinics, or outpatient clinics, and through mass media, billboards, the Internet, smartphones, and social marketing approaches.

Activities at the institutional, community, and policy levels can enact policies and system changes that promote physical and social environments supportive of healthful food choices and diet- and physical activity–related behaviors.

IS "NUTRITION EDUCATION" AN ACCURATE TERM?

The term *nutrition education* is widely used in the United States, although not in other parts of the world. The term is problematic. *Nutrition* is the word used to describe the way people are nourished by the nutrients in food. Nutrition education can be seen as education about nutrients. However, people eat foods, not nutrients. So people need education about food. So at the very least, the term should be *food and nutrition education*. In addition, however, it is hard for nutrition professionals to let go of the meaning of the word *education* as being solely about teaching or disseminating some set of information, even though even in the context of schooling, the word means much more than that, as noted previously. Thus the term *nutrition education* is inadequate, and indeed misleading. As we have seen, contemporary nutrition education goes considerably beyond these two words and involves enhancing people's *motivation*, *abilities,* and *opportunities* to take action. To capture this larger meaning of the term, many countries and international agencies such as the FAO use the terms *social and behavior change communication (SBCC)* or *food and nutrition communication and education (FNCE)* (McNulty 2013; Hawkes 2013*)*. Some in the United States have used the terms *food and nutrition education* and *nutrition education and promotion* (Briggs, Fleischhacker, and Mueller 2010). For the purposes of this book we will continue to use the term nutrition education, despite its considerable limitations, because it is so familiar in the United States, but we will be mindful at all times that the term refers to a contemporary view of nutrition education as an enterprise much larger than suggested by these two words, and is similar to the international term *social and behavioral change communication*.

Behaviors Versus Topics for Nutrition Education

Research in nutrition science, food studies, and food systems and related areas generates information that forms the basis of all nutrition education content. It is how the information is communicated that is crucial to its impact on people. When nutrition educators think of planning programs or individual sessions, they tend to immediately organize them in their heads in terms of "topics," such as diabetes risk reduction, malnutrition, sports supplementation, the science of energy balance, food security, or organic farming. How do these *topics* relate to *behaviors* as defined here?

When we examine these "topics," we see that many are descriptions of *issues* that are of national or local concern or of potential interest to the audience. If you choose an issue, remember that your audience will want to know what to do about the issue. So, what behaviors or practices are you going to recommend in order to address the particular issue of concern? These *behaviors* become the focus of your program or session(s). Note that some behaviors can serve more than one purpose or can address more than one issue of concern. For example, consuming fewer highly processed snacks or sweetened drinks may be good not only for personal health, but also for reducing people's carbon footprint on the planet.

Other "topics" may fall into the *general information* category—what foods are in which food groups and what vitamins and minerals they contain. Think carefully about what purpose this information serves. As an update for professionals, general information may be quite appropriate and important under the assumption that the professionals will use the information in their work with their audiences to assist them to enhance their behaviors. But for the general public, given the finding that knowledge by itself has not been shown to be effective for behavior change and given that most people do not have much time, is this the best use of their time? What will they do with this information? If your unspoken hope is that they will eat better, then your goal is really behavior change after all. It is important to lay out your unstated behavioral goals.

Behavior Change Versus Critical Thinking: Opening Doors

Often there is a concern that nutrition education that is behavior focused does not encourage critical thinking

and careful reflection. However, this is not at all the case. Indeed, nutrition education can and should open doors. Critical thinking skills and careful reflection are necessary for our audiences in identifying which behaviors or actions to undertake in the context of their values and larger life goals and situations and in their being able to carry out the actions they choose. We can help our audiences develop conceptual frameworks to understand the complexities of issues related to food and nutrition. For young children, where critical thinking skills are not yet well developed, opening doors may involve other values, such as the appreciation of new foods, becoming taste literate, and becoming ready to adopt health-promoting behaviors.

SUMMARY OF A CONTEMPORARY DEFINITION OF NUTRITION EDUCATION

In summary, our definition suggests that nutrition education focuses on effective communication and activities to facilitate the voluntary enactment of specific observable *behaviors or actions* that are conducive to health and well-being. This summary is shown visually in **FIGURE 1-7**. The situations of individuals are very different from each other and so are their social and cultural contexts. Nutrition education is more likely to be effective when it takes these differences into account and designs activities to be appropriate to the needs and cultures of their audiences.

Enhancing Motivation and Empowerment to Change: "Why-To" Take Action

Increasing awareness is an important first step toward making behavior changes or taking action but it is not sufficient. Motivation is central in diet-related behavioral change, so its role in nutrition education must be specifically recognized and addressed. Food and nutrition information can be very motivating and empowering when it is communicated in such a way that it helps individuals understand and value *why* to take action. For example, reasons why to take action may include science-based information on the impact of diet (and physical activity) on health, or the impact of people's food choices in the food system on the environment. Reasons can also include personal health concerns, self-identities, concern for the social impact on communities, and so forth. Nutrition education thus focuses on enhancing people's motivations by providing science-based information on the benefits of action and emphasizing self-understanding and deliberation of reasons and values to take action, particularly in light of their own larger life goals and of cultural expectations.

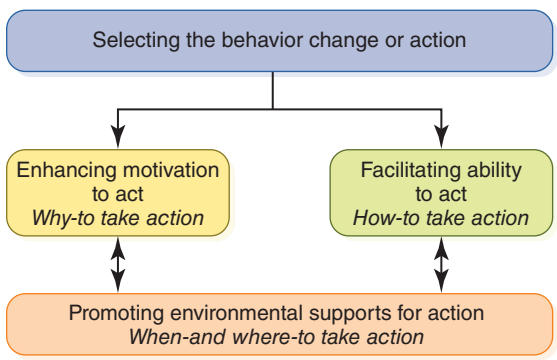

FIGURE 1-7 A contemporary definition of nutrition education.

Facilitating the Ability to Change: "How-To" Take Action

Individuals also need to feel empowered to take action on the desired behavior or practice, once motivated. Individuals are more likely to feel empowered if they have the specific how-to knowledge and skills they need and self-confidence in their ability to bring about change in themselves and their environment. Here nutrition education communicates information in such a way as to focus on building appropriate food and nutrition skills and strengthening people's ability to initiate and guide their own behavior.

Promoting Environmental Supports for Action: "When- and Where-To" Take Action

Nutrition education can also help to make the healthy choice the easy choice by working with institutions, communities, or government to promote more supportive food and physical activity environments and policy.

VISION OF PROFESSIONAL ASSOCIATIONS

The view of nutrition education described here is in keeping with the vision of the foremost nutrition education professional organization, the Society of Nutrition Education and Behavior (SNEB), which states that its *vision* is "healthy communities, food systems, and behaviors" and its *mission* is to "promote effective nutrition education and healthy behavior through research,

BOX 1-1 Society for Nutrition Education and Behavior—Mission and Identity Statements

Vision

Healthy communities, food systems and behaviors.

Mission

To promote effective nutrition education and healthy behavior through research, policy and practice.

Identity Statements

The Society for Nutrition Education and Behavior (SNEB) represents the unique professional interests of nutrition educators in the United States and worldwide. SNEB is dedicated to promoting effective nutrition education and healthy behavior through research, policy and practice and has a vision of healthy communities, food systems and behaviors.

SNEB is an international community of professionals actively involved in nutrition education and **health promotion**. Their work takes place in colleges, universities and schools, government agencies, cooperative extension, communications and public relations firms, the food industry, voluntary and service organizations and with other reliable places of nutrition and health education information.

The *Journal of Nutrition Education and Behavior*, the official journal of the society, is a refereed, scientific periodical that serves as a resource for all professionals with an interest in nutrition education and dietary/physical activity behaviors. The purpose of *JNEB* is to document and disseminate original research, emerging issues, and practices relevant to nutrition education and behavior worldwide.

Reproduced from Society for Nutrition Education and Behavior. What is SNEB? http://www.sneb.org/about/mission.html. Accessed 4/2/15.

policy and practice" (Society for Nutrition Education and Behavior 2015) (**BOX 1-1**). SNEB uses the contemporary definition of nutrition education. This view is also in keeping with the *vision* of the Academy of Nutrition and Dietetics (AND) to "optimize the nation's health through food and nutrition," and its *mission* to "empower members to be the nation's food and nutrition leaders" (Academy of Nutrition and Dietetics 2015), as well as with the mission of the International Society of Behavioral Nutrition and Physical Activity, which is to "stimulate, promote, and advocate for innovative research and policy in the area of behavioral nutrition and physical activity toward the betterment of human health worldwide" (International Society of Behavioral Nutrition and Physical Activity 2015).

Nutrition Education Effectiveness

Nutrition education is exciting but also challenging. How effective is it? A number of reviews have been conducted to examine the question of whether nutrition education is effective. One such review used meta-analysis to examine 303 studies conducted over a 74-year period from 1910 to 1984 that included a total of 4,108 separate findings (Johnson and Johnson 1985). Meta-analysis is a sophisticated statistical method that involves combining data from all relevant studies and calculating significant change based on the combined data. This meta-analysis found that, overall, nutrition education increased knowledge by 33 percentiles, attitudes by 14 percentiles, and behaviors by 19 percentiles. Comprehensive reviews and meta-analyses of more recent studies have found that behavior change interventions were able to bring about statistically significant though moderate improvement in eating and physical activity behaviors and weight status (Johnson, Scott-Sheldon, and Carey 2010; Khambalia et al. 2012; Wang and Stewart 2013).

More specifically, studies have shown nutrition education to be effective in improving dietary intakes:

- Increasing fruit and vegetable intake in children and adults through educational activities in studies worldwide (Pomerleau et al. 2005; Thompson and Ravia 2011; Evans et al. 2012), by adding salad bars to school meals (Harris et al. 2012) and through the use of gardens in schools and communities, which

has been gaining in popularity in the United States (Langellotto and Gupta 2012), Britain, Australia, Mexico, and elsewhere (Gibbs et al. 2013), and is part of recommendations by the FAO.
- Reducing risk of childhood obesity (da Silveira et al. 2013; Khambalia et al. 2012, Wang et al. 2013).
- Food security for infants and toddlers in the United States and other countries (Colman et al. 2012; Thompson and Amoroso 2011).
- Breastfeeding (Schlicka and Wilson 2005; Dyson, McCormick, and Renfrew 2008; Hill 2009).
- Healthy eating in low-income audiences, in particular increased intake of fruits and vegetables and fat-free or low-fat milk (Long et al. 2013).

Cost-benefit and cost-effectiveness analyses have also been conducted for nutrition education programs. Cost-benefit analysis compares the economic benefits of a nutrition education program for participants to the actual costs of delivering the program and cost-effectiveness analysis compares the health benefits of the program for participants with the cost of delivering the program. Several such analyses have shown nutrition education to be cost-beneficial and cost-effective (Rajopal et al. 2003; Schuster et al. 2003; Dollahite, Kenkel, and Thompson 2008; Roux et al. 2008; Gustafson et al. 2009).

Thus, the evidence from these reviews and cost analyses of intervention studies demonstrates that nutrition education programs can make a moderate but significant contribution to improving dietary practices when they use appropriate messages and strategies.

What Do Nutrition Educators Do? Settings, Audiences, and Scope for Nutrition Education

As we have noted, this is an exciting time to be in the field of nutrition education. Everyone seems to be interested in food and nutrition, which is good news for nutrition educators who want to help the public eat well. Because nutrition can be seen as the link between agriculture and health, behavior change communication and education about food and nutrition covers a wide range of issues and takes place in a variety of settings, with different audiences. This means that nutrition educators are involved in a wide scope of activities.

SETTINGS: WHERE IS NUTRITION EDUCATION PROVIDED?

Nutrition educators work in many settings; some are well known and others quite unusual. Some of them are described in the following sections. Some examples are shown in **NUTRITION EDUCATION IN ACTION 1-1**. More examples are given throughout this book.

Communities

Much nutrition education for the public at large occurs in communities through programs sponsored in the United States by the U.S. Department of Agriculture (USDA), such as Cooperative Extension programs that provide nutrition education activities to adults, families, and children to assist them to eat healthfully. Most states have developed extensive nutrition education programs for Supplemental Nutrition Assistance Program participants (called SNAP-Ed). The USDA's Special Supplemental Program for Women, Infants, and Children (WIC) program provides nutrition education to its participants in addition to providing food. The Head Start program provides both food and nutrition education to preschool children. The HHS Administration for Community Living's Administration on Aging provides meals to low-resources older adults in a group setting and serves most communities in the nation. Nutrition education is a required component of the program. Most countries have similar programs.

Many other agencies and private volunteer and nonprofit organizations, such as heart associations, cancer societies, and food banks, also provide nutrition education. Social marketing campaigns focusing on nutrition and physical activity have become more common within communities.

Food- and Food System–Related Community and Advocacy Organizations

Community nutritionists work in emergency food organizations such as food pantries and soup kitchens, providing needed education to low-resources audiences. Community nutritionists also work in organizations that seek to enhance the availability and accessibility of affordable, nutritious—and often local, sustainably produced—food to individuals and communities by linking food producers to consumers through such programs as farmers' markets, community-supported agriculture, and farm-to-institution programs. Most of these programs include

NUTRITION EDUCATION IN ACTION 1-1 Nutrition Education Programs in Different Settings

Small Steps Big Rewards

Get Real!
National Diabetes Educator.

"Live well. Eat healthy. Be active. *It's not easy, but it's worth it,"* announces the National Diabetes Education Program's website. This federally-funded program, sponsored by the National Institutes of Health and the Centers for Disease Control and Prevention, is based on findings from several landmark studies of diabetes control and prevention that showed modest weight loss and regular physical activity can prevent type 2 diabetes (T2DM) in those at risk and improve treatment outcomes for those who have T2DM. A national, multicultural campaign that aims to "Identify, disseminate, and support the adoption of evidence-based, culturally and linguistically appropriate tools and resources that support behavior change, improved quality of life, and better diabetes outcomes," targets children and adults with diabetes or at risk for T2DM as well as their families and caregivers, particularly populations disproportionately burdened by diabetes and its complications. Included in this campaign are healthcare professionals, community health workers, community and healthcare-focused organizations, media, businesses, schools, and other groups concerned about diabetes. For more information visit http://ndep.nih.gov.

Nutrition education using live theater performances.
Courtesy of FoodPlay Productions, www.foodplay.com

FOODPLAY: Theater for Kids

FOODPLAY, a live theater performance for school assemblies, conferences, and special events, was developed by a nutrition educator and has been presented all over the United States. *FOODPLAY* performances feature captivating characters, motivating health messages, juggling, music, magic, and audience participation to help kids take charge of growing up healthy, happy, and fit. The program uses the power of live theater to motivate kids to say "yes!" to healthy eating and exercise habits, seeing through media messages, and building self-esteem from the inside out. *FOODPLAY* performances come with extensive Follow-Up School Resource Kits providing materials for students, teachers, school food service, and health staff so that they can continue nutrition education lessons in the classroom, integrate nutrition into core curriculum areas, and help schools improve their health environments and wellness policies. It has won an Emmy Award and has been shown to be effective. The website is http://www.foodplay.com.

Stellar Farmers' Markets

New York City's Department of Health uses Stellar Farmers' Markets to provide community-based nutrition education and resources. At select markets, nutritionists use the *Just Say Yes to Fruits and Vegetables* curriculum to provide free nutrition education for market shoppers about locally grown, seasonal produce; food safety; healthy eating; food resource management; and cooking. The website is http://www.nyc.gov/html/doh/html/living/cdp-farmersmarkets.shtml.

special outreach efforts to low-income communities. Nutrition educators provide educational sessions in these settings, take people on tours of farmers' markets and farms, and work with community policymakers.

Schools

Nutrition education is taught as a part of school health education in many states in the United States. In these instances, classroom teachers deliver the nutrition education. The role of the nutrition educator is to develop good curricular materials, provide professional development to teachers, and help teachers provide nutrition education, usually through specific projects externally funded by nonprofit organizations. In addition, school food service personnel often provide informal nutrition education through posters and food-related activities in the lunchroom. Nutrition educators also work in numerous school-based nutrition education research interventions that have been conducted in schools in recent decades with funding from federal agencies such the National Institutes of Health and the USDA.

Workplaces

In recent decades, workplace health promotion has grown considerably, usually incorporating nutrition education, weight control, and physical activity along with other health education efforts to reduce the risk of chronic diseases, such as cardiovascular disease and cancer. These efforts have been directed at both the general population of employees and high-risk individuals. Nutrition educators often assist in designing the programs and delivering them.

Healthcare Settings

Although one-on-one nutrition counseling is the norm in healthcare settings, many medical centers provide outpatient nutrition education to at-risk individuals served by the center. Health maintenance organizations and health insurance plans often provide nutrition education to their membership. Nutrition educators also work in physician practices, weight control programs, and eating disorders clinics.

AUDIENCES FOR NUTRITION EDUCATION

Nutrition education is provided to a wide range of audiences who differ on many counts, including age, life stage, socioeconomic status, cultural background, and other characteristics.

Life Stage Groups

Nutrition education programs have been developed and delivered to people throughout the entire life span: preschool children and their caregivers; school-aged children through school curricula, after-school activities, or family-based programs; college students through nutrition or health courses, cafeteria interventions, and student health center activities; adults through community or workplace programs; pregnant and lactating women and their infants and toddlers through WIC and other programs; and older adults through a variety of specifically targeted programs.

Diverse Cultural Groups

The United States is becoming increasingly diverse ethnically and culturally. Some nutrition education programs are developed specifically for different cultural groups, such as programs for African Americans, Latino/Latina groups, Asian Americans, or recent immigrants who speak a variety of languages. Many other countries have become similarly diverse. Nutrition educators need to become culturally competent as they work with such diversity.

Socioeconomic Background

Socioeconomic status (SES) has been linked to health status, with those of low SES experiencing more health problems and greater premature death than those of higher SES. Many government programs are designed to reduce these health disparities through food assistance activities such as the SNAP and WIC programs or public health programs. Head Start seeks to reduce educational inequities by providing free schooling to eligible preschoolers. Nutrition education is an important component of all these programs, assisting low-income participants to eat more healthfully.

Athletes and Exercising Individuals

Athletes and other exercising individuals are often specially interested in, and in need of, nutrition education. Nutrition educators with additional training in sports nutrition work with such groups as college and professional athletic teams and exercising individuals in fitness centers, worksites, and community programs.

Gatekeepers: Policymakers, Media, and the Food Industry

Traditionally, the term *gatekeepers* referred to those in the family (usually the mother) who purchased and prepared

the food because such people controlled what the family ate. However, the term can be used more broadly. Today individuals receive food from a variety of sources. Gatekeepers include individuals or organizations that provide food or services or have some policymaking role in the accessibility and availability of food- or nutrition-related services in organizations, communities, and local and national government. Gatekeepers may also be those who influence social and informational environments, such as the mass media. Nutrition educators can educate these gatekeepers about current food and nutrition conditions (e.g., anemia, food insecurity, unhealthy eating patterns, chronic disease risk, or obesity) and make the case for the relevance of nutrition education and policy alternatives in order to encourage policymakers to take actions that are more supportive of healthful eating, active living, and sustainable food systems.

SCOPE OF NUTRITION EDUCATION

The major function of nutrition education activities is to assist people to eat and enjoy healthful food by increasing awareness, enhancing people's motivations, facilitating the ability to take action, and improving environmental supports for action. However, nutrition education can expand its scope not only in terms of appropriate audiences, but also in terms of the content to be addressed and the nature of the strategies to be used.

Wide Range of Content: Health and Beyond

Nutrition education can address an extremely wide range of content issues related to food and nutrition. The primary content issues are, of course, related to personal health, such as the relationship between diet and health, healthful eating as recommended by the *Dietary Guidelines* and MyPlate, how to get the best nutrition within one's budget, food safety, breastfeeding, how to get one's children to eat more healthfully, eating breakfast, balancing eating and physical activity, reducing diet-related chronic disease, and so forth. However, any given nutrition education program can address any issue of concern or interest.

Food Systems Issues

In recent years, there has been an increase in interest among consumers and nutrition professionals in issues related to how and where food is produced, because eating fresh and local food is good for personal health, for farmers, and for the environment (Gussow 2006). Some programs have focused on these issues of eating locally (Englberger et al. 2010) and farm to school linkages (Feenstra and Ohmart 2012). Farmers' markets have emerged in many communities. To increase the accessibility and affordability of local foods to low-resources individuals, the USDA has made it possible for such individuals to use SNAP electronic benefits transfer (EBT) cards at farmers' markets. Various community organizations have also worked to link food banks and soup kitchens to local farmers. Nutrition professional organizations have suggested that nutrition education in schools be linked with working in school gardens and other strategies to help children develop a deeper appreciation for the environment and food systems (Briggs, Fleischhacker, and Mueller 2010).

Gardening and Cooking

Gardening and cooking have long been considered part of nutrition education in developing countries. Their importance for people of all ages has also become increasingly recognized in developed countries. These activities provide important skills and also help to connect people to food in a way that is engaging, motivating, and health promoting.

Social Justice and Sustainability

Some consumers are interested in what are called social justice and sustainability issues related to food. Indeed, some surveys suggest that about one-third of consumers are motivated in their purchases by concern for the environment as well as for their health, and mainstream food producers are beginning to cater to this segment (Burros 2006; McLaughlin 2004). One study found that worldwide, an average of 38% agreed or strongly agreed that "fair trade food and beverages are worth paying a little extra for" (Agriculture and Agri-Food Canada 2012). Consequently, the scope of nutrition education can be expanded to address these content issues as well. Numerous other issues of interest and concern will no doubt emerge that can be addressed by nutrition educators.

Physical Activity and Nutrition

Given the increasing recognition that being less sedentary and more physically active decreases the risk of chronic disease and obesity and improves health, many nutrition education programs now address physical activity

in tandem with individual and community nutrition education–related behaviors and practices.

A Variety of Approaches: Beyond the Traditional

Nutrition educators can embark on a wider variety of activities beyond mass media campaigns, lectures, group discussions, workshops, health fairs, newsletters, videos, brochures, and other print and audiovisual materials.

Empowerment Approaches

Nutrition education can use a critical consciousness–raising approach, originally proposed by Freire (1970), in which people participate in a process involving a careful analysis of the causes of the food or health issue facing the group and of the structure of power in their communities, and then plan ways to organize to take action. This approach has been used in nutrition education to assist low-resources groups identify the causes of their problems of access to food and to take political and economic actions to reduce nutritional inequities (Travers 1997).

Nutrition educators can also use a growth-centered educational approach, which seeks to foster self-reliance by building on the abilities and assets of the participants, providing opportunities for self-directed learning and activities, and building social support (Abusabha, Peacock, and Achterberg 1999; Arnold et al. 2001; WIC Works Resource System 2013). These approaches are related to an empowerment process through which individuals, communities, and organizations gain mastery over their lives (Israel et al. 1994; Rody 1988; Minkler, Wallerstein, and Wilson 2008). And indeed, an aim of nutrition education is for nutrition programs to assist individuals to become more able to take control of their own food choices and practices and to take collective action regarding their environments to make them more supportive—in short, to become more empowered.

Collaboration

Nutrition educators can also work in collaboration with other professionals, organizations, and governmental agencies to increase the accessibility and affordability of foods for low-income audiences; promote environments at the institutional and community levels that foster attitudes and behaviors conducive to health; encourage the development of social networks and social support; build food and nutrition programs that involve genuine community participation and control; and promote policies at local, state, and national levels that are supportive of food- and nutrition-related health.

Nutrition Education, Public Health Nutrition, and Health Promotion: The Roles and Context of Nutrition Education

Nutrition education that addresses both environmental and personal motivating and facilitating factors and includes expanded audiences and strategies begins to overlap public health nutrition and health promotion efforts. To make the situation even more complex, we should note that dietary interventions are often integrated with interventions directed at other health-related behaviors, such as smoking cessation, blood pressure control, and increased physical activity. Within the context of today's emphasis on health promotion and disease prevention, the roles of nutrition education, public health nutrition, health education, and health promotion are indeed overlapping and intertwined.

At the same time, the scope of nutrition education is broader than educating about nutrition in relation to personal health. Nutrition has often been defined as the link between agriculture and health. Some nutrition educators are concerned about the agriculture-to-nutrition component of the link as well as the nutrition-to-health component. Thus, nutrition education can address such concerns as food safety and how to ensure the availability and accessibility of nutritious and wholesome food for all, poor and rich alike. As we have seen, for many nutrition educators and consumers, considerations about how and where food is produced are also important. Nutrition education can thus be visualized as including the overlapping portion of several intersecting circles, as shown in **FIGURE 1-8**.

Clearly, nutrition education by itself cannot accomplish everything needed for improved nutritional well-being for all people. It must be conducted in conjunction with many other related strategies, some not educational in nature. Facilitating individual behavior change and bringing about change in the environment are both important and interactive. Nutrition education is directed primarily at individual and group behaviors through direct and indirect activities that enhance motivations,

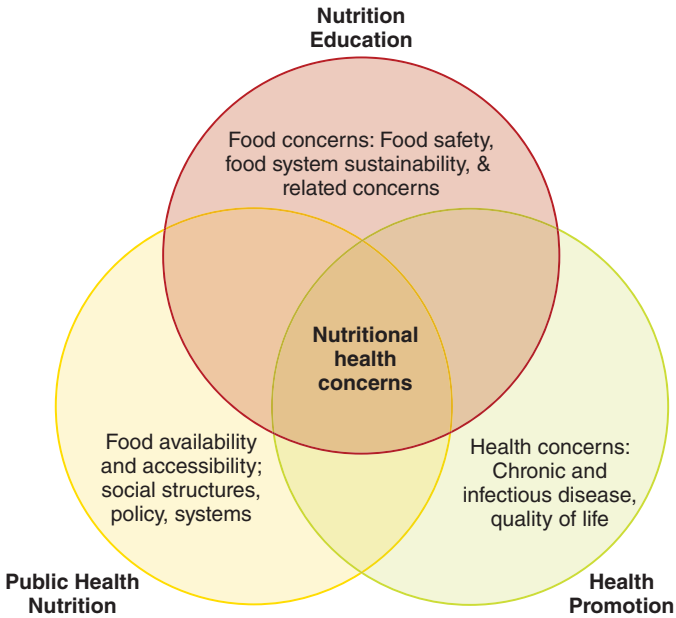

FIGURE 1-8 The overlapping roles of nutrition education, public health nutrition, and health promotion.

knowledge and skills, and social support. However, it also includes nutrition education activities conducted in collaboration with decision-makers and policymakers in order to promote specific policy, systems, and environmental supports that make it easier for the public to engage in healthy behaviors (Story et al. 2008). Public health nutrition efforts and food assistance programs, on the other hand, are directed primarily at environmental, systemic, and policy factors such as the availability and accessibility of food, access to nutritional services within the healthcare system, community structures that enable active living, policy, and legislation, and secondarily at personal and behavioral factors. In addition, those in nutrition education, public health nutrition, and health promotion share an interest in fostering collective efficacy and capacity building in communities so that communities can become empowered to act on their own food, nutrition, and physical activity issues for the long term.

Purpose and Overview of this Book

Nutrition educators have the opportunity to make a real difference in the lives of the people with whom they work. This book is intended to be a *guide* to designing, implementing, and evaluating effective, evidence-based nutrition education intervention programs and dietary change strategies. Effective interventions and strategies are those that enhance people's motivation, ability, and opportunities to eat well and live actively and are grounded in the integration of theory, research, and practice. We first explore the research and theoretical foundations of nutrition education and then examine a systematic and practical procedure for conducting it, called the DESIGN Procedure.

We have seen that nutrition education and promotion can be delivered through multiple venues and that its scope can be broad. One book cannot cover all aspects. Consequently, this text focuses on designing, implementing, and evaluating the types of educational interventions and programs that the vast majority of nutrition educators offer on an ongoing basis in their places of work:

- *Providing direct, site-based, in-person educational activities with groups* in a variety of settings, such as communities, outpatient clinics, health maintenance organizations, fitness centers, schools, workplaces, or private nonprofit organizations
- *Developing and implementing indirect activities and accompanying materials,* such as activities involving the Internet and emerging technologies, mass media campaigns, and social marketing activities, or health fairs and printed materials and visual media
- *Engaging in activities and coalitions with others* to promote environments, social structures, and policies that are supportive of the public's ability to eat healthfully

Many factors in the larger society, such as public policy, systems, and social structures, have important impacts on food- and nutrition-related behaviors and practices. Designing interventions to change directly these larger environmental forces operating at the community and national levels is the subject of many available health promotion planning and community nutrition books, and discussion of such design in detail is beyond the scope of this book. The focus of this book is thus on how to design and implement real-world educational programs that can stand alone or be conducted within, or in collaboration with, these larger programs. Specifically, this book provides a systematic stepwise procedure for translating theory and research evidence into exciting, effective direct and indirect educational activities for a variety of audiences and also policy, system and environmental supports for these activities. Working with individuals one on one, as in nutrition counseling, is also very important but is the

Table 1-1 Conceptual Framework of This Book					
Designing and conducting direct and indirect nutrition education with various audiences using many channels and including environmental and policy supports:					
The Foundations (Chapters 1–6)					
Introduction to contemporary definition of nutrition education	•				
Determinants of food choice and dietary change	•				
Foundation for successful nutrition education	•				
Enhancing motivation and facilitating behavior change and action	•				
Promoting policy, system, and environmental supports for action	•				
Design of Direct and Indirect Nutrition Education (Chapters 7–13)					
Deciding on behavior change goals of nutrition education programs	•				
Identifying determinants of behaviors	•				
Creating strategies and education plans to deliver nutrition education	•				
Planning the evaluation	•				
Delivery of Nutrition Education (Chapters 15–18)					
	Audiences				
	Children	**Teens**	**Adults/ Families**	**Cultural Groups**	**Low Literacy**
Understanding learning theory and audience learning styles	•	•	•	•	•
Understanding instructional design for teaching sessions/working with groups	•	•	•	•	•
Materials/visuals, Internet/social media	•	•	•	•	•
Mass media campaigns and social marketing	•	•	•	•	•
Design and Delivery of Strategies for Environmental and Policy Supports (Chapter 14)					
Family/social networks	•	•	•	•	•
Institutional/community strategies	•	•	•	•	•
Policy, systems and environmental change actions	•	•	•	•	•

subject of other available texts and will not be addressed in this book.

A *conceptual* outline of the book is shown in **TABLE 1-1**.

LEARNING A NEW VOCABULARY

You will encounter many new terms and ideas. Indeed, you will learn a new vocabulary. Just as when you took your first course in biochemistry or nutrition you had to learn new terms such as *metabolism*, *Kreb's cycle*, *lipogenesis*, *glycemic index*, and *electrolyte balance*, so you will learn new terms such as *outcome expectations* (beliefs about desired outcomes of behavior), *self-efficacy* (confidence in being able to perform a behavior), *attitudes*, *perceived social norms*, *personal agency*, and so forth. The terms are explained as you encounter them in this book. They are labels or terms used by health behavior professionals and psychologists to describe people's common perceptions and experiences. You will soon be comfortable using this new vocabulary and speaking the language of behavioral nutrition and nutrition education.

OVERVIEW OF THE BOOK

Nutrition education is challenging but also highly rewarding for those who work in the field. The public is interested in food and nutrition. Research is very active, drawing investigators from a variety of fields so that there is rich cross-fertilization of ideas. Such research has generated evidence about effective approaches to nutrition education and has produced usable conceptual frameworks and theories as tools to guide practice. The remainder of this book is

devoted to discussing relevant theories, emerging nutrition education research evidence, and practical techniques for increasing awareness and enhancing motivation for *why* to take action, facilitating the ability for *how* to take action, and promoting *supportive* environments in order to assist people to adopt and maintain food- and nutrition-related practices conducive to long-term health.

- Part I of this book provides the background in behavioral nutrition and nutrition education research and theory for understanding the determinants of food choices and the processes of dietary behavior change in order to provide you with guidelines and tools to make nutrition education practice more successful.
- Part II presents a six-step Nutrition Education DESIGN Procedure for designing effective practical nutrition education strategies that use theory and evidence as a tool or guide.
- Part III describes the nuts and bolts of implementing the direct and indirect nutrition education activities planned in Part II and making theory and research practical in real-world settings, including working successfully in group settings, using other channels and media effectively, social marketing, and working with diverse age, cultural, and literacy groups.

Questions and Activities

1. Why is nutrition education for the public needed?
2. Describe some reasons why it is difficult for people to eat healthfully, despite the abundance of choices and extensive media coverage of diet and health.
3. Social and behavioral factors contribute to a broad range of health outcomes for people and ecological conditions for the planet. What are the implications for nutrition education?
4. Although food and nutrition information is used in nutrition education in some form, why and how the information is communicated makes a difference in outcomes for people. Describe different ways that the information can be presented and indicate the implications for outcomes for each way of communicating the information.
5. Think carefully about the contemporary definition of nutrition education presented in this chapter. How does it differ from a definition you may have had previously? How do you think it will impact your work as a nutrition educator?
6. If someone now asks you to explain what nutrition education is, what would you say, using your own words?
7. As you review the audiences and settings for nutrition education, where you do see yourself as a nutrition educator? What would you like to do?

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