An Innovation Adoption Approach to the Dissemination of Health Information to Consumers

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This chapter views health information programs as attempts to diffuse health innovations among consumers. The proposed framework draws on previous theory and research in the diffusion of innovations and social marketing to develop a framework that delineates the conceptual, material, and behavioral components of health innovations and that conceptualizes and manages their interrelationships to promote adoption.

To begin, the current state of the health information marketplace and consumers’ responses are described. An innovation adoption approach to the design of health information programs is then suggested and literature describing characteristics of health innovations and consumers that influence adoption of health innovations is reviewed. A general framework for managing health information programs is then proposed and specific strategies are overviewed. Finally, data from a recent study are used to generate several example applications of the proposed framework. The implications of this approach are then discussed.

The Status of the Health Information Marketplace

Health information is defined as knowledge relevant to physical or mental well-being. This definition suggests that health information is more than mere data; it is information that has a more intelligent nature—it has been processed, codified, and formatted and its implications have been delineated. Three fundamental changes in the health information marketplace have dramatically influenced the intelligence of currently available health information.

First, we have witnessed an explosion in the amount of health information available to consumers. Second, this explosion has been accompanied by an increase in the technical quality of health information. Indeed, Naisbitt’s (1984) idea that “we are drowning in information, but starved for knowledge” is a reality in the area of health information for many consumers. Finally, health information reaches a wider group of consumers and does so more quickly than in the past. This is the case because consumers often bypass medi-
According to Rogers (1983), adoption of an innovation involves the following steps: (1) building knowledge about the innovation, (2) being persuaded that the innovation supersedes the status quo, (3) deciding to adopt the innovation, (4) implementing the decision to adopt, and (5) confirming the innovation’s benefits. Therefore, health information utilization is defined as the *process of acquiring and processing knowledge relevant to physical and mental well-being and subsequent effects on consumers’ decisionmaking and the implementation and confirmation of health-related behaviors*.

A number of factors influence whether and to what degree consumers adopt health innovations. These factors, which can be classified as characteristics of the innovation or characteristics of the consumer, should therefore be considered in designing health information programs.

### Innovation Characteristics Affecting Adoption

Table 1 summarizes innovation characteristics as either benefits or costs. Each group will be described and examples offered.

**Benefits.** Benefits are the perceived positive psychosocial or functional consequences associated with adopting an innovation (Olson and Reynolds, 1983). A great deal of research has described the notion of yield or gain associated with change (Davis, 1973; Davis and Salasin, 1975). Other research has described this general benefit as the perceived advantage of the change over current practice (Gatignon and Robertson, 1985; Zaltman and Lin, 1971). More specific benefits that may fall under the rubric of these two general terms include the avoidance or savings of discomfort (Fleegal and Kivlin, 1966; Zaltman and Lin, 1971), time savings (Zaltman and Lin, 1971), social approval or acceptance (Fleegal and Kivlin, 1966), and self-esteem. With regard to change in the area of health, such benefits as fitness, attractiveness, weight control, longevity, social approval, perceiving a sense of control over life, safety from health threats, and feeling good are all possible outcomes associated with adoption of healthy behaviors.

In addition to the actual benefit, Zaltman and Lin (1971) noted that the clarity of the benefit or result is also critical to adoption. If consumers cannot discern the benefit, change agents may have to implement strategies to increase consumers’ abilities to do so. Such strategies may include communicating the benefit to target consumers, designing benefits that consumers value, or linking current benefits more explicitly to espoused values. Finally, strategies could educate consumers as to the meanings and importance of current benefits.

**Costs.** Costs are the perceived outputs necessary to adopt an innovation. These costs come in a variety of forms, such as financial, time, effort, and risk. Financial costs, for example, may be actual monetary outlays to begin adoption (e.g., the purchase of exercise equipment) and the expenditures associated with continuing the change over the long
term (e.g., maintenance and upgrading of equipment) (Fliegel and Kivlin, 1966).

Time or inconvenience is an important cost that consumers incur (Peter and Olson, 1990; Rothschild, 1979). If consumers have to expend a great deal of time adopting an innovation, they are less likely to adopt it. For example, Third World immunization programs that travel to towns and villages in addition to larger cities decrease the time costs associated with immunization.

Costs may also come in the form of effort. Russo, Staelin, Nolan, and others (1986) referred to three types of effort that represent important costs in the utilization of nutrition information: collection effort (acquiring information), computation effort (combining collected information), and comprehension effort (inferring and categorizing meanings associated with information). Likewise, Zaltman and Lin (1971) described the effort necessary to align beliefs, values, and behaviors with the adoption of an innovation (see also Peter and Olson, 1990). Incompatibilities between the change and existing ways of thinking and behaving (Gatignon and Robertson, 1985) may also cause effort to be expended. Ram and Sheth (1989) referred to use behaviors as one type of incompatibility, describing tofu as a product that suffered because its use ran counter to existing food preparation behaviors and consumers were required to make an effort to learn correct use patterns.

Effort may also be created by the perceived complexity of the change. Complexity refers to the sophistication and number of behaviors and the skills required to adopt a change. A low-cholesterol diet is an example of a complex change. It entails adapting food preparation practices, identifying high-saturated fat foods, and modifying consumption patterns. Finally, effort may arise because of the frequency of the adoption. Frequency refers to how often behaviors must be enacted to achieve valued outcomes. For example, improving cardiovascular health requires frequent behaviors—engaging in daily exercise, for instance, and consuming a low-fat diet—whereas an influenza immunization is required only once a year.

Two special types of costs that are unrealized at the time of adoption but that threaten adoption are the risk of loss and the uncertainty associated with both gains and losses. Ram and Sheth (1989) described four types of risk: physical (bodily harm), economic (financial loss), functional (reliability of the product), and social (social disapproval). A variety of factors affect perceptions of risk and uncertainty. One such factor is permanency, which reflects the trailability of the change irrespective of the frequency with which it is performed during that time. Trailability is the degree to which a behavior innovation may be tried on a limited basis (Zaltman and Lin, 1971). For example, the valued outcome of a trim figure can be achieved by a permanent change (plastic surgery) or by a nonpermanent change (diet and exercise). As discussed in the next section, some consumer characteristics also affect perceptions of risk.

Strategies that decrease the cost of adopting the innovation (e.g., strategies that decrease effort, risk, and time) increase adoption. For example, decreasing the financial cost, complexity, and permanency of an innovation makes a health innovation more likely to be adopted. Furthermore, increasing the trailability or compatibility of a health innovation makes its adoption easier for the consumer because it requires no change in thinking or practice and because the innovation may be discarded at any time (Zaltman and Duncan, 1977).

### Consumer Characteristics Affecting Adoption

**Health-related cognitions and motives.** Health value refers to the extent to which health is a fundamental end state that consumers want to achieve in life (Peter and Olson, 1990; Rokeach, 1973). When health is valued relative to other end states, consumers should enact high levels of health behaviors. This is the case because values represent a central component of consumers’ knowledge about themselves (Kihlstrom and Cantor, 1984; Markus, 1977); hence, their fulfillment motivates the acquisition and consumption of information, products, and services. Moreover, when health is valued, no effort is required to change beliefs and values.

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**Table 1. A classification of innovation characteristics affecting adoption.**

**Benefits of innovations**

**Generic benefits**
- Social approval
- Avoidance of discomfort
- Time savings
- Ease of use
- Higher yield
- Self-esteem

**Health-related benefits**
- Fitness
- Longevity
- Weight control
- Control over life
- Safety from health threats

**Costs of innovations**

**Generic costs**
- Financial
- Time
- Effort
  - Incompatibilities between innovation and beliefs or behaviors
  - Complexity
  - Frequency
  - Risk and uncertainty
  - Permanency
  - Observability

**Health-related costs**
- Learning new behavioral routines
- Giving up unhealthy behavioral routines
- Purchasing products and services
- Collecting, computing, and comprehending health information
- Changing attitudes and values regarding health
Health motivation refers to the extent to which consumers have goal-directed arousal toward health-related activities (Park and Mittal, 1985). Kotler and Roberto (1989) refer to consumers' willingness to learn as a critical factor affecting the adoption of innovations. This willingness can be more broadly interpreted as a motivation, in this case for the consumption of health-related information, products, or services. Consumers can have enduring levels of health-related motivation, because they value health or such end states as attractiveness and longevity. Alternatively, consumers can have a situation-induced or stimulus-induced level of health-related motivation that has been created by the social environment (a need to fit into a group that is health conscious), the information environment (new nutrition information at the point of sale), or the general physical environment (healthy food “giveaways”) (see Houston and Rothschild, 1978; Celsi and Olson, 1988).

Health knowledge refers to the extent to which consumers have health-related cognitive structures that assist in information processing. High knowledge levels, in general, have been theorized to reduce consumers' motivation to acquire (collect) more information (Bettman and Park, 1980; E.J. Johnson and Russo, 1984), despite the fact that high knowledge levels also facilitate consumers' ability to process information (Alba and Hutchinson, 1986; Brucks, 1985; E.J. Johnson and Russo, 1984). Knowledge has also been found to improve the quality of decisionmaking (Sproles, Geistfeld, and Badenhop, 1978, 1980) and the performance of various health innovation behaviors, including practicing safe sex (Manning, Barenberg, Gallo, and Rice, 1989), changing dietary practices (Speers, Niemczyk, Morter, and others, 1990), exercising (Avis, McKinlay, and Smith, 1990), and performing sun-protection behaviors (Keesling and Friedman, 1987). Other research has found no such linkage between health knowledge and increased health behaviors, including practicing safe sex (Ottomanelli, Kramer, Bihari, and others, 1990) and performing sun-protection behaviors (Hill, Rassaby, and Gardner, 1984).

Health-risk orientation also affects the adoption of health innovations. Assuming that health is valued, a consumer who is averse to risk may be less inclined to adopt a risky health innovation. A risk-taking consumer, on the other hand, would be more likely to make a risky adoption. Risk takers, who may be associated with such characteristics as the need for variety, excitement, or novelty, will be more inclined to try new behaviors, products, or information sources than will consumers who do not have this need (McAlister and Pessemier, 1982).

Perceived health status refers to consumers' perceived physical and mental well-being. Research suggests that perceived health status may inhibit the adoption of health behaviors because consumers who perceive themselves to be unhealthy do not perceive the benefits associated with health or are uncertain about their ability to achieve a healthy state (Closher, Wallace, Pomrehn, and others, 1990). Other research, however, has found that perceived poor health is associated with higher levels of counseling in hospitals (Pineault, Champagne, Maheux, and others, 1989), medical service utilization, and health-enhancing behaviors (Mechanic, 1982). Therefore, the effect of health status remains equivocal.

Preventive orientation refers to the extent to which consumers believe they should manage their health prior to a health problem's appearance (Dabs and Kirsch, 1971). Curative orientation refers to the extent to which consumers believe their health problems should be managed after symptoms appear (Moorman, 1990). Research has found that a preventive orientation increases health behaviors, whereas a curative orientation decreases health behaviors (Zweig, LeFevre, and Kruse, 1988).

Finally, many health innovations provide gratification only long after adoption has occurred, and often if results do occur, they may not be detectable by the adopter, as in the case of many cardiovascular improvements. Hence, consumers who are able to defer gratification or who have a long-term orientation will be more likely to adopt such health innovations.

Demographic characteristics. Research indicates that age inhibits the processing of information, including nutrition labels, because of elderly consumers' declining cognitive and perceptual skills (see Cole and Gaeth, 1990). Processing health information from electronic media may also be difficult, because of the presentation speed of such information. Elderly consumers are, however, likely to utilize other sources of information, such as health professionals, family, and friends, who can help them process complicated health information. In addition, the elderly are likely to adopt behavioral (not informational) health innovations, possibly because they encounter less interference (e.g., from work or family) with the enactment of health regimens and because they value their increasingly fragile health at higher levels than do younger consumers.

Income continues to represent access to health behaviors, despite such programs as Medicaid and Medicare (Liem and Liem, 1978; MeLeod and Kessler, 1990). High-income consumers, for example, use physicians more often than do low-income consumers (Rosner, Namazi, and Wykle, 1988; Williams, 1990). In addition, low income often coincides with feelings of alienation and psychological distance from mainstream societal norms (Mirowsky and Ross, 1986; Myers, Lindenthal, and Pepper, 1975). Hence, low-income consumers may not enjoy access to communication about social norms involving health or, when exposed to such communication, may not perceive themselves as part of the social system holding such norms. Low-income consumers may, however, rely on family and friends, who are less costly and more convenient than professional or label sources.

Research is mixed on the topic of gender; however, results generally indicate that women exhibit more health behaviors than do men (Verbrugge, 1985) and engage in fewer direct-risk behaviors, such as smoking and drinking (Antonucci, Akiyama, and Adelmann, 1990; Dean, 1989; Kristiansen, 1990). Women also exhibit more risk-avoidance behaviors (e.g., checking the home for safety hazards), daily health routines (e.g., taking vitamins and eating high-fiber foods), and preventive measures (Hickey, Rakowski, and Julius, 1988; Spilman, 1988).

Psychological control characteristics. Health locus of control (HLC) beliefs refer to the extent to which consumers believe they control health outcomes (Rotter, 1966). Lau (1982, 1988; Lau and Ware, 1981) suggested that HLC beliefs are multidimensional, including beliefs in self-
control, provider-control, chance-control, and the existence of general health threats. Consistency between these health beliefs and health-innovation behaviors should emerge because consumers have a need for cognitive consistency (Heider, 1946), they learn via a hierarchical process (Lavidge and Steiner, 1961; Ray, 1973), and their beliefs can be used to predict behaviors (Fishbein and Ajzen, 1975).

**Behavioral control beliefs** are described as a sense of personal efficacy, or the "conviction that one can successfully execute the behavior required to produce certain outcomes" (Bandura, 1977, p. 193). As consumers' sense of behavioral control increases, so will their initiation, persistence, and maintenance of various health innovation behaviors (Ajzen and Madden, 1986). This is the case because the performance of most health behaviors is achieved only through high costs; therefore, consumers are unlikely to attempt behaviors unless they believe they will be effective (Bagozzi and Warshaw, 1990).

### A Framework for the Strategic Management of Health Innovations

This section describes a framework and a process for designing, managing, and evaluating health information programs. Each component of the framework is described, two general design principles are noted, and strategies for ensuring adherence to these principles are suggested. Examples are provided that indicate the effect on adoption. Finally, recommendations for evaluating the effectiveness of health information programs designed using the proposed framework are provided. A summary of the process is contained in Table 2.

### The Components of Health Information Programs

Figure 2 illustrates the proposed framework for conceptualizing the components of health information programs. These include the target adopters' characteristics, the change objective, the concept innovation, the behavior innovation, and the material innovation.

**Target adopters' characteristics.** The term *target adopters' characteristics* refers to any characteristic relevant to the adoption of health innovations. It may include any of the consumer characteristics reviewed earlier or other relevant characteristics. One way to easily conceptualize the large number of characteristics that are likely to emerge in such an analysis is to classify them into one or more of the overarching categories that have been recommended for consideration in the design of change programs: values, abilities, motivations, and context (Davis, 1973; Davis and Salasins, 1975; K.W. Johnson, 1989; Maclnnis, Moorman, and Jaworski, 1991). These four categories are not mutually exclusive.

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3 The general factors are drawn from the A VICTORY model (Davis, 1973; Davis and Salasins, 1975). Each letter in the acronym A VICTORY describes an important precondition for change. Factors not relevant to the framework are not discussed.

### Table 2. Summary of process for managing health information programs.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>1.</td>
<td>Place health information in the broad context of how consumers will use it. Identify the specific information acquisition, information processing, decisionmaking, implementation, and confirmation behaviors to be encouraged or discouraged.</td>
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<tr>
<td>2.</td>
<td>Identify potential consumers. Research their key characteristics, focusing on abilities, motivations, values, and context, among other critical characteristics that might affect adoption. Research the extent to which consumers value various concept innovations that may be used. These might include some of the benefits noted in Table 1.</td>
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<tr>
<td>3.</td>
<td>Select a target market(s) for the program on the basis of criteria determined to be important.</td>
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<tr>
<td>4.</td>
<td>Select a change objective from among health information utilization outcomes for the target market. This objective should reflect important health goals for target adopters while accounting for their unique characteristics and the ability to achieve the objective via health information programs.</td>
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<tr>
<td>5.</td>
<td>Design a number of potential concept innovations, behavior innovations, and material innovations that are consistent with target adopters' manifest or latent characteristics and with the achievement of the change objective.</td>
</tr>
<tr>
<td>6.</td>
<td>Reduce the set of consistent program components to those that mutually reinforce one another. Specifically: (1) choose material innovation(s) and behavior innovation(s) that consumers believe, or can be persuaded to believe, lead to the achievement of concept innovation(s); (2) choose material innovation(s) that are easy to acquire and understand and behavior innovation(s) that are easy to enact.</td>
</tr>
<tr>
<td>7.</td>
<td>Implement health information program.</td>
</tr>
<tr>
<td>8.</td>
<td>Evaluate health information program.</td>
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</table>
ally exclusive and many consumer characteristics that increase one factor may decrease another. For example, the presence of health knowledge may reflect an increase in consumers' abilities but may work to decrease their motivation to acquire and process more health information. Each general category of factors will now be briefly reviewed.

Ideas, practices, and products consistent with consumers' values are more readily adopted (Davis and Salasin, 1975; Rogers and Shoemaker, 1971; Zaltman and Lin, 1971). For example, Dholakia (1984) described how family planning efforts in India met with slow success because of the value placed on large families and the negative attitudes toward birth control. Moreover, health psychology research has shown that unless individuals value their health, attempts to change their disease prevention activities prove largely ineffective (Lau, Hartman, and Ware, 1986).

Abilities include consumers' resources, knowledge, and skills, including factors that affect these abilities, such as education, age, income, and psychological-control belief levels. Change agents must consider target adopters' abilities when designing health information programs because abilities influence the extent to which consumers can acquire and process information and evaluate, implement, and sustain a change (Glaser, Abelson, and Garrison, 1983). For example, Moorman (1990) found that recommended daily allowance (RDA) information dramatically increased comprehension accuracy levels over milligram information for consumers with some graduate education (+17 years); it also increased comprehension accuracy among university-level consumers, but less dramatically. However, RDA information rather than milligram information slightly reduced the comprehension accuracy of consumers with a high school education.

The goal-directed arousal of motivation (Park and Mittal, 1985) could be focused on consumers' processing of health information or on their enactment of health behaviors, such as exercise or diet restriction. Zaltman and Duncan (1977)
argued that motivation arises when there exists a significant discrepancy between actual and desired well-being in the area of the change. This discrepancy may be the result of consumers' health-risk aversion, perceived health status, age, gender, psychological-control beliefs, preventive or curative orientation, the value of health, or knowledge regarding possible health achievement levels. Evidence suggests that introducing change when there is a felt need increases the chance of a program's success (Glaser, Abelson, and Garrison, 1983). Other research suggests that felt needs can be fostered by change agents (Zaltman and Duncan, 1977).

Context refers to those environmental conditions surrounding consumers. These conditions, which may be enduring or temporary in nature, include geographic location, family size, cultural norms, and exposure to communications. For example, Rogers and Shoemaker (1971) found that Peruvians rejected the idea of purifying water by boiling it because doing so ran contrary to their superstitions. Likewise, cultural norms regarding cigarette and alcohol consumption have radically changed consumption patterns over the last decade ("Youthful Sobriety," 1990). Change agents who understand these contextual factors can use them to design change strategies.

The change objective. Health information programs can have a variety of objectives. For example, information programs can have macro or micro objectives. Micro objectives focus on changing individual consumer behaviors. Macro objectives focus on how changes at the micro level transform the entire marketplace in productive ways, such as when the choices and complaints of an informed minority of consumers influence firms or governments to alter offerings or provide information (Mazis, Staelin, Beales, and Salop, 1981; Thorelli and Engledow, 1980). This chapter focuses only on micro objectives of health information programs.

Another distinction among programs, suggested by Bettman (1975) and others, focuses on improving consumers' information-processing behaviors (i.e., processing normative objectives) or on improving the quality of consumers' decisions (i.e., behavioral normative objectives). Processing normative objectives include ensuring that consumers are exposed to information, that they attend to it, and that they comprehend its meaning. How—or even whether—consumers act on such information is considered an individual matter, however, and the system does not try to direct those decisions other than to present the information in a manner that facilitates processing. Behavioral normative objectives, on the other hand, explicitly attempt to improve the quality of consumers' decisions and behaviors. The current chapter includes both types of objectives.

The selection of the change objective should (1) reflect important health goals for the target adopters while accounting for (2) target adopters' unique characteristics and (3) the ability to achieve the objective via health information programs. The health information utilization outcomes illustrated in Figure 1 form the general set of objectives most health programs will seek to achieve. For example, the general objective of increasing health information acquisition and processing may be chosen in a context where the target adopters are teenaged women and the type of health information is information concerned with the symptoms and health effects of various eating disorders. In this case, the change objective would be to increase the acquisition and processing of health information concerned with the symptoms and health effects of various eating disorders.

The concept innovation. All innovations have a conceptual element (Kotler and Zaltman, 1971). Concept innovations are usually designed to communicate an abstraction that consumers value, although adopting an innovation will often involve other conceptual costs. Therefore, concept innovations represent benefits and costs to the consumer. For example, consumers who quit smoking may believe that they will become healthier, but they may suffer temporary weight gain. Likewise, consumers who wish to be protected against the threat of catastrophic disease must risk the dangers associated with immunizations.

The behavior innovation. Behavior innovation refers to the practices associated with an innovation that have certain costs and benefits. The benefits (costs) include compatibility (incompatibility) with current attitudes and behavioral routines, the simplicity (complexity) of the practice, the low (high) frequency of the practice, and the trialability (permanency) of the practice. With regard to family planning, for example, sterilization is a far more costly approach than using condoms (Fox and Kotler, 1980).

The material innovation. Material innovation refers to the tangible attributes associated with a health innovation. These attributes may be expressed as information, a physical good, a service, or some combination of these. Material innovation elements could be, for example, attributes associated with the product, such as: size, weight, texture, smell, color, packaging, brand name, and illustrations. Change agents must manage these tangible attributes, matching their suitability to certain types of consumers. For example, when contraceptives with the broad name "F. L." or "French Letters" were introduced in India, they were viewed negatively because the name was associated with prostitution. However, when the name was changed to "Nirodh," a Sanskrit word meaning "protection," acceptance of the product improved appreciably (Fine, 1981).

Other attributes may be information related, including the content, format, source, and amount of information. Content may involve the primary message and the use of certain types of appeals (e.g., humor or fear) to influence an innovation's adoption by informing the consumer of important consequences. Format involves the way the information is structured for presentation. Research has found, for example, that consumers use nutrition information formatted in RDAs more than they use information in a milligram format (Moorman, 1990) and that they use an adjectival descriptor format more than an RDA format (Scammon, 1977), presumably because the comprehension costs are lower. The source of information also affects consumers' adoption of health innovations. For example, sources that are trusted, knowledgeable, liked, or similar to the message recipient are more persuasive than are sources that do not have these characteristics (Sternthal, Dholakia, and Leavitt, 1978). Finally, the amount of information affects adoption, because consumers view information processing as costly.

When a material innovation is a service, many of the attributes are intangible. For example, the quality of a service is a very important attribute. However, change agents need to "tangibilize" this attribute so it can be experienced and evaluated by adopters. Quality may be tangibilized into timeliness, courtesy, or honesty of health service providers, which would decrease the costs of adoption.
The Design of Health Information Programs

Two principles, consistency and complementarity, guide the creation of programs to facilitate the adoption of health innovations (Park and Zaltman, 1987).

Designing consistency. Consistency occurs when health information program components are in agreement with or reflect consumers' manifest and latent characteristics and the change objective. Research has shown that innovations that are consistent with target consumers' needs and characteristics are used to a greater degree (Glaser, Abelson, and Garrison, 1983). Moreover, when the program components reflect the program objective, it is more likely that the objective will be achieved.

In managing consistency between a health information program and target adopters' characteristics, change agents have, presumably, two alternatives: to alter the program or to alter the target adopters. Because of the framework's customer orientation, the preferred option is to modify the program's components to accommodate target adopters' characteristics except when doing so is not feasible or risks the achievement of critical change objectives.

Designing complementarity. After consistent components have been identified, change agents should make the decision to include a component on the basis of its complementarity with other potential program components. Complementarity requires that the components be mutually reinforcing or support one another's efforts toward the adoption of the innovation (Park and Zaltman, 1987). Various combinations of the health-innovation components will now be examined with the objective of achieving complementarity in the combination.

Complementarity between concept innovations and behavior innovations. One way to manage complementarity between these two components is to ensure that target adopters perceive concept innovations as valued outcomes and behavior innovations as an effective means for acquiring them. Figure 3 summarizes four combinations of these states and corresponding strategies for moving target adopters toward the state in which both beliefs are held.

When the concept innovation and behavior innovation are already complementary (the yes-yes cell), a reinforcement strategy is recommended to reward target adopters for their beliefs. Psychological reinforcement is recommended if the behavior innovation has not been enacted. Psychological reinforcement is the directing of such intrinsic rewards as encouragement and compliments toward the belief and the reasons for the behavior (Sheth and Frazier, 1982). However, if the behavior innovation has been enacted, psychological reinforcement in conjunction with a behavioral reinforcement strategy is recommended. Behavioral reinforcement provides rewards following the behavior innovation to strengthen the probability of its recurrence (Nord and Peter, 1980).

Although the concept innovation may be valued and the behavior innovation may be believed to be an effective means for acquiring it, the proposed change may not be adopted if adopters feel that the costs involved in enacting the behavior innovation outweigh the concept innovation's benefits. Under such conditions, a facilitation strategy is suggested. Facilitation strategies are strategies that make the implementation of innovations by the target group easier (Zaltman and Duncan, 1977). Change agents can use these strategies to either increase the value of the concept innovation or to reduce the costs of enacting the behavior innovation. The percentage of consumers eating low-fat diets, for example, rose after the cardiovascular benefits of doing so were publicized (higher benefits) and easy-to-prepare alternatives to fatty foods were offered at convenient locations and reasonable prices (lower costs).

Three strategies are recommended when the concept innovation is valued but the behavior innovation is not believed to be an effective means for achieving it. First, an informa-

Figure 3. Strategies for creating complementarity between concept innovations and behavior innovations.
tion/education strategy could be used to present factual and nonbiased information so target adopters perceive that the behavior innovation will achieve the concept innovation. Second, if factual information alone cannot convince adopters, a persuasion strategy that presents biased information to stress the efficacy of the behavior innovation can be used. This strategy may be accomplished via specialized appeals (e.g., “This is your brain on drugs!”).

A third strategy, a confirmation strategy, can be used alone or in conjunction with either of the other two. This strategy attempts to illustrate directly the efficacy of the behavior innovation in leading to the concept innovation, as when adopters directly confirm that using contraceptives prevents unplanned pregnancies. In some cases, however, the concept innovation is difficult to confirm because it is not self-evident, is somewhat abstract, or is not realizable in the short term (e.g., increasing cardiovascular fitness). In such cases, change agents must manage the confirmation process more explicitly. This explicit management may entail teaching adopters simple confirmation processes (e.g., how to detect a slower resting pulse after adopting exercise regimens) or supplying more sophisticated forms of confirmation that will give credence to changes that can not be sensed (e.g., free blood pressure and cholesterol testing at local health fairs and places of employment).

When the behavior innovation is believed to be effective in achieving valued outcomes but the designed concept innovation is not valued, two strategic options exist. The first, a nonintervention strategy, allows target adopters to continue to value whatever outcome they link to behavior innovations. However, if linking the behavior innovation to a different, more highly valued concept innovation would increase the likelihood of the health innovation’s adoption, a second approach, an introduction strategy, is recommended to present the new idea. For example, following the adoption of organizational wellness programs touting the benefit of employee health, it was discovered that these programs also had positive effects on worker motivation, productivity, and health care costs. When these new outcomes were communicated to decisionmakers (via an introduction strategy), the adoption of wellness programs was reinforced in existing organizations and spread to other organizations that also valued these outcomes (Roberts and Harris, 1989). In this case, the linkage of the additional concept innovations with the wellness programs made the programs more attractive.

When the concept innovation is not valued and the behavior innovation is not believed to be helpful in achieving the concept innovation, change agents may employ various strategies to create complementarity. Depending on adopters’ beliefs about the relationship between the concept innovation and the behavior innovation. If adopters have no beliefs, the information/education strategy is recommended to create this linkage. If, on the other hand, target adopters’ beliefs conflict with the change organization’s proposed concept innovation and behavior innovation, three strategies are recommended.

First, a persuasion strategy to change beliefs with the purposive biasing of information may be useful. One potentially fruitful approach is personal selling, in which change agents engage in face-to-face oral presentations to build good will, demonstrate product or information use, and deliver the product or information to target adopters (Kotler, 1988). Both Lazarsfeld and Merton (1949) and Wiebe (1951) noted that face-to-face interaction between the change agent and the target adopter increases the likelihood of change. This interaction is furthered when the target adopter trusts, likes, and believes in the expertise of the change agent. A recent program in which former drug addicts taught intravenous drug users how to sterilize needles with bleach (the behavior innovation) to decrease the spread of the acquired immunodeficiency syndrome (AIDS) (the concept innovation) demonstrates the flexibility of this strategy (Watters, Downing, Case, and others, 1990).

Whereas information/education and persuasion strategies create new beliefs, change agents can use a disconfirmation strategy to discredit currently held beliefs and replace them with new beliefs that support the proposed concept innovation and behavior innovation linkage. Research has shown that beliefs can change in a direction consistent with new information when that information disconfirms current beliefs that are in conflict with it (Argyris, 1982; Crocker, 1983). Thus, to use this strategy, change agents should assess target adopters’ current beliefs and provide information that disconfirms these beliefs and supports new beliefs consistent with the change objective. For example, change agents interested in reducing obesity among the inner-city poor must consider that the target adopters associate being overweight with being healthy and being underweight with being addicted to drugs or being too poor to eat well (Freedman, 1990a, 1990b). Hence, inner-city residents may value being overweight. Moreover, these consumers place status on the ability to eat at fast-food restaurants, which contributes to their weight problems. A change agent using a disconfirmation strategy could provide evidence demonstrating the link between obesity and death rates, negating the link between normal or low weight and drug addiction, and illustrating how fast food contributes to obesity because of its high fat content. This information could be communicated in conjunction with guidelines showing normal weight levels for different heights and body types and campaigns to make vegetables and fruits status foods among inner-city consumers. In each case, new beliefs are created while old beliefs are disconfirmed.

Finally, a power strategy also may be appropriate when target adopters have beliefs that conflict with the proposed concept innovation and behavior innovation linkage. This strategy describes an array of strategies that are mandated by law or that exploit one party’s dependence on another for desired resources (see Zaltman and Duncan, 1977, and Zaltman, Duncan, and Holbek, 1973, for greater detail). Although change agents should use these strategies sparingly and only after trying to move target adopters to another cell by using the strategies noted previously, there may be health problems that cannot be solved in any other manner. Attempts to influence the prenatal care of young, inner-city mothers reflect this difficulty. Mandating that such women make prenatal visits to local clinics prior to receiving assistance from Government support programs may be one way to overcome

4 The problem is actually more systemic in that groceries and restaurants do not carry more healthful alternatives for inner-city poor consumers to select. It is not clear, however, whether consumers’ choices have created this stock-out situation or the stock-out situation has increased inner-city consumers’ demand for fast food.
the fact that many of these women do not see the value of such visits, see the behavior as costly, or are unaware of the need for such services.

**Complementarity between material innovations and concept innovations.** Complementarity between concept innovations and material innovations ensures that target adopters perceive concept innovations as valued outcomes and material innovations as an effective means for achieving them. Figure 4 summarizes four combinations of these states and corresponding strategies.

Once again, the yes-yes cell (when concept innovations are valued by target adopters and material innovations are believed to be an effective means for acquiring them) indicates that a **reinforcement strategy** can be used to reward target adopters for their beliefs. For example, the product, package, or label could reiterate the linkage between the material innovation and the concept innovation, reinforce the logic or morality of believing in this linkage, or provide subtle or overt forms of reinforcement. In one study using a reinforcement strategy, more trash was disposed in trash cans that flashed “THANKS” than in trash cans that did not (O’Neill, Blanck, and Jayner, 1980). Although the word “THANKS” is not the benefit adopters seek when depositing trash, it does provide an immediate reward that reinforces their ecologic behaviors.

When the concept innovation is valued and the material innovation is believed to be an effective means for acquiring it but adoption is resisted because consumers perceive that the costs of acquiring and understanding the material innovation exceed the concept innovation’s benefits, a **facilitation strategy** is proposed. As described in the previous section, users of this strategy attempt either to increase the perceived benefits of the concept innovation or to decrease the acquisition costs of the material innovation. Decreasing the material innovation’s costs could involve change agents changing the format of the information so that it can be processed more efficiently. For example, Levy, Matthews, Stephenson, and others (1985) found that consumers processed significantly more nutrition information in a supermarket when it was placed on point-of-sale shelf markers (next to the product) than when the information was displayed on sectional posters (Russo, Staelin, Nolan, and others, 1986).

When concept innovations are valued outcomes but material innovations are not believed to be an effective means for achieving them, an **association strategy** may link the material innovation to the concept innovation in target adopters’ minds, in much the same way as traditional products and services are linked to abstract qualities and benefits (e.g., Waterford crystal with prestige and exclusivity). Association strategies can be used in one of two ways in health information programs.

First, a conditioning approach can be used to pair a previously neutral stimulus (material innovation) with a conditioned stimulus (concept innovation) so that the neutral stimulus comes to elicit reactions similar to those elicited by the conditioned stimulus (Nord and Peter, 1980). Just as Campbell’s soup (neutral stimulus) evokes the concept of being nurtured (conditioned stimulus), nutrition information (conditioned stimulus) could evoke the concept of food expertise (conditioned stimulus), cigarettes (neutral stimulus) could evoke the concept of death (conditioned stimulus), and drug treatment centers (conditioned stimulus) could evoke the concept of loving recovery (conditioned stimulus). Change agents may also use promotional tools to associate the product and concept by using visual and auditory cues that exemplify the concept innovation. In the case of cigarettes and death, consistently showing a skull and crossbones in conjunction with cigarettes would condition the product. Likewise, pairing the term “smart shopper” and nutrition labels via appropriate cues could link the two.

Second, a product modification approach can be used to associate the material innovation with achievement of the

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**Figure 4. Strategies for creating complementarity between concept innovations and material innovations.**

<table>
<thead>
<tr>
<th>Concept innovation is a valued outcome</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reinforcement strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilitation strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Belief that material innovation is an effective way to achieve concept innovation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>No</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conditioning approach</td>
<td></td>
<td></td>
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<tr>
<td>Product modification approach</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nonintervention strategy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduction strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information/education strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persuasion strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disconfirmation strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power strategy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
concept innovation. One method is for change agents to choose product attributes that communicate the concept innovation. For example, oral contraceptives have been successfully linked to the benefit of convenient birth control because they are sold in easy-to-store-and-carry packages with numbered slots to help users keep track of their consumption each day of the month. Thus, although taking a pill every day may require more effort than using a condom periodically, oral contraceptives are perceived as a more convenient form of birth control. A material innovation’s service attributes can also be linked to the concept innovation. For example, if middle-aged women value educational and hassle-free services, the design of a breast cancer detection clinic might include presentation of a videotape that introduces equipment and procedures prior to the actual examination. Thus, the material innovation (in this case, a service) would reinforce the concept innovation.

When material innovations are believed to be effective means for attaining concept innovations but concept innovations are not valued outcomes, nonintervention or introduction strategies similar to those described previously are appropriate. The use of a nonintervention strategy involves allowing adopters to continue in their beliefs even though they may be acquiring products for reasons other than the target reason. For example, consumers are allowed to continue valuing low-fat foods for their effects on attractiveness even though the organization desiring the adoption values low-fat foods because their use decreases medical costs. However, if linking the material innovation to a different concept innovation will facilitate adoption, change agents could introduce the additional benefit of decreased medical costs.

Finally, when adopters have no beliefs about the concept innovation and the material innovation, an information/education strategy should be used to create the necessary beliefs about their relationship. For example, prior to C. Everett Koop’s statement suggesting that condoms were the best weapon against the transmission of AIDS, the public was generally unaware of the linkage. Public information campaigns have continued to communicate this message to educate consumers, with great success. However, if target adopters have negative beliefs about this linkage, persuasion or disconfirmation strategies similar to those described in the previous section should be used. In extreme cases, power strategies may also be necessary when negative beliefs are held about this linkage. In these situations, laws may be developed to ensure that products or services have certain qualities linking them to valued outcomes, as illustrated by various regulations governing the nutritional value of school lunch programs. In other cases, voluntary industry codes exist so that products will facilitate certain outcomes. For example, the breakfast cereal industry volunteered nutrition information before it was required by law. Finally, a power strategy that involves a fat and cholesterol tax on meat, eggs, and junk food may be used to solve the problem of fatty diets (“Odds and Ends,” 1991).

**Complementarity between material innovations and behavior innovations.** Change agents can achieve complementarity between material innovations and behavior innovations by managing the extent to which target adopters believe material innovations are easily acquired and understood and behavior innovations are easily enacted. Figure 5 summarizes four combinations of these states and corresponding strategies.

When material innovations are believed to be easily acquired and understood and behavior innovations are easily enacted, two different strategies are recommended, depending on whether the behavior innovation is being enacted. If it is, a reinforcement strategy should be used to reward the adopters for their behaviors as well as to reiterate that the innovation is easy to acquire, understand, and enact. If the behavior innovation is not being enacted, change agents should direct their efforts at linking the behavior and mate-

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**Figure 5. Strategies for creating complementarity between behavior innovations and material innovations.**

<table>
<thead>
<tr>
<th>Belief that behavior innovation is easily enacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Reinforcement strategy</td>
</tr>
<tr>
<td>Product modification strategy</td>
</tr>
<tr>
<td>Experimentation strategy</td>
</tr>
<tr>
<td>Information/education strategy</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Accessibility strategy</td>
</tr>
<tr>
<td>Persuasion strategy</td>
</tr>
<tr>
<td>Information/education strategy</td>
</tr>
<tr>
<td>Power strategy</td>
</tr>
</tbody>
</table>

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59
rial innovations to valued and confirmable concept innovations using an introduction strategy.

When the material innovation is not believed to be easily acquired and understood but the behavior innovation is easily enacted, an accessibility strategy is recommended to attain complementarity by lowering the costs of the material innovation. For example, the complexity of the material innovation can be reduced so that there are lower information processing costs. Likewise, the financial cost (price) of the innovation can be reduced to facilitate its adoption. An information/education strategy could also be used to increase consumers' abilities to handle such complexity, hence making the innovation more accessible to them. For example, in nutrition programs, recommended daily levels of fiber, sodium, and fat might be communicated to consumers so they could enact diet restriction behaviors.

When material innovations are easily acquired and understood but behavior innovations are not easily enacted, three strategies are available. First, a product modification strategy alters the material innovation to reduce any real or imagined costs of the behavior innovation. When, for instance, the American Cancer Society began distributing Hemocult kits for self-screening of colorectal cancer, the behavior innovation required patients to carry their stool smears to a hospital lab. Conceivably, this psychic cost could have been reduced if the organization had included a special receptacle for the specimen and a discretely carrying case. Moreover, had the organization included information telling consumers how to obtain the specimen easily or acknowledging the difficulty of obtaining the specimen, costs might also have been reduced.

A second general strategy for increasing the ease of enacting the behavior innovation is an experimentation strategy. In this strategy, change agents redesign the behavior innovation or the material innovation to minimize the risks perceived by target adopters. Two characteristics that can be redesigned to minimize these risks or costs are the innovation’s trialability and observability. When adopters perceive the behavior innovation as costly to enact, increasing its trialability (i.e., the extent to which it can be used on a limited basis) can lessen resistance because adopters can reverse their behavior if results do not meet their expectations. Allowing shoppers to taste foods made with fat substitutes before purchasing them promotes trialability and behavior innovation experimentation.

Observability is the degree to which the behavior innovation can be viewed by others. Target adopters may perceive conspicuous behavior innovations as easier to enact when the innovations are socially desirable. Conversely, they may perceive inconspicuous behavior innovations as easier to enact when the behavior is socially undesirable or stigmatized. When observability decreases as the social undesirability of the behavior increases, complementarity in this linkage increases and adoption barriers are minimized. For example, companies with employee substance abuse programs have found them to be more effective when they are moved to off-site locations where employees can use the service inconspicuously (Marshall, 1989).

Third, an information/education strategy can teach target adopters how to enact the behavior innovation and hence reduce the perception that it is difficult to enact. Promotions can illustrate the behavior innovation (e.g., how to cook tofu) in displays or through cooking demonstrations where target adopters acquire the product. Personal sources can describe and demonstrate the behavior innovation, clarify concerns, and correct wrong-use behaviors. For example, the Red Cross teaches cardiopulmonary resuscitation at local workshops to reduce the perception that the behavior innovation is difficult to enact.

When target adopters believe material innovations are not easily acquired or processed and behavior innovations are not easily enacted, persuasion, information/education, and power, or some combination of these strategies, are recommended. For example, neighborhood bulletins focusing on the benefits to unborn fetuses of pregnant women not drinking alcohol (the behavior innovation-concept innovation linkage) might also direct the women to alcohol treatment centers, provide hotline numbers to call, publish times and locations of Alcoholics Anonymous meetings, and offer encouragement and support for these women (the material innovation-behavior innovation linkage). If the concept innovation is not valued and the material innovation and behavior innovation appear costly compared with this outcome, a power strategy may be appropriate. Such is the case of the power strategy that enforces product availability (e.g., nonsmoking sections in restaurants or seatbelts in cars) or the use of certain products in the performance of certain behaviors (e.g., requiring parents to place their newborn in a restraint system before leaving the hospital).

The Evaluation of Health Information Programs

Health information programs should be evaluated by assessing the degree to which the change objective has been achieved. This assessment could be accomplished by comparing preprogram and postprogram scores indicating the degree to which consumers believe that (1) the concept innovation is a valued outcome, (2) the material innovation is easily processed and acquired, (3) the behavior innovation is easily enacted, (4) the behavior innovation is an effective way to achieve the concept innovation, (5) the material innovation is an effective way to achieve the concept innovation, and (6) the material and behavior are reinforcing. An assessment of these beliefs is useful in several ways. First, these beliefs will assist in understanding the degree to which the health information program has achieved a consistent and complementary mix of components. Second, as modeled in this chapter’s framework, these beliefs should be antecedents to actual adoption behaviors, including the acquisition and processing of health information, subsequent effects on consumers’ decisionmaking, and the implementation and confirmation of health-related behaviors. Hence, assessing the degree to which consumers hold these beliefs about the adoption process should indicate the consumers’ readiness to enact the adoption behaviors.

In addition to assessing consumers’ beliefs, change agents should also measure the degree to which consumers have actually engaged in targeted behavior innovations. Again, preprogram and postprogram performance should be assessed. However, in the event that preprogram performance levels are not available, comparing the performance of

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5 Psychic costs include the forfeit of self-esteem or pride or other losses affecting peace of mind (Fine, 1981, p. 51).
matched sites on adoption beliefs and behaviors would also provide an evaluation of the health information program.

AHCRP is developing health messages and materials that are targeted to specific ethnic groups. One such group is African Americans. Although reaching African Americans is somewhat similar to outreach for the majority population, this strategy should emphasize areas such as cultural sensitivities, lifestyle, and socioeconomic and educational levels.

Illustrative Examples

This section illustrates how the proposed framework can be applied to design programs to increase consumers’ use of health information in four specific situations. The data and measures used in these examples were drawn from Moorman and Maitlis’s (1991) comprehensive model of consumers’ health behaviors, including 11 consumer characteristics and 8 health behaviors.

Data regarding the 368 sample members’ characteristics and health behaviors were cluster analyzed to create four groups that maximize within-group homogeneity and maximize between-group heterogeneity (see Table 3). In the cluster analysis, a covariance matrix was used as an input and an object-by-object factor analysis was performed to determine clusters or segments. Results of the analysis were then used to design a health information program for each segment, as illustrated in Figure 6.

Table 3. Cluster analysis results.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Educated segment</th>
<th>Poor, aged segment</th>
<th>Worrier segment</th>
<th>Invincible segment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health locus of control</td>
<td>M</td>
<td>H</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Behavioral control</td>
<td>H</td>
<td>H</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Perceived health status</td>
<td>L</td>
<td>M</td>
<td>H</td>
<td>M</td>
</tr>
<tr>
<td>Health knowledge</td>
<td>H</td>
<td>L</td>
<td>H</td>
<td>M</td>
</tr>
<tr>
<td>Health value</td>
<td>M</td>
<td>H</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Preventive orientation</td>
<td>H</td>
<td>M</td>
<td>H</td>
<td>L</td>
</tr>
<tr>
<td>Curative orientation</td>
<td>L</td>
<td>L</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Education</td>
<td>H</td>
<td>L</td>
<td>H</td>
<td>M</td>
</tr>
<tr>
<td>Income</td>
<td>H</td>
<td>L</td>
<td>M</td>
<td>H</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>Female/male</td>
<td>Male</td>
<td>Female/male</td>
</tr>
<tr>
<td>Age</td>
<td>M</td>
<td>H</td>
<td>M</td>
<td>L</td>
</tr>
<tr>
<td>Media use</td>
<td>L</td>
<td>L</td>
<td>H</td>
<td>L</td>
</tr>
<tr>
<td>Label use</td>
<td>M</td>
<td>L</td>
<td>H</td>
<td>L</td>
</tr>
<tr>
<td>Casual source use</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>H</td>
</tr>
<tr>
<td>Professional source use</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Diet restriction behaviors</td>
<td>H</td>
<td>L</td>
<td>M</td>
<td>L</td>
</tr>
<tr>
<td>Stress reduction behaviors</td>
<td>H</td>
<td>M</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Checkup behaviors</td>
<td>H</td>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Alcohol moderation behaviors</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>L</td>
</tr>
<tr>
<td>Tobacco nonuse behaviors</td>
<td>H</td>
<td>L</td>
<td>L</td>
<td>M</td>
</tr>
</tbody>
</table>

Abbreviations: H = high; M = moderate; L = low.
Figure 6. Illustrative examples.

Cluster 1's characteristics and objective

Clustering:
- Fitness
- Longevity

Characteristics:
- Educated segment

Change objective:
- To ensure that consumers stay informed

Increase acquisition of professional health information

"Stay informed, stay fit"

Make information available on foods in doctors' offices

Smart Shopper Program

Cluster 2's characteristics and objective

Clustering:
- Longevity

Characteristics:
- Poor and aged segment

Change objective:
- To increase health survival skills

Increase checkup behaviors

Clinics

"Tip off a friend"

Restrict diet

Reinforcement

Long-life meals
Figure 6. Illustrative examples (continued).

Cluster 3’s characteristics and objective

- Control — CI — Safety
- Information describing moderation
- Reduce information processing
- Counseling services
- Reduce stress

Characteristics: Worrier segment
Change objective: To develop moderate health regimens

Cluster 4’s characteristics and objective

- Feeling good — CI — Attractiveness
- Contests (social visibility)
- Accessible information
- Attractive health food
- Restrict diet
- Reduce stress

Characteristics: Invincible segment
Change objective: To increase the value of health and improve basic health behaviors

Abbreviations: CI = concept innovation; BI = behavior innovation; MI = material innovation.
health to be fitness and longevity, as opposed to attractiveness, the concept innovation should be formulated to reflect these benefits. To link "using health information" to "fitness and longevity," change agents should use an association strategy. An information campaign, for example, could present the material innovation with a slogan such as "Update your health quotient—be a lifelong learner" or "Stay informed, stay fit." Likewise, a facilitation strategy could be used to make health information available on products (e.g., low-fat salad dressing, fresh fruits, and vegetables) and in locations (e.g., doctors' offices) that cluster 1 consumers are currently using. This strategy may be particularly useful given that these consumers have the ability to process the information but may not want to expend the resources to acquire it. Likewise, characterizing the acquisition and processing of health information as a "smart" activity (consistent with the values of this cluster) via public service announcements may also increase the benefits associated with this activity and reduce the perception of costs. Finally, a health promotion called "Smart Shopper," in which patrons are given dollars off their grocery bills for using in-store health information, is an observable and easily tried behavior that encourages the appropriate behaviors and provides reinforcement.

Cluster 2

Members of cluster 2 are aged, poorly educated, and unknowledgeable consumers who have low incomes and are equally likely to be female or male. These consumers value their health very highly and are neither preventively nor curatively oriented, but believe they can control their health behaviors and affect health-related outcomes. These consumers do not process health information at all and are only minimally engaged in such health behaviors as reducing stress and moderating alcohol consumption. This cluster is termed the "poor, aged" segment.

Given this segment's demographic characteristics, change agents might select a change objective that involves increasing these consumers' health survival skills. This objective, when defined in terms of specific behavior innovations, may involve diet restriction and medical checkup behaviors. Moreover, a concept innovation involving the benefit of longevity may prove fruitful for this cluster. Specific strategies might include disseminating information regarding, for example, the positive link between cardiovascular disease and fat intake, or offering instruction on low-fat cooking techniques in locations where elderly consumers live, work, and play. This information should be presented simply, perhaps in a visual as opposed to a printed-material form and with large letters for easy use by elderly consumers. These strategies might be followed by a confirmation strategy to link diet restriction and longevity that involves setting up clinics to take blood pressure and blood cholesterol levels. The confirmation strategy could be used in conjunction with a reinforcement strategy that links the behavior and concept innovations by providing consumers with an estimate of how many days, months, or years their changes in diet have added to their lives. Likewise, providing reinforcement that is not as explicitly tied to the concept innovation and that rewards consumers who come for the screening (e.g., with free fresh fruit baskets) and greatly rewards those who show signs of having restricted their diets (e.g., with monetary rewards) might encourage the behavior innovation. If, however, the behavior does not follow, change agents could switch to a power strategy by altering the composition of meals offered in free meal programs going to these consumers. These meals might be renamed "long-life" meals to associate them with longevity.

In constructing a program to encourage the use of professional sources and services by cluster 2 consumers, change agents could focus on two characteristics. The first is the high level of psychological control that causes these consumers to believe they can influence their health and health outcomes. The second characteristic is income related, but it involves the more general problem of the psychological and physical distance that low-income consumers experience in their lives. Health information programs need to reduce this distance by making health innovations more accessible without threatening the psychological control that is so critical to these consumers. One persuasion strategy using personal selling would involve elderly volunteers, traveling to elderly consumers' homes or communities to verbally disseminate health information (the program could be called "Tip off a friend about health"). This approach minimizes the adopters' costs of traveling. Moreover, the similar source is perhaps more trusted and less threatening to target adopters' sense of control than a dissimilar source might be.

Cluster 3

Members of cluster 3 are highly educated, highly knowledgeable consumers who have moderate incomes and are more likely to be male than female. These consumers do not value their health but perceive that it is good; they are preventively oriented, but they do not believe they can control their health behaviors or affect health-related outcomes. Cluster 3 consumers are heavy processors of health information, except from casual sources, but perform low-to-average levels of most health behaviors. Because this group processes a lot of information but takes little action, cluster 3 is termed the "worrier" segment.

Given these characteristics, change agents should select a change objective that focuses on the development of moderate health regimens. An emotional, rather than physical, concept innovation that offers cluster 3 consumers a sense of control over their health and safety from health threats is also recommended. The behavior innovations for this group might include reducing information processing to a moderate level and developing a health regimen that includes stress reduction via relaxation and exercise. Change agents can link the concept innovation to these behaviors via an introduction strategy that indicates that moderation is central to health or via a disconfirmation strategy that introduces the same notion but also disconfirms current unproductive health beliefs. This campaign would focus on moderation in life as a long-term strategy for combating health threats. This focus is meant to keep this group from being excessive in adopting new behaviors, to encourage reasonable expectations, and to help moderate the high levels of health information processing. Change agents could design campaigns using such slogans as "Everything in moderation leads to nothing but health" and could introduce the benefits of moderation in

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6 One set of information not included in Moorman and Maturlich (1991) is information regarding the consumers' concept innovations or the reasons why they perform health behaviors. This information will be inferred from the consumers' other characteristics.
conjunction with information defining the term (e.g., "Moderation in exercise is exercising three times a week for 30 minutes" or "Moderation in diet is eating fewer fatty snacks," etc.). This type of material innovation would also facilitate the behavior innovation by suggesting that it is simple, easy to implement, and trialable. These low investments should be communicated to cluster 3 consumers via informational sources they are currently using, such as health professionals and media sources, and these sources should reaffirm the importance of moderation as well as the benefits of freedom from fear and the reassurance of feeling a sense of control over one’s health.

**Cluster 4**

Members of cluster 4 are young consumers who are moderately educated and knowledgeable. They come from households where incomes are high, and they are equally likely to be female or male. Cluster 4 consumers do not value their health and perceive that it is poor, are curatively oriented, and do not believe they can control their health behaviors or affect health-related outcomes. These consumers engage in low levels of all health behaviors, except that they use casual sources of health information a great deal. Given these characteristics, cluster 4 is termed the “invincible” segment.

Because of cluster 4’s psychosocial characteristics, change agents may be less ambitious in their objectives for this group and may seek merely to increase the value of health and to improve basic health behaviors, which are defined as diet restriction and stress reduction through moderate exercise. These behaviors can easily be linked to several concept innovations which are less health based and more hedonic, involving the benefits of attractiveness and feeling good. To begin, change agents should attempt to link healthy foods to hedonic outcomes. This linkage may be accomplished by using an association strategy to make healthy foods’ taste and appearance attractive to cluster 4 consumers. Creating tasty and great-looking snacks out of low-fat ingredients may be one way to create this linkage. This change in products could be accompanied by a disconfirmation strategy communicating “the new look of health food.” Furthermore, the behavior innovation could be linked with the material innovation by offering a new product that is healthful, convenient, and fits within their lifestyle.

**Discussion**

Conceiving of health information programs as systems of mutually reinforcing innovations consistent with target adopters’ needs and characteristics offers a number of advantages and raises several important issues for discussion.

One advantage of this framework is that it is generic in its approach; hence, it can be applied to any health information problem. Second, the customer orientation proposed by this framework suggests that consumers’ needs and characteristics drive the formulation of health information programs, which increases their probability of utilization. A third advantage of this framework is that it suggests that change agents shift their focus from a strict concentration on health information per se and place it on managing the entire health information utilization process. Managing this process brings us to the fourth advantage, which is a unique conceptualization of health information programs as innovations consumers adopt. These health information programs were conceptualized comprising concept innovations, material innovations, and behavior innovations whose content and relationships with one another should be explicitly managed. Previous research has not systematically related these components or noted how they support one another’s effects. The present chapter provides one view of how these components could be structured to maximize health information utilization.

One of the issues raised by this approach is how to implement a customer orientation in the development of health programs. Using information regarding consumers’ needs and characteristics is an important part of ensuring that health programs reflect these characteristics; however, ensuring that information regarding these characteristics is collected, analyzed, and presented to decisionmakers can become expensive and involve a radical change from current procedures. This is the case, for instance, for organizations who are focused on the development of information products without regard to whether they will be used by consumers. A customer orientation, on the other hand, requires periodic assessments of consumers’ beliefs, perceived needs, and problems. These assessments involve effort and time, such as that required to conduct focus groups with consumers or to administer surveys. A customer orientation also involves sincere attempts to develop programs using collected information and gauging the acceptance of the program by exposing small groups of the target consumers to planned programs.

A second issue raised by this framework arises when consumers’ varied needs mean that the same program is not suitable for all groups and there are not enough resources available to develop programs for each group. In this case, change agents might have to choose among consumer groups in targeting information campaigns. Within a traditional marketing framework, the most likely prospect for targeting would be the group whose members are most likely to alter their behaviors. However, within a traditional health care framework, targeting would be based on need, generally focusing on those who are less likely to change health behaviors on their own. More generally, the decision to target groups based on certain characteristics leaves many health care and public policy organizations concerned about the equity and appropriate distribution of benefits among society’s members. Hence, change agents must consider how health care and marketing criteria will be used and to what extent equity is an important criterion for use in targeting activities.

A third issue is the question of the conditions under which a power strategy is necessary. Recall that a power strategy involves strategies that are mandated by law or that exploit
one party's dependence on another for desired resources. In general, it may be unnecessary to use power strategies, because other, less restrictive approaches can create desirable outcomes. However, there are times when consumer behavior is so harmful or consumers' beliefs and behaviors are so difficult to change that change agents are forced to use power strategies; for instance, when the actions of one consumer harm another person or adversely affect the latter party's choices (Moorman and Price, 1989). These situations may occur if (1) health information programs targeted for one consumer segment spill over to harm another segment (e.g., if RDA information increases the decision quality of educated consumers but decreases the decision quality of uneducated consumers [see Moorman, 1990]); or (2) consumer health behaviors spill over to harm others who do not choose to enact the behavior (e.g., if parents' food choices affect children's health or smokers' choices affect nonsmokers' health). The use of power strategies to ameliorate these situations raises complex issues about how to trade off benefits to some consumers against harm to others. Hence, the use of power strategies should receive considerable review from external constituencies.

References


