Communicating Healthy Eating: Lessons Learned and Future Directions

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ABSTRACT

Achieving and maintaining wide-scale positive dietary change is a complex and formidable endeavor, given the current food environment. Moreover, for positive change to occur, nutrition messages should be communicated in a scientifically precise, yet practical and motivating manner. This challenge was the impetus for the organization of a 2-day workshop hosted by the National Cancer Institute (NCI) and the Division of Nutrition Research Coordination (DNRC), both of the National Institutes of Health (NIH). The conference included communication, nutrition, and behavioral scientists, market researchers, media advocates, journalists, and public policy experts. Discussions regarding communication efforts and the best methods to craft, deliver, and evaluate the impact of nutrition messages illustrated both the challenges and the opportunities we face. During the discussions, important recommendations for nutrition communicators and interventionists emerged, based on existing knowledge from the communications field, lessons learned thus far, and noted gaps in our knowledge.

Key Words: nutrition, communication, diet, behavior change

INTRODUCTION

Although the contribution of diet to the risk of chronic diseases such as cardiovascular disease, diabetes, and certain cancers is accepted,1,2 a consensus does not exist as to how nutrition and health information should be communicated to the public. Experts in nutrition and behavioral sciences, including communication scientists, play a role in the design and dissemination of credible and practical nutrition information that has the potential to lower the risk of some major chronic diseases. Typically, however, these groups have not had the opportunity to work collaboratively to create messages, develop interventions, and conduct research to aid in this endeavor. Recognizing the need for collaboration among these distinct groups, researchers at the National Cancer Institute (NCI) and the Division of Nutrition Research Coordination (DNRC), both of the National Institutes of Health (NIH), planned a scientific workshop entitled “Diet and Communication: What Can Communication Science Tell Us About Promoting Optimal Dietary Behavior?” that was held in Bethesda, Maryland, in July 2005. An overview of the workshop, including its objectives and a summary of presentation topics, is discussed in the introductory paper for this supplement.3

The purpose of this paper is to provide a context for the workshop’s deliberations by briefly describing the current diet and communications environment, synthesizing the major themes emerging from the presentations and accompanying papers, and outlining future directions and a research agenda.

THE CURRENT DIET AND COMMUNICATION ENVIRONMENT

Since the beginning of the twentieth century, our understanding of the relationship between diet and health...
promotion/disease prevention has grown immensely. As scientific knowledge, changes in the food supply, and changes in food consumption patterns have progressed, the government has published nutrition recommendations reflecting current evidence. These recommendations have evolved from a relatively narrow focus on nutrient adequacy to a broader focus that incorporates chronic disease risk reduction and overall health promotion. For example, the most recent edition of the Dietary Guidelines for Americans, published in 2005, focuses on preventing overweight and encouraging physical activity. Using the Dietary Guidelines as a foundation, the federal government produces numerous other documents, Web sites, and media materials to encourage healthful dietary patterns among Americans.

The federal government is not alone in having an interest in Americans’ eating patterns, however. Workshop participants identified other groups, including health organizations such as the American Heart Association, the food industry, mass media, advertisers, and advocacy groups, as key communicators who influence people about their perceptions of food and nutrition and shape the context of our eating environment.

All these groups have different and often competing and conflicting interests in providing nutrition information. For example, the government generally seeks to use education to improve overall dietary intake and the public’s health. Its information emphasizes existing scientific evidence, and its recommendations reflect that evidence. In contrast, the food industry’s primary aim is to sell food products and to create consumer satisfaction through preferred taste and convenience. The approach taken by the popular press varies widely depending on the timing of the article and the nature of the medium (local versus national media, newspapers versus magazines, print versus electronic, news versus features) and can range from promoting the latest fad diet to disseminating legitimate scientific evidence about diet and health.

Interest in nutrition and dietary intake has risen dramatically with the escalation in rates of overweight, obesity, and diet-related diseases. Thus, nutrition has become a “hot” topic. For example, a recent study suggested that the number of stories on obesity on major television networks increased from 5 stories in 2000 to 56 stories in 2004, an increase of more than 1000% in 5 years. Governmental and nongovernmental organizations have taken a variety of actions to assist consumers in making healthful choices. For example, the Institute of Medicine recently suggested a uniform system of food ratings that could provide simplified information to help parents and children select healthful food. Likewise, some food companies have developed nutrition rating systems based on their own product lines to assist the public in selecting healthful options. Television media companies, such as the Public Broadcasting System (PBS), Disney Channel, and Nickelodeon, are inserting messages about healthful eating and physical activity into children’s TV shows and Public Service Announcements (PSAs). Unfortunately, much like the nutrition self-rating system being adapted by the food companies, limited information is available as to whether these interventions are being crafted in a scientifically appropriate and consistent manner. Moreover, these efforts are sometimes contradictory. For example, even though Nickelodeon characters such as SpongeBob SquarePants and Dora the Explorer appear on packages of carrots and spinach, Nickelodeon continues to advertise many foods of poor nutritional quality during its children’s programming.

The result is that Americans are surrounded by messages that encourage the consumption of a wide range of foods, and the content, focus, and scientific accuracy of these messages vary widely. It is not surprising, therefore, that many Americans report that nutrition messages are contradictory, confusing, and lack clear personal benefit. Historically, most people have made food choices based on taste, convenience, and cost, with less emphasis on healthfulness. Although the health benefits of dietary choices have become more emphasized in recent years, nutrition messages that address health issues must still integrate these other salient features if they are to substantially influence dietary choices.

It is apparent that neither public health nor communication science has a solid framework for developing effective dietary messages in our current environment. The challenge, then, for those who seek to influence dietary behaviors is to design and develop salient and practical nutrition messages that are scientifically precise, yet also acknowledge the essential factors that drive dietary behavior. This work requires drawing on the experience and expertise of nutrition and communication scientists to craft effective communication strategies that promote a healthful diet—the major purpose of the workshop.

WHAT CAN COMMUNICATION SCIENCE TEACH ABOUT PROMOTING OPTIMAL DIETARY BEHAVIORS?

In reflecting on evidence from the literature and lessons learned from practical experience, the communication experts presenting at the workshop focused on 6 themes that may serve to help public health agencies design more effective nutrition communications. These themes were: 1) draw from a variety of communication theories; 2) use strategies that are relevant to the target audience; 3) apply marketing strategies used by the private sector; 4) take action on multiple levels; 5) think broadly about evaluation; and 6) recognize potential communication inequalities.

Draw From a Variety of Communication Theories

Public health nutritionists are often trained in behavior change theories or models, such as Social Cognitive
Theory,17 the Social Ecological Model,18 the Theory of Reasoned Action and Planned Behavior,19,20 and the Health Belief Model.21,22 Behavior change theories focus primarily on the determinants that can potentially influence individual behavior.22,23

Although behavior theories are basic to the field, communication science includes many other theories as part of its foundation, and these theories can be very helpful in designing effective nutrition interventions. These theories include those that focus on message effects and media production.24 Factors that influence exposure and marketing of messages also are relevant.25

Message effects theories focus on how formats, structure, and features of messages influence audience perceptions about health and health behaviors.6 When a specific dietary behavior is chosen as a focus of a particular nutrition campaign or intervention, planners must have a thorough understanding of not only how the behavioral determinants differ by target audience, but also how messages to influence those behaviors must be constructed.25,26

Media production theories explain how the nature of media organizations and their cultures and structures, the occupational practices of journalists or producers, and the products such as news, stories, television shows or movies, influence the construction of and dissemination of messages and the effects of those messages.24 Media effects theories explain how exposure to media messages influences the knowledge, attitudes, and behaviors of individuals, social groups, and institutions.27

Marketing theory is useful for identifying the most effective strategies for delivering health messages on specific topics, determining target audiences, and assessing appropriate communication channels.28 The 4 Ps of marketing—place, price, product, and promotion—are key concepts in commercial marketing that have been adapted to social marketing and health communication.29 Social marketing often draws from communication theories and combines with experiences from commercial marketing to effectively market ideas and services to achieve public health objectives.30

Social marketing principles offer ways in which the environment can be structured to support recommended health behaviors by making it easier for the audience to act on those recommendations. For example, campaigns to increase consumption of fruits and vegetables are more likely to be successful if there are concomitant changes that promote access to fruits and vegetables.

Recent work in public communication campaigns highlights the importance of exposure to media messages as crucial to the effects of campaigns.25 Increased exposure to a campaign is associated with an increased likelihood of behavior change25 and can often be achieved by using multiple channels and formats. However, extensive resources are often needed to achieve exposure that is sufficient to achieve desired communication objectives. Considering multiple theories from both behavioral and communication sciences to help understand key aspects of the change process is an important, yet often overlooked and understudied component of planning public health campaigns.23

Use Strategies That Are Relevant to the Target Audience

An initial step in designing a public health nutrition communication program or campaign is to decide which messages to convey to a particular audience. Researchers can draw from message theory to determine how to frame or craft the messages to suit the needs and characteristics of the target audience. However, in order to decide on a message strategy, it is necessary to have a solid understanding of the target audience, how the audience could be affected by a message, and how the audience is likely to process the information conveyed.12,30 Knowing the audience and understanding their existing knowledge base, cognitive abilities, beliefs, values, current dietary behaviors, barriers to change, communication patterns, and information processing can help communicators develop message strategies that are personally relevant and that will resonate in ways that lead to behavior change.12,31,32 Involving members of the target population in nutrition campaign and intervention design and implementation is one important way to ensure that audience needs and characteristics are reflected in the message strategy.25,31

However, while it may be optimal to create unique campaign strategies for each target group, the number of groups to be addressed could be overwhelming. In an effort to economize, the campaign could establish a standardized message but acknowledge the diversity of the audience by including actors from different socioeconomic and ethnic groups.30

Several strategies from message theory have shown promise for communicating dietary advice. These strategies include using persuasive messages that have an explicit conclusion, addressing why people do or do not engage in certain behaviors, advocating a specific course of action rather than offering general guidelines, conveying practical “how to” and “when to” information, encouraging new behaviors rather than discouraging undesirable behaviors, and appealing to emotion rather than intellect.12,23,31,32 Data suggest that changing habits, including dietary habits, can be harder than adopting new behaviors that only need to be performed once or twice.30

Other strategies, which have been used in communications on other health behaviors, also may be worth exploring to determine their applicability to the area of nutrition. For example, framing has been successfully used in promoting health behaviors. Three ways of framing have been commonly used. One is a message strategy that emphasizes benefits to be gained (gain-framed) or losses to be avoided (loss-framed) through behavior change.34 Another is to define the problem and solution, thereby helping the audience to consider an issue in a particular way.35 A third
message strategy, fear arousal, also has shown some success, particularly in increasing the perception of susceptibility. However, such a strategy is risky, because the message could backfire if it does not offer explicit ways to reduce the fear. Currently, it is unclear whether any of these strategies is appropriate or would be effective for nutrition or dietary messages.

One critical aspect of message strategy is the choice of media outlets through which to convey the message. For example, older consumers are more apt to use print-based media, and younger consumers more often obtain information from the Internet. Similarly, more-educated and higher-income individuals are more likely to use print media and the Internet compared to less-educated and lower-income groups. Television viewing, in general, is uniform across different social groups, though program preferences differ. Thus, it is necessary to seriously consider which media vehicle will most effectively convey designated messages to a target audience.

### Apply Marketing Strategies Used By the Private Sector

A thorough understanding of the target audience, a carefully crafted message strategy, and solid decisions about the most appropriate outlets for delivering messages are cornerstones of marketing theory. Using these principles, social marketing campaigns have produced important public health successes. For example, the VERB campaign showed increased physical activity among 9-13-year-olds, the American Legacy Foundation’s “truth” campaign reduced smoking among teenagers, and the “5 A Day for Better Health” partnership between the NCI and others, promoted increased consumption of fruits and vegetables.

Workshop presenters suggested additional aspects of private sector marketing that could be adapted for public health purposes. These marketing aspects also were recommended in a recent article calling for application of marketing to disease prevention and health promotion. For example, commercial marketers commonly brand their products to establish positive associations and, ultimately, to ensure loyalty and repeat business. Recently, health campaigns have begun to effectively use analogous branding strategies and, although it can certainly be argued that the dietary behavior changes advocated in public health campaigns are complex and require multilevel approaches, branding could be extended to nutrition. In the case of a public health campaign, the brand is a set of prevention or health promotion behaviors that can be interpreted as representing an appealing lifestyle for a specific audience. For example, in the VERB campaign, the brand (VERB) was the promotion of physical activity among youth aged 9-13, and in the “truth” campaign, the brand was reduced smoking initiation among youth aged 12-18. The underlying assumption of these campaigns is that there needs to be a high level of awareness to realize behavior change. Importantly for these campaigns, awareness began with the VERB or “truth” brand, which became the vehicle for transmitting the messages. The goal was to create a link between an enviable and fun lifestyle and being physically active or not smoking.

Branding related to anti-tobacco campaigns has shown smoking initiation prevention effects in a longitudinal cohort of adolescents. In particular, the descriptive social norms (ie, perceived popularity of branded health behavior among a peer group) and subjective social norms (ie, perceived normative behavior of others associated with the brand, such as actors seen in ads) may be the most important targets for social marketers employing a branding strategy to prevent youth smoking. These results also may be applicable to nutrition behavior change communication campaigns, as constructs representing descriptive and subjective social norms have been associated with prevention effects across multiple health risk behaviors, including poor nutrition.

Applying private sector marketing techniques to public health communication campaigns has much potential utility. However, it also must be acknowledged that the private and public sectors are dramatically different in the resources they can provide to develop and deliver strategies for establishing brand loyalty, influencing attitudes, and changing behaviors. The food industry is the leading buyer of television, newspaper, magazine, billboard, and radio advertisements, spending US $7.3 billion on advertising in 1999. In contrast, the USDA spent US $333 million on nutrition education media campaigns during the same time period. The VERB campaign was unique in that Congress appropriated US $125 million in 2001 to the Centers for Disease Control and Prevention (CDC) to develop a national media campaign to improve child health behaviors. Thus, the funds for VERB were comparable to those of a marketing agency promoting a particular product or brand. However, owing to competing priorities, funding for the VERB campaign has been reduced. Public health campaigns are often limited by budget constraints and short-term funding support.

Creativity and innovation are essential if nutrition educators are to be effective in applying commercial marketing strategies in ways that would be useful in public health nutrition campaigns.

### Take Action On Multiple Levels

It is clear that dietary patterns and food choices develop in response to environmental and policy influences, as well as individual lifestyles. As a result, public health communicators must go beyond the individual level to the realm of societal and cultural norms, social context such as public policy, industry practices, and the environment, all of which have a profound impact on individual behavior.

Increasingly, researchers are acknowledging the importance of applying a multilevel approach to influence nutrition and
dietary practices. This multilevel approach has been successful in tobacco control efforts and has effectively altered the complex and entrenched behavior of smoking for many Americans. Antismoking advocates have been quite successful in reframing tobacco issues to transform what was commonly viewed as an individual problem into a social issue. For instance, secondhand smoke became a prominent issue in the workplace and community (e.g., restaurants), which generated societal pressure and changed norms. In terms of nutrition, this approach could serve to shift the focus away from an emphasis on individual responsibility for a poor diet or a diet-related condition, such as obesity, to a broad perspective on the ways we as a society view and organize our food marketplace.50,56

The social-ecological model, which has been proposed for health promotion program planning and evaluation, may be a particularly useful multilevel approach for nutrition.5,51,52,54 This model helps to conceptualize individual change within the context of social change through 5 levels of influence: social structure; policy and systems; community, institutional, and organizational; interpersonal; and individual. For example, interventions at the environmental level that address the placement and pricing of fruits and vegetables can influence individual purchasing and consumption patterns, because they affect the affordability, availability, and accessibility of these foods.57 Other possible environmental actions include instituting policy-level restrictions on the sale of certain unhealthy foods in selected venues, applying a tax to certain foods to influence choices, and shifting food product manufacturing and advertising away from high-calorie, low-nutrient products and toward the production and marketing of nutritious foods and beverages. Some groups have even attempted lawsuits against the food and/or media industries for selling and/or marketing “unhealthy” foods.9,59,60 These environmental efforts are relatively new and can potentially influence those whose decisions affect the food environment.51,62 For example, Nickelodeon recently refused to allow one of its cartoon characters to be used for a Burger King kids’ meal unless a piece of fruit was included in the meal.10 Also, Disney recently severed advertising ties with McDonald’s and former President Clinton and the American Heart Association recently persuaded soda manufacturers to agree to guidelines that limit the calorie content and portion size of beverages sold in schools. These guidelines are intended to foster the sale of nutritious beverages, such as low-fat milk and water, and to reduce the sale of soft drinks.64 These types of environmental interventions can be reinforced by interventions in schools, workplaces, and other organizations to help create a more pervasive and sustainable environmental force for positive behavior change—in other words, to make the healthful choice the easy choice.

Some speakers at the workshop discussed the importance of media advocacy, which is an approach to strategically influence the topics covered by the media and frame the ways in which they are covered.65 That kind of advocacy, which primarily draws from work on social movements, is sometimes offered as an important component of a multilevel approach because it can apply pressure through the media to advance health-promoting public policies.50,56 In a recent review of environmental and policy approaches used in chronic disease prevention, Brownson et al53 found that evidence of media advocacy in influencing public policy regulation of “unhealthy foods” was inconclusive, however. Media advocacy potentially could be more effective if there were a better understanding of how journalists cover news. Work on media production has identified how the understanding of reporters’ occupational practices and newsgathering processes could help in advancing ideas in the public arena, a body of work that could be useful in promoting a healthful diet through the media.

Think Broadly about Evaluation

Public health campaign planners often use unrealistically high behavior change standards to judge the effectiveness of their programs. Effect sizes achieved in behavior change interventions can be used as a yardstick by which to measure the effectiveness of nutrition communications interventions.23 However, low effect sizes do not necessarily reflect failure, because many other real world factors are competing, which may minimize the effect(s). Researchers, policymakers, and funders need to have realistic expectations about how to measure the success of such communications. Small effect sizes can translate into significant reductions in morbidity, mortality, and health care costs when they reach a large number of people. For example, small changes in mean US blood cholesterol levels achieved through the work of the public and physician education campaigns of the National Cholesterol Education Program have been part of the reason for the recent decreases in heart disease rates.66

Many of the approaches used to communicate nutrition messages do not lend themselves to traditional evaluation methods such as randomized controlled trials (RCTs). One reason why these traditional approaches do not work is because of strong secular trends, where information can potentially diffuse to both intervention and control groups.24 In addition, even if behavior change is the ultimate goal, evaluations of nutrition campaigns and interventions should measure not only behavior change, but also changes in behavioral antecedents such as knowledge, attitudes, beliefs, and perceived barriers.12 Until recently, many interventions have not incorporated formal analyses of these mediators, or potential predictors of behavior change, in their evaluations.67,68 Yet when designing an intervention, it is important to include such mediators in the evaluation design, because it is very difficult to retrospectively evaluate what factors helped to cause a particular change. For example, with regard to fruit and vegetable consumption, it has been shown through formal mediation analyses that knowledge, social support, and self-efficacy are promising mediators that may positively affect fruit and
vegetable consumption. In addition, potential moderating factors, such as sociodemographic variables and culture, should be considered in addition to potential mediators of dietary change to help elucidate how nutrition communications may be influenced by these factors. As a result, nutrition communicators must select creative and innovative evaluation designs to determine the reach and impact of campaigns.

Recognize Potential Communication Inequalities

One major outcome of public communication campaigns is the potential “knowledge gap” between the information haves and have-nots. In other words, those who are from a relatively higher socioeconomic status are more apt to be able to take advantage of information compared to those who are relatively disadvantaged. This relative difference in knowledge accruing from health communication campaigns has been expanded to incorporate the idea of communication inequality—differences among social groups and classes in accessing, processing, and taking advantage of information and their capacity to act on it. Communication inequalities in nutrition communication could widen the existing differences among social classes in the adoption and maintenance of a healthful diet. This could potentially lead to greater differences in health outcomes as well. Any communication on diet and nutrition must pay close attention to such inequalities.

WHERE DO WE GO FROM HERE?

After 2 days of lively discussion and debate, participants in the “Diet and Communication: What Can Communication Science Tell Us About Promoting Optimal Dietary Behavior?” workshop reached 3 major areas of consensus:

- Determining the right dietary messages and delivering them in an effective fashion is critical. Because diet is a complex behavior, messages that will encourage individuals to initiate and maintain health-promoting dietary choices must be crafted with care, grounded in a solid knowledge of the audience, and supported by sound behavioral and communication theory. Private sector marketing and advertising experience provides much of value in informing the development of dietary messages, as does the experience of social marketing campaigns. However, encouraging people to change complex dietary behavior is dramatically different from promoting a particular commercial brand of dishwashing liquid or reinforcing a single health action, such as seat belt safety or smoking cessation. A number of participants urged the development of more simplistic nutrition messages. However, it has not been empirically shown that crafting “simple” messages is the optimal strategy for communicating dietary messages.

- It may be that a more complicated approach would be better if it were crafted and delivered effectively. Ensuring sufficient exposure to the messages is also essential, but the best ways to achieve that exposure remain unclear.

- We can no longer focus dietary interventions and messages solely on individuals, but must incorporate the larger environment. It is clear that an individual’s dietary decisions are influenced, and even dictated, by a host of variables, including personal knowledge and preferences, family and socio-cultural factors, and the school, neighborhood, and media environment in which one lives. Efforts to inform, educate, and influence individuals must be accompanied by efforts to create a health-promoting environment through policy change and shifts in the food marketplace.

- The evolution of the current food environment and its attendant problems of obesity and diet-related chronic diseases has been complex. Improving the public’s dietary choices will require a long-term, multilevel approach that includes governmental and nongovernmental agencies as well as commercial interests so as to find common ground in strategies.

These 3 areas of consensus inform an initial approach, described in the following sections, that combines action with a complementary research agenda.

Action Steps

Understanding the multiple and intersecting elements that shape dietary behaviors is the initial step in developing effective communication strategies. A broad conceptual framework that integrates behavior theory, communications science, nutrition principles, and environmental influences would do much to help policymakers, communicators, and public health advocates enhance knowledge about dietary behaviors and foster a perspective that would provide a base for the development and design of messages and communication interventions.

This overarching framework must reflect the various disciplines and backgrounds identified as fundamental during the workshop. To accomplish this goal, a diverse group including funding agencies, nutrition researchers, interventionists, and those who are dedicated to the translation and dissemination of research findings to various populations, should be recruited to collaborate in this endeavor. Development of the framework could be accomplished through conferences or workshops augmented by wide dissemination and review by a range of stakeholders.

A fundamental product of the work to develop a conceptual framework should be agreement by the participating groups on a series of key nutrition messages. There is widespread agreement that the public is confused by the multiple and often contradictory messages in the current nutrition environment. A unified approach to the nature
and sequence of nutrition messages would do much to reduce this confusion.

Once agreement is reached on the messages, the participating groups could move forward with their own initiatives to promote those messages. These initiatives would, of course, reflect the particular interests and expertise of the individual groups. For this approach to work, it is essential that communication, coordination, and collaboration be improved across multiple organizations. Federal funders for nutrition campaigns could potentially combine resources and better coordinate nutrition campaigns and messages. Improved transdisciplinary communication could be accomplished through listservs, conferences and workshops, Web sites, electronic journals, and search engines such as Scopus and Google Scholar. Improved coordination on the federal level could create a powerful incentive to encourage other participating groups to work from the same conceptual framework and build powerful public health brands associated with positive dietary messages. One important step would be to determine in which federal agency the proper leadership of such a centralized strategy should reside and to ensure that it is as well informed in the areas of branding and marketing as the food industry.

Additionally, it is essential that public health nutrition communicators find innovative ways to partner with the media, nonprofit organizations (eg, the American Heart Association, the American Cancer Society), and the advertising and food industries to encourage consumption of more healthful food products. An example of such a partnership is the VERB campaign discussed in this issue. Another example is the new Healthy Lifestyles and Disease Prevention initiative, which is a joint venture between the Department of Health and Human Services, the Ad Council, and the Ad Council’s volunteer partners. The campaign includes multimedia public service advertisements (PSAs) (http://www.adcouncil.org/default.aspx?id=54) and an interactive Web site (www.smallstep.gov). For such partnerships, nutrition communicators need to find areas of common ground and leverage the help and funding of these companies around those areas.

A Complementary Research Agenda

Each of the actions outlined previously, including the development of a conceptual framework, agreement on key messages, and initiatives to communicate those messages, should be accompanied by research to ensure that the process is scientifically sound and demonstrably effective.

The conceptual framework must be tested and validated to ensure that it incorporates essential elements and that it can, in fact, be used as the basis for developing appropriate dietary messages.

Much is still unknown about what works in messages. Is simple better? If not, what level of complexity is appropriate? How should messages be crafted, and who should deliver them? It is assumed that the repetition of the same message by multiple senders helps people remember the message and regard it as credible. However, this idea has not yet been established with certainty. There is also much to learn about how to achieve sufficient exposure for messages.

Research in the application of theoretical principles and techniques used by other sectors, such as product advertising, political campaigns, and successful public health campaigns also would be valuable in an effort to determine the extent to which nutrition educators should adopt private sector marketing techniques.

Formative and outcomes research will need to be conducted in order to develop and test messages and evaluate the interventions in which they are used.

As this process evolves, it would be useful for investigators to conduct natural experiments and observational studies to assess changes in the marketplace and the environment. It will be difficult to determine the impact of any single intervention or message on knowledge, attitudes, or behaviors, but it will be useful to document evolutions in food available in the marketplace and shifts in buying patterns. Over time, these trends could be compared to trends in weight status or chronic disease risk factors to provide some insights into the various factors associated with these trends.

Equally critical, attention must be paid to whether communication campaigns in nutrition are benefiting all groups in society or are the advantages from campaigns accruing only to those already well off? A danger exists that inequalities between the rich and poor could be exacerbated unless close attention is paid to this issue.

Finally, the program outlined here presents a rich opportunity for investigators to conduct methodological research so as to improve the ability to design, deliver, and evaluate effective dietary communications to a heterogeneous US population.

The NCI and DNRC workshop was an important step in the evolving process of collaboration between communication and nutrition scientists. Collaborative efforts are essential in the quest to positively affect individual dietary behavior, the food environment, and societal norms related to healthful eating.

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