

Models of Behavior Change

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To develop empowered learners, the Extension educator must have an understanding of behavior change theories and their application in achieving learner outcomes. Human behavior is very complex. Researchers concerned with behavior change have long been interested in questions of how people seek, use and process information. Behavior theories attempt to explain why people act as they do. Health education programs are more likely to benefit the learner if they are guided by a theory of human behavior.

Why do some people change their health behavior and others don't? Effective health education programs must be designed to insure participants are aware they need to change, aware of how they can change, and aware of what types of tools that might help them improve their health. Behavior changes, such as weight loss, smoking cessation or daily exercise, generally require time to firmly change and establish a new habit. Educational programs designed to change behavior must understand the learner and processes that influence a learner's ability to change.

There is a wide range of theories that focus on individual health behaviors, which for the most part have been borrowed from other disciplines including social and behavioral psychology, communication theory, and, most recently, social marketing. A detailed description of each theory is beyond the scope of this discussion. The theories described in this session were chosen because of their global application to Extension health education programming.

The Health Belief Model, Stages of Change Model and Consumer Information Processing Theory Model address individual characteristics that influence behavior such as knowledge, attitudes, beliefs and personality traits. These models are referred to as individual-level health behavior models. A model building on the ecological perspective is the Social Learning Theory (SLT) Model. This model examines the individual existing within social environments and is referred to as an interpersonal-level health behavior model. The premise of SLT is that people are influenced by, and are influential in, their social environments. Diffusion of Innovations Theory and Community Organization Theory are community-level health behavior models. These models provide a framework for understanding how social systems function and change and how communities and organizations can be energized to act.

1. Individual-Level Health Behavior Models

The Health Belief Model

The Health Belief Model (HBM) attempts to predict health-related behavior in terms of certain belief patterns. The model is used to explain and predict preventive health behavior as well as sick-role and illness behavior [3]. In other words, explain noncompliance to health recommendations. The model postulates that:

- ❖ Health behavior of all kinds is related to a general health belief that one is susceptible to health problems.
- ❖ Health problems have undesirable consequences.
- ❖ Health problems and their consequences usually are preventable.
- ❖ Barriers or costs have to be overcome if health problems are to be overcome.

A person's motivation to undertake a health behavior can be divided into three main categories:

1. **Individual perceptions:** Factors that affect the perception of illness or disease and address the importance of health to the individual, perceived susceptibility (perception of the likelihood of experiencing a condition that adversely affects one's health), and perceived seriousness (perception of the difficulties the disease would cause) such as pain, disability, loss of work time, financial burden, or death.
2. **Modifying factors:** These factors include demographic variables such as age, gender, ethnicity and educational level; perceived threat of the disease; and cue to action created through such events as mass media campaigns, advice from others, illness of friend or family member, diagnosis of a disease, or a newspaper article. The ultimate decision to engage in the behavior is influenced by these modifying factors. These account for a person's "readiness to act."
3. **Likelihood of action:** Addresses the perceived benefits minus perceived barriers in undertaking the health action. The learner conducts an unconscious cost-benefit analysis that must weigh the positive aspects of the action against the potential negative aspects of the action such as dangerous, unpleasant, inconvenient, expensive, time-consuming, etc.

The HBM addresses the importance of designing educational programs that affect the learner's perceptions. People understand the seriousness of many health conditions, but they often do not perceive themselves as susceptible. Overcoming this perception is a prerequisite to healthy lifestyles. Complicating

this task of the educator is the plethora of advertising and media that reinforces negative perceptions about a health behavior such as quick weight loss programs or products. The HBM can be used to help develop health messages that persuade people to make healthy decisions.

For example, the HBM can be used to design effective health messages concerning chronic diseases such as diabetes. Before a person can accept the diagnosis of diabetes and manage the disease, he must believe he has the disease (is susceptible); that diabetes can lead to blindness, heart disease and amputations (severity is great); and that following the prescribed treatment regime such as taking medicine, losing weight and measuring blood sugar will reduce risks (benefits) without negative side effects (barriers). Publications, diaries, charts and contracts can serve as a means for supporting adherence (cues to action). If the person has difficulty following the recommendation, developing short-term goals can help build up confidence to succeed (self-efficacy). Table 1 summarizes the application of these concepts.

Table 1. Health Belief Model

Concept	Definition	Application
Perceived Susceptibility	One's opinion of chances of getting	Define population(s) at risk, risk levels; personalized risk based on a person's self assessment of behavior; heighten perceived susceptibility if too low
Perceived Severity	One's opinion of the seriousness of a condition and its long-term effects	Specify consequences of the risk and condition
Perceived Benefits	One's opinion of the efficacy of the advised action to reduce risk or seriousness of impact	Define action to take -- how, where, when; clarify the positive effects to be expected -- why
Perceived Barriers	One's opinion of the tangible and psychological costs of the advised action	Identify and reduce barriers through reassurance, incentives and assistance
Cues to Action	Strategies to activate "readiness to act"	Provide how-to information, promote awareness, use reminders
Self-efficacy	Confidence in one's ability to take action	Provide skill training and guidance in performing action in small steps

The Stages of Change: The Transtheoretical Model

There are six well-defined stages of change: precontemplation, contemplation, preparation, action, maintenance, and termination [4]. Although nearly all change begins with precontemplation, only the most successful ends in termination. The most successful self-changers follow the same path for every problem. The learner can be at different stages of change for different problems. The stages of change are not linear, but rather spiral. Learners begin by proceeding from contemplation to preparation to action to maintenance. Most, however, slip up at some point, returning to contemplation or sometimes even the precontemplation stage, before renewing their efforts. The average self-changer recycles many times. For example, most people who try to quit smoking, lose weight or begin an exercise program, report three or four serious attempts before they succeed. New Year resolutions are typically made for five consecutive years or more before the maintenance stage is achieved. Below is a detailed description of each stage.

1. Precontemplation: Not Even Thinking about Changing

Precontemplation indicates an active resistance to change. Before changing, people must recognize a need to change. For example, people who smoke may deny smoking is bad for their health. To move a smoker to the next stage requires providing them with enough appropriate information or talking with someone who "has been there." Building their awareness is the main task of the educator at this stage.

2. Contemplation: Thinking about Changing

Some people know they have unhealthy behaviors and devote a considerable amount of time thinking about making changes. They begin to gather information about the behavior and how it may be affecting their lives now and in the future. In the contemplation state, a person may look for sources of support, the pros and cons of making a change, and begin setting realistic goals. A smoker may begin to realize the cost of smoking a package of cigarettes by determining how much money they would have if the money spent on cigarettes was put into savings. Once enough information is gathered, they usually move to preparation. Programming for people in the contemplation stage should address motivating the learner by presenting options available to assist in making the change.

3. Preparation: Getting Ready

People in the preparation stage are usually planning to take action within a month. They plan the action they will take and make a firm commitment to carry out the plan. The plan usually includes telling others they are going to make a health behavior change as well as letting family and friends know what they can do to help. A date to begin action is also chosen. Action plans are tools to assist the learner at this stage.

4. Action: Making a Change

Change begins here. During action, people learn to control their behavior. They plan ways to deal with barriers such as time constraints, unrealistic goals and unsupportive people. Adjustments are made to their plan when needed, and more realistic goals are restated if necessary. Also, the learner needs to have strategies for dealing with relapse or slips when they happen.

5. Maintenance: Maintaining Change

Once a goal has been met, for example weight loss, the maintenance stage begins. An important part of maintenance is for the learner to stay committed by listing barriers during the action stage and accepting credit for accomplishments. New strategies for prevention relapse may need to be identified again to prevent going back to unhealthy behavior. Both social and environmental temptations are continually scrutinized. Some people remain in the maintenance stage for years and may never move to termination. Programs may offer periodic opportunities to meet again in ever extending time intervals. People who maintain their new health behaviors have learned the new behavior so well it is now "automatic" or habitual.

6. Termination: Established Change as Part of Lifestyle

How does one know if they are in the termination stage? Research has shown there are at least four criteria for the termination stage.

- ❖ A new self-image. The learner feels at ease with the relationship between self and the new behavior.
- ❖ No temptation in any situation. The fear of relapse is gone when the individual is faced with situations that once were temptations to resume the old, such as over eating at a restaurant.
- ❖ Solid self-efficacy. A genuine confidence in knowing one will never engage in the problem behavior again.
- ❖ A healthier lifestyle. The learner is living a healthier lifestyle to sustain health.

The process of change depends on doing the right things at the right times. Therefore, the key to successful change is knowing what stage the learner is in for the specific health problem. Research has shown that people who try to accomplish changes they are not ready for set themselves up for failure. These six stages of change are not easy to accomplish. People often resist change, but those who really want healthier behaviors may be able to make permanent changes. Successful health education programs must support the learner moving through these stages by providing time for building the learner's progress through these stages. The educator should build behav-

ior changes in small steps, allowing the learner as many as possible to build up confidence in the behavior change process. Forcing people to move too quickly to action is the most common reason for failure.

Table 2. Stages of Change Model

Concept	Definition	Application
Precontemplation	Unaware of problem, hasn't thought about the change	Increase awareness of need for change, personalize information about risks and benefits
Contemplation	Thinking about change in the near future	Motivate and encourage to make specific plans
Preparation	Making a plan to change	Assist in developing concrete action plans, setting gradual goals/short-term goals
Action	Implementation of specific action plans	Assist with feedback, problem solving, social support and reinforcement
Maintenance	Continuation of desirable actions or repeating periodic recommended step(s)	Assist in coping, reminders, finding alternatives, avoiding slips and relapses
Termination	Changing is now habitual -- unconscious behavior	Self-motivated by positive, habitual behavior

Consumer Information Processing (CIP) Theory

Information is necessary but not sufficient for encouraging people to adapt healthful behaviors. Central assumptions of CIP are that:

- ❖ Individuals are limited in how much information they can process.
- ❖ In order to increase the usability of information, they combine bits of information into "chunks" and create decision rules to make choices faster and more easily.

People will use information if it is available, seen as useful and new, and format-friendly. CIP concepts apply to formative evaluations to determine if the target audience finds the program materials attractive, interesting and easy to use [3]. Table 3 describes the application of CIP.

Table 3. Consumer Information Processing Model

Concept	Definition	Application
Information Processing Capacity	Individuals' limitations in the amount of information they can acquire, use and remember	Choose the most important and useful points to communicate, whether orally or in print material.
Information Search	Processing of acquiring and evaluating information; affected by motivation, attention and perception	Provide information so it take little effort to obtain; draws consumer's attention and is clear.
Decision Rules	Rules of thumb are developed and used to help consumers select among alternatives.	Learn key ways to synthesize information in ways that have meaning and appeal for the audience.
Consumption Learning	Iternal feedback based on outcome of choices, and use in future decisions.	Keep in mind that people have probably made related choices in the past, and are not "empty vessels."
Information Environment	Amount, location, format, readability, and processibility of relevant information.	Design information tailored to the audience; place it conveniently for use.

2. Interpersonal-Level Health Behavior Model

Theory of Interpersonal Health Behavior: Social Learning Theory Model (SLT)

A basic premise of SLT is that people learn not only through their own experiences, but also by observing the actions of others and the results of those actions [1]. In other words, behavior, personal factors and the environmental influences all interact continuously. SLT synthesizes concepts and process from cognitive, behavioristic and emotional models of behavior change. It is very complex and includes many key concepts. Five key concepts used to shape the behavior change process include:

1. **Reciprocal Determinism:** This means that behavior and the environment are reciprocal systems and that the influence is in both directions. So the environment shapes, maintains and constrains behavior; however, the learner is not passive in the process, he or she can create and change the environment. New knowledge, new skills and changed values can lead the learner to be an advocate within his or her immediate environment. For example, if the learner has a positive attitude about exercise, that may lead him or her to exercise. As he or she exercises more and more, that behavior causes him or her to rethink and strengthen his or her attitudes toward exercise.

2. **Behavioral Capability:** This maintains that the learner needs to know what to do and how to do it. A program should include clear instructions and skill training for the learner. Written materials in the form of take-home handouts reinforce the "how to" practiced during the program.
3. **Expectations:** This refers to the results that the learner thinks will occur as a result of learning. The curriculum must address the expectations of the learner. The trainer identifies these expectations at the beginning of the program. If some expectations are not met in the program, the trainer can guide the learner in meeting those expectations through other community health resources.
4. **Self-efficacy:** This refers to the learner's self-confidence and competence in his or her ability to change a specific health behavior or make a health decision. The learner needs to believe that he or she can do something about his or her health. It is the lack of confidence and competence about health issues that breaks down a person's ability to be an advocate for his or her health and the health of his or her family as he or she interacts with the health care system.

Self-efficacy is the most important concept in SLT. The advantages of greater self-efficacy include higher motivation in the face of obstacles and better chances of persisting over time. Five strategies can be used by trainers to increase self-efficacy:

- ❖ The learner identifies personal health actions to change or improve at the beginning of the learning process. This includes examining how willing he or she is to make the necessary changes or improvements. Self-assessment is a critical component of the curriculum.
- ❖ Knowledge is imparted, a variety of decision making strategies are discussed, and skills are practiced through group discussion, demonstrations, group activities, and individual self-assessments. This process provides the learner with the tools to address a particular health action and develop an action plan.
- ❖ The learner develops an action plan that stresses setting small, incremental goals. When someone achieves a small goal, like exercising for 10 minutes each day, his or her self-efficacy increases. Thus, the next goal (longer periods each day, five days in a row) seems achievable, and his or her persistence is greater.
- ❖ The action plan identifies specific, measurable goals; a person who supports the learner in attainment of the goals; a reward system for

recognizing success; and strategies for tracking progress. The action plan serves as a written behavioral contract.

- ❖ The written action plan lends to monitoring and reinforcement which reduces anxiety about one's ability to achieve a behavior change, thus increasing self-efficacy. Keeping a journal or chart is a useful tool to help track daily progress.

- 5. Observational Learning or Modeling:** People learn about what to expect through the experiences of others. This is referred to as "modeling." Taking time in the program for both the trainer and participants to share experiences for success as well as failure for a particular health action are very useful to the learning process.
- 6. Reinforcement:** Reinforcement is a response to a person's behavior that affects whether or not the behavior will be repeated. Positive reinforcement, often called "rewards," increases the chances that behaviors will be repeated. Negative reinforcements include punishment and lack of any response. Health education programs that provide tangible rewards or praise and encourage self-reward support people to establish positive habits. Extrinsic rewards to help motivate behavior change should be used with caution to avoid developing dependence on external reinforcements. They are often useful as motivators for continued participation but not for sustaining long-term change. Token reward systems and refundable deposits have been used successfully to increase participation rates and reduce attrition in programs involving multiple sessions such as smoking cessation, physical activity and weight management programs.

In summary, SLT assumes that the learner and the environment interact continuously. It is important to recognize that SLT clearly addresses both the psychosocial factors that determine health behavior and strategies to promote behavior change. Table 4 describes the application of this model.

3. Community-Level Health Behavior Models

Diffusion of Innovations Theory (DIT)

Diffusion is defined as the process by which an innovation is communicated through certain channels (networks with members, norms and social structures) over time among members of society. Innovation is an idea, practice, service or other object that is perceived as new by an individual or other unit of adoption. It is a major challenge in health education to disseminate new prevention, early detection, and treatment methods and to increase the use of programs and curricula that have been found to be successful.

Table 4. Social Learning Theory

Concept	Definition	Application
Reciprocal Determinism	Behavior changes result from interaction between person and environment; change is bidirectional	Involve the individual and relevant others; work to change the environment, if warranted
Behavior Capability	Knowledge and skills to influence behavior	Provide information and training about the action
Expectations	Beliefs about likely results of action	Incorporate information about likely results of action in advice
Self-efficacy	Confidence in ability to take action and persist in action	Point out strengths; use persuasion and encouragement; approach behavior change in small steps
Observational Learning	Beliefs based on observing others like self and/or visible physical results	Point out others' experience, physical changes; identify role models to emulate
Reinforcement	Responses to a person's behavior that increase or decrease the chances of recurrence	Provide incentives, rewards, praise; encourage self-reward; decrease possibility of negative responses that deter positive changes

DIT addresses how new ideas, products and social practices spread within a society or from one society to another [3]. Some of the most important characteristics of innovations are their relative advantage (is it better than what was there before?), compatibility (does it fit with the intended audience?), complexity (ease of use), trialability (can it be tried out first?) and observability (visibility of results). Table 5 describes the application of this theory.

DIT attempts to translate new health-related research findings or effective interventions into widespread behavior change for the good of society. Examples of new effective interventions include:

- ❖ A mobile mammography unit goes where the women are and saves these women the travel time and money necessary to take off work and go to a mammography facility (relative advantage).
- ❖ Providing the flu shot at work sites, schools and pharmacies reaches audiences that often avoid getting the flu shot because of inconvenience of going to the doctor for the vaccine (relative advantage).

Table 5. Diffusion of Innovations Theory

Concept	Definition	Application
Relative Advantage	The degree to which an innovation is seen as better than the idea, practice, program or product it replaces	Point out unique benefits: monetary value, convenience, time saving, prestige, etc.
Compatibility	How consistent the innovation is with values, habits, experience and needs of potential adopters	Tailor innovation for the intended audience's values, norms or situation
Complexity	How difficult the innovation is to understand and/or use	Create program/idea/product to be uncomplicated, easy to use and understand
Trialability	Extent to which the innovation can be experimented with before a commitment to adopt is required	Provide opportunities to try on a limited basis such as free samples, introductory sessions, money-back guarantees
Observability	Extent to which the innovation provides tangible or visible results	Assure visibility of results: feedback or publicity

- ❖ A culturally sensitive health video is more acceptable to the intended audience (compatibility).
- ❖ A diabetes home testing kit may seem like a good idea, but if it is too difficult to use, most people with diabetes will avoid using it. Changing to a digital blood pressure monitor may be used more often because it is easier to use and understand than the stethoscope type model (complexity).
- ❖ An open introductory session can attract more employees to register for a multiple-session work site wellness program than a course that permits only preregistration (trialability).
- ❖ Presenting data about the number of women who are cancer survivors due to self-exams and mammograms provides a concrete sense of the value of breast cancer screening (observability).

Community Organization Theory

Community Organization Theory (COT) has its roots in theories of social networks and support. This theory emphasizes the role of community participation in solving health problems [2]. Many health education organizations use coalition structures for activating and involving community members, including the target audience, to identify common health problems or goals, mobilize resources, and develop and implement strategies for reaching goals. This is a useful tool for reaching underserved populations.

Five key concepts are used in COT (Table 6). The process of empowerment is intended to stimulate problem solving and activate community members. Community competence is an approximate community-level equivalent of self-efficacy plus behavioral capability, thus, the confidence and skills to solve problems effectively. Participation and relevance go together. They both involve citizen activation and a collective sense of readiness for change. Issue selection concerns identifying "winnable battles" as a focus for action, and critical consciousness stresses the active search for root causes of problems. Because of the creative and strategic nature of COT, it can lead to major health and health care advances in public support, funding and policies.

Table 6. Community Organization Theory

Concept	Definition	Application
Empowerment	Process of gaining mastery and power over oneself/one's community to produce change	Give individuals and communities tools and responsibilities for making decisions that affect them
Community Competence	Community's ability to engage in effective problem solving	Work with community to identify problems, create consensus and reach goals
Participation and Relevance	Learners should be active participants, and work should "start where the people are"	Help community set goals within the context of pre-existing goals, and encourage active participation
Issue Selection	Identifying winnable, simple and specific concerns as focus of action	Assist community in examining how they can communicate the concerns and whether success is likely
Critical Consciousness	Developing understanding of root causes of problems	Guide consideration of health concerns in broad perspective of social problems

Significance of Behavior Change Models to Extension Educators

Theory is a system of principles that attempt to explain how certain things happen. The theories described attempt to explain why people act as they do. Health education programs are more likely to benefit participants and accomplish expected behavior outcomes if they are guided by a theory of human behavior. In examining the components among the above models, four factors surface as influential on health behavior:

1. **Perceptions of expected benefits.** People have to get something in exchange for engaging in the behavior.

2. **Perceptions of expected costs.** People have to pay some cost to undertake the behavior.
3. **Community-level effect.** People—as individuals—do things if other people are doing them, even if their personal consequences are not all that favorable. People as a collective body can impact the health of their communities.
4. **Ability to affect outcomes, or self-efficacy.** People need to feel confident that they can make the behavior change, and communities need to feel they can impact the need for behavior change activities. This provides the seeds for empowerment.

The Extension educator must recognize that the learner comes to the learning environment with these forces guiding their ability to change behavior. Additionally, these theories identify the following factors that should be included in any health education program.

- ❖ **Knowledge:** A person must have information about a topic—facts, controversies, problems.
- ❖ **Self-efficacy:** A person must believe they have the ability to change their behavior and impact their health.
- ❖ **Skills:** A person must have and be able to use skills that will promote health.
- ❖ **Environmental support and influence:** The social environment (peers, family, school, work, home and community) must support and encourage the newly changed behaviors in order for the learner to be able to use the skills in daily living.

Table 7 summarizes the focus and key concepts of each of the theories described in this session. This table can be used to help in choosing multiple theories to help understand and address a specific health issue. These theories can be used for designing needs assessments, diagnosing educational delivery problems, and shaping the design of the intervention.

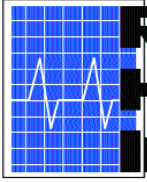
Table 7. Summary of Theories: Focus and Key Concepts

Model Level	Theory	Focus	Key Concepts
Individual Level	Health Belief Model	Persons' perception of the threat of a health problem and the appraisal of recommended behavior(s) for preventing or managing the problem	Perceived susceptibility Perceived severity Perceived benefits of action Perceived barriers to action Cues to action Self-efficacy
	Stages of Change Model	Individual's readiness to change or attempt to change toward healthy behaviors	Precontemplation Contemplation Preparation Action Maintenance Termination
	Consumer Information Processing Model	Processing by which consumers acquire and use information in their decision making	Information processing Information search Decision rules Consumption and learning Information environment
Interpersonal Level	Social Learning Theory	Behavior is explained via a three-way, dynamic reciprocal theory in which personal factors, environmental influences and behavior continually interact	Behavioral capability Reciprocal determinism Expectations Self-efficacy Observational learning Reinforcement

In summary, these theories are tools for the Extension educator to use in planning a health education program. By using a combination of levels, a comprehensive approach can be used to impact health behavior of a community as well as the individual.

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