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**THE ELABORATION LIKELIHOOD  
MODEL OF PERSUASION:  
DEVELOPING HEALTH PROMOTIONS  
FOR SUSTAINED BEHAVIORAL  
CHANGE**

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# Influencing Behavioral Change

Roughly half of all causes of mortality in the United States are tied to social and behavioral variables including smoking, alcohol use, diet and sedentary lifestyle (Institute of Medicine, 2000). Because of this, health promotion campaigns and research are typically designed to induce positive change in health-related behaviors. For example, a media campaign might attempt to convince people to use their seatbelts or to stop smoking. However, studies of the effectiveness of media and direct interventions have provided inconsistent results. In particular, efforts in critical areas such as drug and alcohol abuse and AIDS prevention have sometimes proven to be disappointing in terms of concrete successes. This challenge has led to a number of responses. There is a growing awareness of the importance of health promotion programs that establish sustained behavioral change, as distinct from merely impacting initiation of behavior change (Rothman, 2000). For example, between 2003 and 2007 the Office of Behavioral and Social Sciences Research awarded \$53.8 million to support research investigating, “Maintenance of Long-Term Behavioral Change,” (Solomon, 2005). To understand why certain interventions with high face validity fail to provide sustained behavioral change, health promotion researchers and practitioners have sought insight from basic research on influence processes. In line with this view, funding agencies have identified the importance of uncovering the underlying cause-effect relationships between specific intervention components and outcomes.

Experimental research has shown that attitudes represent one of the most important theoretical constructs that determine behavior (Eagly and Chaiken, 1993; Fishbein and Ajzen, 1975; Petty and Cacioppo, 1981). As most commonly conceived, an attitude is a relatively stable global evaluation of a person, object, or issue. Taking exercise behavior as an example, critical attitudes might include: Exercise is good; I feel favorable toward running on the weekends; I feel good enough about myself to believe I can start exercising. Thus multiple attitudes held toward different objects at different levels of specificity (for example, the general concept of exercise, a specific behavior such as running, one’s own self-efficacy) can impact the likelihood that any behavior is committed (Petty, Baker, and Gleicher, 1991). Thus, one job of those interested in health promotion is to determine which attitudes are the most important for predicting a particular health behavior and which procedures are best used for changing those attitudes and obtaining sustained behavioral change.

Of course, a number of factors other than attitudes determine whether or not people engage in a certain behavior. These include social norms, (Fishbein and Ajzen, 1975), the strength of the attitude (Petty and Krosnick, 1995), feelings of self-efficacy and competence (Bandura, 1986), and prior behaviors and habits (Triandis, 1980). Although this might suggest that we should try to change these factors instead, many of these behavioral determinants result from attitudes as well. For example, when the attitudes of many people change, this changes social norms. Positive attitudes toward the

self can increase feelings of self-efficacy making behavioral change more likely. Finally, the fact that past behaviors (habits) have a strong role in predicting current behaviors may be due in part to the impact of prior attitudes (Petty, Tormala, Briñol, and Jarvis, 2006). Thus, to change behavior, it is useful to understand how attitudes are changed.

Attitudes are most frequently measured using some type of direct self-report procedure such as asking a person how favorable or unfavorable and positive or negative they are toward some object or behavior such as wearing seat belts (see Eagly and Chaiken, 1993, for more detail about common attitude measurement procedures). [When planning a health promotion program, it is important to select the attitude or attitudes that the program intends to change and to measure each attitude separately to determine the success of the program.] Depending on one's goals, it can be useful to measure attitudes toward a general idea (safe sex), a specific object (condom), or a behavior (using a condom). The success of a persuasive attempt is then measured by assessing change in the attitudes targeted. Change can be assessed in either a pre-post design or by comparing the attitudes of individuals who have and who have not received some persuasion treatment (Campbell and Stanley, 1964).

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## The Elaboration Likelihood Model of Persuasion

Contemporary scientific research on attitude change began in the 1940s as an extension of the U.S. military's effort during World War II to understand propaganda and persuasion (for example, Hovland, Lumsdaine, and Sheffield, 1949). The most popular persuasion theory at the time was based on learning principles and viewed persuasion as a function of attention, comprehension, acceptance and retention of the persuasive communication (Hovland, Janis, and Kelley, 1953). Early research guided by this framework identified many of the variables investigators continue to examine today as determinants of attitude change. That is, research focused on features of the source of the message (for example, Is the source attractive? Expert? A member of an ingroup?), the message itself (for example, Is the message complex? Composed of cogent arguments? Rational or emotional?), the recipient of the communication (for example, Is the recipient in a good mood? Intelligent? Involved in the topic?), and the context in which the message was presented (for example, Is the environment quiet or distracting? Is the message on the radio, television, or the Internet?).

As the number of persuasion studies began to grow, numerous inconsistencies in findings appeared. For example, increasing the same variable (for example, number of arguments, source expertise, use of fear appeals) would increase persuasion in one experiment, decrease it in another, and have no effect in a third. Furthermore, numerous attitude change theories were developed to describe a number of processes through which persuasion takes place, but each theory only seemed to predict persuasion under certain

conditions. Theories were also in disagreement about the effects of any one variable (for example, how does source expertise influence attitude change (see Petty, 1994).

The Elaboration Likelihood Model (ELM) was developed to explain past inconsistencies in attitudes research. Whereas past models tended to emphasize one effect of a given variable and one process by which that effect occurred, the ELM organized multiple persuasion processes into two routes to attitude change. The central route involves change that occurs when people are relatively thoughtful in their consideration of the issue-relevant information presented. In contrast, the peripheral route to persuasion involves processes requiring relatively little thought about issue-relevant information. Instead, attitudes are changed by simple association processes (for example, classical conditioning) or the use of various mental shortcuts and heuristics. By noting that variables influence attitudes by different means at different points along an elaboration continuum, the ELM is able to explain seemingly inconsistent findings in the persuasion literature. After describing key ideas from the ELM, we discuss the utility of the model for understanding health communication.

## **Central Route Processing**

As noted earlier, the ELM organizes attitude change processes into two routes to persuasion: the central route and the peripheral route. The central route to persuasion involves careful consideration of information pertaining to the attitude object and its relationship to pertinent knowledge stored in memory. Careful consideration of the issue-relevant information presented involves generating positive and/or negative thoughts toward the advocated position (for example, seat belt usage). Under the central route, the valence of those thoughts (whether positive or negative) is related to the direction of persuasion, and the extent to which the thoughts are new and more positive or negative than they were previously determines the extent of attitude change. The thoughts about the message make up the key component that links internal knowledge to the information presented in the message. Also, the more confidence people have in the thoughts that they generate under the central route, the more these thoughts determine a person's attitude (Petty, Briñol, and Tormala, 2002). Thus, if a person has many favorable thoughts but there is reason to doubt them, attitude change is unlikely. [The focus of the thinking under the central route is often on the perceived desirability of the consequences in the communication and the perceived likelihood that these consequences will occur] (Petty and Wegener, 1991; Fishbein and Ajzen, 2000).

Two conditions are necessary for effortful processing to occur—the recipient of the message must be both motivated and able to think carefully. A person's motivation to consider message arguments can be influenced by a number of variables, including the perceived personal relevance of the message (Petty and Cacioppo, 1979b) and whether the person enjoys thinking in general (Cacioppo, Petty, and Morris, 1983). A person's ability to think can also be influenced by a number of variables, including the amount of distraction present in the persuasion context (Petty, Wells, and Brock, 1976), and the number of times the message is repeated (Cacioppo and Petty, 1979). If a person is both motivated and able to think about the issue-relevant information presented, the end result of this careful processing is an attitude that is well articulated, readily accessible, held

with confidence, and integrated into the person's overall belief structure (Petty and Cacioppo, 1986).

## **Peripheral Route Processing**

In our daily lives, we often lack either the motivation or the ability to thoughtfully consider every potential persuasive communication in the way characterized by the central route. Attitude change can occur nonetheless, because many persuasion processes require little to no consideration of substantive information. In the ELM, such processes are organized into the peripheral route, and they include reliance on simple cues available in the persuasion context as well as mental shortcuts called heuristics. The persuasion context can elicit an affective state (like happiness) that becomes associated with the advocated position through classical conditioning (Staats and Staats, 1958), or a mental shortcut might be used so that a message from an expert is judged based on the heuristic that, "experts are generally correct," rather than careful consideration of the substantive arguments (Chaiken, 1987). Another common method used when either motivation or ability are lacking is simply to count the number of arguments made rather than evaluating them based on their merit (Petty and Cacioppo, 1984). Although the peripheral route to persuasion does not involve thoughtful consideration of message content, it can be effective in leading to persuasion, at least in the short term.

For expository purposes, it has been convenient to break the processes of persuasion into two distinct routes. However, the ELM holds that persuasion occurs along an elaboration continuum. The continuum stretches from processes requiring no thinking, like subliminal classical conditioning that occurs outside of awareness, to processes requiring some effort, like counting arguments or making inferences based on one's experienced affect, to processes requiring careful consideration, such as listing the pros and cons to make an important life decision. Along much of the continuum, both peripheral and central processes take place and can influence attitudes simultaneously (Petty, 1994). But, as the elaboration likelihood increases, central route processes (that is, careful evaluation of issue-relevant information) tend to dominate in their impact on attitudes over more peripheral processes (for example, reliance on heuristics).

It is important to emphasize that [the distinction between central and peripheral routes is made based on the extent of issue-relevant scrutiny and on how carefully the information is processed rather than on the type of information itself] (Petty, Wheeler, and Bizer, 1999). As an example, information about the source of a message can have an impact on attitudes under either the central or the peripheral routes, depending upon whether the recipient has the motivation and ability to evaluate it carefully. If, for example, Magic Johnson is the source of a message about human immunodeficiency virus (HIV), and people use the heuristic "famous is good," then persuasion will follow the peripheral route. However, if people are more persuaded because he has contracted HIV and knows what he is talking about, then we are examining the central merits of Magic Johnson as a source as is likely to occur under the central route. Note that under the peripheral route, the use of Magic Johnson could be effective regardless of the message topic because if all one considers is his fame, and fame is good, this is constant across attitude objects. On the other hand, if one processes the source information

carefully for relevance, Magic Johnson should be more effective in an HIV message (or for basketball shoes) than in a message for swimming pools.

## **Support for the Central and Peripheral Routes**

There is extensive empirical support for the distinction between persuasion that is governed more by central rather than peripheral route processing (see Petty and Cacioppo, 1986; Petty and Wegener, 1998a, for reviews). In one early and representative study, the presence or absence of a potential peripheral cue and the quality of the arguments, strong versus weak (as determined in pilot testing), were manipulated (Petty, Cacioppo, and Goldman, 1981). In this study, college students were given one of four persuasive messages that contained either: (a) strong and compelling arguments attributed to an expert source; (b) weak and specious arguments presented by an expert source; (c) strong and compelling arguments attributed to a nonexpert source; or (d) weak arguments attributed to a nonexpert source. No distractions were present during the procedure and the message was easily comprehended, so all participants had the ability to process the message. On the other hand, motivation to process the message was manipulated by informing some of the students that the proposal (supporting a change in campus policy) would take effect in a year (high relevance condition), whereas others were informed that the proposal would go into effect in ten years (low relevance condition). The high relevance condition should motivate effortful processing of the message (Petty and Cacioppo, 1979b). The low relevance condition offers little motivation to process the message, so low effort attitude change processes should have a greater impact on attitude change. This was in fact the observed pattern; those in the high motivation condition processed the message arguments, so their level of persuasion was greatly influenced by the manipulation of argument strength. They responded based on whether the arguments offered good support for the advocated position or not. Those in the low personal relevance condition lacked the motivation to process the message thoroughly, and so their level of persuasion was a function of the expertise of the source rather than strength of the message. That is, they supported the policy change as long as the source was an expert, regardless of the quality of the arguments offered to support the policy.

## **Variables Influencing the Extent and Direction of Elaboration**

Taken as a whole, the evidence supporting the ELM shows that a number of variables exist that can impact persuasion by influencing a message recipients' motivation or ability to think about the communication. In this way, these variables determine whether high or low effort processes are more likely to influence attitudes. For example, if a woman has a family history of breast cancer, then she might be motivated to think about a persuasive message about breast self-exams based on perceived self-relevance (Rothman and Schwarz, 1998). However, if the perceived self-relevance is so intense as to induce fear, defensive avoidance might occur (Janis and Feshbach, 1953). In addition to motivational variables, as noted earlier, ability variables also influence processing. For

example, if the message is delivered in the hall of a busy hospital, the ability to think will be lowered. Variables that influence motivation and ability to think can be part of the *situation*, or they can be internal to the *person*.

The breast exam example mentioned variables that influence the *extent* of thinking (whether many or few thoughts are generated). Other variables influence the *direction* of thinking (whether favorable or unfavorable to the message). For example, telling an audience that they are about to receive an attempt to persuade them on an important issue can bias responses to the message, because the audience becomes motivated to actively resist a change in their current opinion (Petty and Cacioppo, 1979a). Sometimes, however, when people want to change, they could be motivated to generate positive thoughts to the message. Similarly, if a person is put in a good mood when exposed to a message on an important topic, the good mood increases the likelihood of generating positive thoughts to the communication (Petty, Schumann, Richman, and Strathman, 1993). Thus, responses to a persuasive message are determined by both situational and personal factors that influence motivation or ability to think in ways that change the extent or direction of thinking.

## **Consequences of the Route to Persuasion**

The route used to produce attitude change is critical, because central route attitude changes tend to have different consequences and properties than peripheral route attitude changes (Petty and Cacioppo, 1986). [In general, attitudes that result from central route processes tend to be stronger than those from peripheral route processes.] Strength refers not to the extremity of the attitude, but how consequential it is. As compared to weak attitudes, strong attitudes are more durable, because they persist over time and resist change when challenged by contrary information. In addition, strong attitudes guide thinking, and perhaps most importantly, strong attitudes guide behavior (Krosnick and Petty, 1995). As an example, consider an individual who engaged in thoughtful processing of a message on exercise resulting in a strong positive attitude toward engaging in exercise. Strong attitudes are more predictive of behavior, so thoughtful attitude change makes the initiation of exercise behavior more likely. In addition, because strong attitudes persist in memory, they are more likely to continue to influence behavior over time than weak attitudes. Furthermore, when a friend suggests forgoing exercise to “watch the game,” the strong attitude will be resistant to change. It is also more likely to bias thinking in favor of the attitude, so the friend’s statement may be reinterpreted as, “stay in and be a slob,” increasing the likelihood of behavior maintenance. Thus, stronger attitudes produced through central route processes have a number of features that increase the chance of eliciting sustained behavioral change compared to attitudes changed the same amount but by peripheral processes.

A number of studies provide evidence that attitudes resulting from more effortful thinking better predict behavioral intentions and guide actions than do attitudes resulting from little thinking. As one example, Brown (1974) assessed the attitudes of high school students toward various health-related behaviors such as using drugs, obeying traffic safety laws, and so forth. Students who reported giving the issues greater thought

exhibited greater attitude-behavior consistency than those who reported giving the issues little thought.

Research on the “need for cognition” (a measure of the extent to which people engage in and enjoy thinking; Cacioppo, Petty, and Sidera, 1982), has also supported this proposition. For example, Cacioppo, Petty, Kao, and Rodriguez (1986) found that the attitudes toward presidential candidates of individuals who enjoy thinking were more predictive of their votes than the attitudes of individuals who did not enjoy thinking (see Cacioppo, Petty, Feinstein, and Jarvis, 1996, for a thorough review of work on need for cognition).

In these studies, existing attitudes based on high or low amounts of thought were examined. Other studies have created new attitudes by relatively thoughtful or non-thoughtful means and assessed how well the attitudes predict behavior. In one study, for example, (Sivacek and Crano, 1982; Experiment 2) undergraduate students were informed that their university was exploring the possibility of implementing senior comprehensive exams (an issue new to them), and they then read a message describing these exams. Then students reported their attitudes toward the proposal and were given the opportunity to sign petitions opposing the exams and to volunteer their services to a group that opposed the exams. The sample was divided into high and low relevance groups on the basis of the students’ self-reports of whether the issue was high or low in perceived personal relevance (that is, would affect them or not). The high relevance group exhibited larger correlations between their attitudes toward senior comprehensive exams and their relevant behaviors (petition-signing/volunteering). That is, students for whom the message was more personally relevant demonstrated higher attitude-behavior consistency than students who considered the message less relevant. Based on the assumption that students in the high relevance group engaged in greater issue-relevant thought when forming their attitudes than students in the low relevance group (as would be expected based on numerous experiments; (Petty and Cacioppo, 1990), this study supported the notion that more thoughtful attitudes are more predictive of behavior than less thoughtful attitudes. Other studies that have changed attitudes to a similar degree under conditions of high or low elaboration have also shown that more thoughtful attitude changes are more predictive of behavioral intentions and actions than are less thoughtful attitude changes (for example, Leippe and Elkin, 1987; Petty, Cacioppo, and Schumann, 1983). Thus, attitudes formed by the central route exhibit greater attitude-behavior consistency.

Research evidence also suggests that [attitudes formed by the central route are more persistent over time and more resistant to counterpersuasive attempts than attitudes formed by the peripheral route.] For example, in two studies (Haugtvedt and Petty, 1992) similar attitude changes were produced in individuals who differed in their need for cognition. In each study, college students were presented with a message containing strong arguments from a credible source, so there were two possible factors on which persuasion could be based. Both high and low need for cognition individuals became more favorable toward the position taken in the message, but what is critical is that they did so through different processes. Students who generally enjoy thinking changed based on a careful consideration of the high quality arguments. Low need for cognition students, who avoid thought, changed to the same extent, but because of the positive



source cue. When attitudes toward the issue were examined just two days after the persuasive message, recipients low in need for cognition had returned to their initial positions, but high need for cognition students persisted in their new attitudes. In a second study, the students' new attitudes were challenged just a few minutes after they were created. High need for cognition students resisted the message attacking their attitude to a greater extent than low need for cognition individuals.

Taken together, these results suggest that attitude change might have less impact if it comes about through low rather than high amounts of issue-relevant thinking. Thus, although central route attitude changes are typically more difficult to produce than peripheral route changes, the benefits are considerable. A key contribution of the ELM is the finding that it is insufficient to know simply what a person's attitude is or how much change in attitudes was produced. It is also important to know *how* the person's attitude was changed. Attitudes that are identical in valence can be quite different in terms of their underlying psychological antecedents (that is, how they were formed or changed) and consequences (for example, whether they predict behavior, see Petty, Haugtvedt, and Smith, 1995, for a review of persuasion and attitude strength research).

The difficulties of creating central route attitude change are familiar to health promotion researchers. For example, there are great challenges in engaging young adults in health-related topics like safe sex practices and substance abuse, simply because they often do not see them as personally relevant or important to their lives (Scott, 1996; Scott and Ambrosion, 1994). Due to these challenges, it is tempting to suggest that use of peripheral cues and heuristics are the best way to create attitude change. However, as reviewed earlier, attitude change produced through peripheral route processes can represent an empty victory, since weak attitudes produce little in the way of tangible results. Instead, more needs to be done to understand what variables successfully engage the thoughtful processing of such messages in each population. One possible hybrid strategy is to use the peripheral route in combination with the central route. That is, one might make a health behavior (for example, using condoms) more acceptable to an unmotivated audience by the use of cues, and then when it is temporarily more desirable, more active processing techniques can be employed, such as getting people to justify their new attitudes in a role-playing exercise.

Before concluding our consideration of attitude strength, it is important to note that some recent research indicates that there may be a shortcut to strength by merely getting people to think that they have considered the issue thoughtfully in the absence of any real increases in thinking (Barden and Petty, 2006). In one study, for instance (Rucker, Petty, and Briñol, in press), students were presented with a typical persuasive message, presenting several arguments in favor of a proposal and one argument against, or one that organized the information into explicit pros and cons. Even though no new information appeared in the explicit two-sided message, and no additional thought was evident, participants perceived that they were more knowledgeable about the topic following this message. In addition, they were more confident in their opinions following this message. This recent research suggests that in addition to the likely structural benefits of increased thinking, such as greater attitude accessibility and attitude-belief consistency, there are also meta-cognitive benefits of thinking, such as perceptions of increased knowledge about an attitude issue and increased certainty in the validity of

one's attitudes. Of most interest, these latter meta-cognitions can enhance the strength and impact of attitudes on their own (see Petty, Briñol, Tormala, and Wegener, 2007).

## **Multiple Roles of Variables in the ELM**

We have seen that one critical aspect of the ELM is its identification of two routes to persuasion and the consequences of these routes. Another essential component of the ELM is that it allows for any one variable, such as the credibility of the message source, or the mood a person is in, to influence persuasion through different processes in different situations. The capacity of one variable to impact judgments through different processes explains how such simple variables as the credibility of the source or one's mood can produce complex outcomes. It also makes it essential to identify the conditions under which a variable influences attitudes by one process rather than another. We have hinted at the limited number of ways that variables can impact attitudes according to the ELM: by serving as a simple cue; by serving as an argument; and by affecting the amount or valence of one's thoughts. A final way in which variables can affect attitudes is by influencing the confidence people have in their thoughts. Thought confidence is important because it determines whether people will rely on the thoughts they have generated to form attitudes (Petty, Briñol, and Tormala, 2002).

Situations of low elaboration likelihood occur when people are unmotivated or unable to scrutinize the issue-relevant information presented. Under low elaboration conditions, then, persuasion-relevant variables such as a person's mood or the expertise of the source influence attitudes primarily through peripheral route processes. This is because people are either not motivated or not able to effortfully evaluate the merits of the information presented. Thus, if any evaluation is formed, it is likely to be the result of a relatively simple association or inference process that can occur without much cognitive effort (for example, "experts are correct"). For example, under low elaboration conditions, one's mood could serve as a simple cue either because the mood becomes associated with the advocated position through classical conditioning, or because people infer their attitude from their mood (for example, "I feel good, so I must like it," see Petty et al., 1993). Both of these peripheral processes assume that mood can influence attitudes without much issue-relevant thinking.

The ELM holds that under high elaboration conditions, however, people want to evaluate on the merits of the arguments presented and they are able to do so. In these high elaboration situations, persuasion-relevant variables have relatively little impact by serving as simple cues. Instead the variable is scrutinized, like a message argument, and can result in attitude change if the variable provides information relevant to the merits of the attitude object (for example, an emotional factor such as how much you "love" someone is central to the merits of selecting a spouse and can serve as an argument in favor of marriage). Even variables not central to the merits of the object can influence attitudes under high processing conditions by biasing the direction of thought taking place. For example, people might be motivated to generate mostly favorable thoughts about the message if the source is credible (Chaiken and Maheswaran, 1994), or they might overestimate the likelihood that some good consequence mentioned in the message will happen if they are in a good mood (Wegener, Petty, and Klein, 1994). Finally, if

thoughts are generated when people are in a good mood, or the source is expert, people might have more confidence in their thoughts than if the thoughts are generated when feeling bad (Briñol, Petty, and Barden, in press) or are in response to an unknowledgeable source (Tormala, Briñol, and Petty, 2006). The more confidence one has in one's thoughts, the more these thoughts will impact attitudes.

In addition to the roles for variables when thinking is constrained to be high or low, variables can affect the amount of thinking itself when thinking is unconstrained by other variables. We previously noted that people are generally motivated to think more about messages of high rather than low personal relevance (Petty and Cacioppo, 1979b), and people are generally unable to carefully think about messages when distraction is high (Petty et al., 1976). But many other variables can influence the extent of thinking when the elaboration is not already constrained to be high or low. For example, the variables of source expertise and a person's mood can influence the extent of thinking in such situations. In these circumstances, people may be more motivated to pay attention to and think about what an expert rather than a non-knowledgeable source advocates (Heesacker, Petty, and Cacioppo, 1983). Or, when in a happy mood, people will be more likely to think about a message that promises to be uplifting, but less likely to think about a message that promises to be depressing than individuals in a sad mood (Wegener, Petty, and Smith, 1995). This suggests that positive mood influences message processing, at least in part, due to mood management concerns (Isen and Simmonds, 1978; Wegener and Petty, 1996). That is, people in a positive mood tend to avoid message processing when they think it might attenuate their good feelings such as when the message is expected to be unpleasant or counter to one's own attitude, but they may engage in message processing when it will maintain or enhance their mood (see Wegener and Petty, 1996; Petty, Fabrigar, and Wegener, 2001, for a review of research on mood and persuasion).

## **Summary of the ELM**

Figure 7.1 presents a schematic depiction of the Elaboration Likelihood Model of persuasion and highlights the major features of the model. In the simplest sense, the ELM does three things. First, the ELM points to two routes to persuasion—a thoughtful and cognitively effortful route that occurs when the person is both motivated and able to think about the merits of the issue under consideration, and a less thoughtful route that occurs when motivation or ability are low. Second, the model points to consequences of these two routes. Thoughtful attitude changes are postulated to be more accessible to memory, persistent over time, resistant to counterpersuasive attempts, and predictive of behavior. Third, the model specifies how variables have an impact on persuasion. That is, the model specifies certain roles that variables can play in the persuasion process. Variables can influence a person's motivation to think or one's ability to think. Variables can influence the valence of one's thoughts or the confidence in the thoughts generated. Finally, variables can serve as simple cues and change attitudes by one of several peripheral processes (for example, identification with the source, invocation of simple decision heuristics). With these features of the ELM in mind, we turn to the potential relevance of this model for health promotion.

[Insert Figure 7.1 about here]

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# Using the ELM to Understand Health Communication Efficacy

Over the past two decades, researchers in the area of health promotion have made use of the ELM to develop health promotion campaigns and interventions including AIDS and condom use (Bakker, 1999; Carnaghi, Badinu, Castelli, Kiesner and Bragantini, 2007; Dinoff and Kowalski, 1999; Helweg-Larsen and Collins, 1997; Igartua, Cheng, and Lopez, 2003; MacNair, Elliott, and Yoder, 1991; Mulvihill, 1996), exercise (Brock, Brannon, and Bridgwater, 1990; Jones, Sinclair, Rhodes, and Courneya, 2004; Rosen, 2000), dental flossing (Updegraff, Sherman, Luyster, and Mann, 2007), diet counseling (Kerssens and van Yperen, 1996), substance abuse interventions (Scott, 1996; Scott and Ambroson, 1994), smoking cessation (Quinlan and McCaul, 2000; Vidrine, Simmons, and Brandon, 2007), compliance in breast cancer screening (Drossaert, Boer, and Seydel, 1996), maternal attitudes toward baby bottle tooth decay (Kanellis, Logan, and Jakobson, 1997), compliance with hospital infection control procedures (Bartzokas and Slade, 1991), pre-natal care for low-income Mexican women (Alcalay, Ghee, and Scrimshaw, 1993), and organ donor program participation (Skumanich and Kintsfather, 1996). Dissertations pertaining to health promotion have also made use of the ELM in research related to phenomena such as promoting physical activity among middle-school girls (Marks, 2004), HIV/AIDS prevention in a college-aged population (Spradlin, 2006), the impact of channel of communication on patient requests for prescription drugs (Lee, 2004), and changing smoking risk perceptions through tailored messages (Irvin, 2003).

As a general theory of information processing, the ELM has considerable utility for understanding the outcomes of different persuasive attempts on resulting attitudes and behaviors. Because attitudes are a primary determinant of behavior, attitude change, and especially creating strong attitudes, they can be a central focus of any health promotion program.

## ELM Analysis of Message Tailoring

One area of health research in which the ELM has been fruitfully applied is in the domain of message tailoring. There is a large and growing literature on tailoring health communications. For example, one recent review found thirty empirical articles on computer tailoring in this domain (Kroeze, Werkman, and Brug, 2006). Tailoring has been defined as “any combination of information or change strategies intended to reach one specific person, based on characteristics that are unique to that person, related to the outcome of interest, and have been derived from an individual assessment” (Kreuter, Farrell, Olevitch, and Brennan, 2000, p. 5). A related approach, often referred to as “targeting” involves aiming messages at particular groups of people based on identifiable

characteristics (for example, race, gender). Although we focus our analysis on tailoring, the same principles are likely to apply to targeting.

Despite occasional contradictory results (for example, Quinlan and McCaul, 2000), the bulk of research has indicated that matching health messages to personal characteristics can increase the effectiveness of the messages in changing attitudes and behavior (see Kreuter et al., 2000; Kroeze et al., 2006 for reviews). Although tailoring strategies have generally been successful, little is known about why tailoring is an effective strategy. Moreover, little is known about what differentiates the situations in which tailoring will or will not be effective in generating short-term or long-term behavioral change.

In this final section, we use the ELM to examine some mechanisms by which message tailoring could work and provide illustrative examples.<sup>1</sup> Additionally, we speculate about conditions that are likely to maximize the effectiveness of message tailoring as well as those in which tailoring might lead to null or even reversed effects.

**Tailoring.** Tailoring typically refers to those instances in which the arguments contained in health communications are altered to match the particular concerns of the message recipient. For example, a pretest of Susie's concerns about condom use might indicate that she believes that they are awkward and inhibit pleasure. Susie might be less concerned about the cost of condoms or about their efficacy in preventing pregnancy or disease. A message tailored to Susie, then, would address the social and physical issues associated with condom use while leaving out information about their efficacy or cost.

Tailoring procedures can be utilized to match not only the types of concerns an individual has about a particular health behavior, but also to the individual's stage of behavioral change. Stages of change models hold that there are a number of qualitatively distinct stages through which an individual must pass when adopting a health behavior (for example, Prochaska, DiClemente, and Norcross, 1992; Weinstein, Rothman, and Sutton, 1998). For example, the transtheoretical model (Prochaska et al., 1992) suggests that individuals pass through five distinct stages (that is, precontemplation, contemplation, preparation, action, and maintenance) on the path to behavioral change, and that messages that match the individual's stage of change should be more effective in changing behavior. With some exceptions, the available literature generally indicates that this is the case.<sup>2</sup>

In theory, tailoring could include virtually any personal aspect of the individual. Although most tailoring approaches focus on the specific health concerns of the individual, tailoring could also include a variety of psychological variables (Salovey, 2005), such as self-efficacy (Brug, Steenhuis, Van Assema, and De Vries, 1996) attributional style (Strecher et al., 1994), or perceptions of time (Kreuter, Lukwago, Bucholtz, Clark, and Sanders-Thompson, 2003). [When a message is tailored to a characteristic of a person that is shared with many others (for example, one's general personality traits, race, gender, or religion), tailoring is the same as targeting.]

**Matching effects.** The finding that tailoring arguments to personal health concerns and other related characteristics can increase persuasion bears more than superficial similarity to findings in other persuasion domains showing that matching a

persuasive message to various facets of the person can increase persuasion. For example, matching a message to the functions of an individual's attitude can increase persuasion (for example, providing image-related arguments to a person concerned about social image; see Shavitt, 1989; Snyder and DeBono, 1985). Likewise, making an emotional appeal to a person whose attitude is based on emotion can be more effective than making a more rational or cognitive appeal (see Edwards, 1990; Priester, Wegener, Petty, and Fabrigar, 1999). Finally, matching a message to one's group identity can be effective (for example, framing the message as "for men" or "for women" for individuals highly identified with their gender; see Fleming and Petty, 2000; Mackie, Worth, and Asuncion, 1990).

As noted earlier, researchers in the health domain have drawn a distinction between *targeting* (matching the message to characteristics of a specified population), and *tailoring* (matching the message to a particular individual based upon an individual assessment; for example, Kreuter, Bull, Clark, and Oswald, 1999). A third distinction that is sometimes made is *personalization*, in which a person's name is used in the message. Tailoring is the most specific of the "matching" approaches, in that many tailoring studies provide individuals with specific feedback about their personal risk and reasons for engaging in a particular behavior (Brug and de Vries, 1999). This information is not part of the simpler personalization and targeting approaches and likely contributes substantially to the success of tailoring procedures. Despite meaningful differences in the basis of the matching, we believe that the various matching approaches share important underlying conceptual similarities, namely, their common linkage to the self-characteristics of the respondent. Petty, Wheeler, and Bizer (2000) reviewed matching effects in a variety of social psychological research traditions, including attitude function matching, self-schema matching, group identity matching, and affect/cognition matching. Petty et al. noted that despite much diversity in the kinds of matching used, there was remarkable similarity in the outcomes observed, and this was attributed to the fact that each kind of matching established a link between the message or issue and some aspect of the self.

**Matching under low elaboration conditions.** In line with the multiple roles postulate of the ELM, linking a message to some aspect of the self (that is, "me-ness" matching) could influence persuasion in a number of different ways. Under low elaboration conditions, the match could act as a simple cue (for example, "If it's for me," or "relates to me," or is "similar to me," "I like it."). This notion derives support from the numerous findings indicating that objects or ideas that are associated with the self are preferred to those that are not. Thus, individuals prefer products that they own to those that they do not, whether the products were chosen by the individual (for example, Brehm, 1956) or received as an unselected gift (for example, Kahneman, Knetsch, and Thaler, 1991). Individuals prefer arguments that they have generated to those that others have generated (for example, Greenwald and Albert, 1968) and even prefer the first letters in their own names to other letters of the alphabet (Nuttin, 1985). Given the typically high self-esteem that most individuals possess (for example, Taylor and Brown, 1988), it is not surprising that the self serves as a positive cue so frequently (an "own-ness" bias, Perloff and Brock, 1980). Some recent research even suggests that the transfer

of positivity (or negativity) from the self to associated objects can occur automatically without one's awareness (Gawronski, Bodenhausen, and Becker, 2007).

Thus, under low elaboration conditions, matching a message to some aspect of the individual's self (for example, one's concerns, values, goals, groups, possessions, etc.) could act as a positive cue in the absence of much issue-relevant thinking. Although this cue strategy could be fruitful in the short run, as noted earlier, durable attitude change is more likely when a message is processed under high elaboration conditions. By engaging in active elaboration regarding the message topic, the individual forges more linkages between the new information and knowledge already stored in memory. Greater elaboration is therefore likely to render the resulting attitude more persistent, more resistant, and more likely to influence thought and behavior.

**Matching under moderate elaboration conditions.** When baseline elaboration likelihood conditions are moderate (that is, motivation and ability factors are not constrained to be high or low), a persuasion variable can act to increase the amount of thinking that takes place. For example, we already noted that a variable that increases the perceived personal relevance of a message can increase the extent to which an individual thinks carefully about all of the issue-relevant information presented (Petty and Cacioppo, 1979b). Indeed, one of the most common findings in the social psychological literature on matching messages to the self is that such matching increases processing of the communication (for example, Petty and Wegener, 1998b; Updegraff et al., 2007; Wheeler, Petty, and Bizer, 2005). In line with this prediction, a number of studies in the health literature have provided evidence consistent with the idea that tailoring a message to the recipient can increase elaboration.

For example, Brug, et al., (1996) found that tailored messages were perceived by recipients as more personally relevant and as written especially for them. Perhaps because of this increased perception of relevance, tailored messages are more likely to be read by the recipients, more likely to be attended to, and result in greater recall for the message content (Brug, et al., 1996; Brug, Glanz, Van Assema, Kok, and van Breukelm, 1998; Campbell et al., 1994; Heimendinger et al., 2005; Oenema, Tan, and Brug, 2005; Ruiter, Kessels, Jansma, and Brug, 2006; Skinner, Strecher, and Hospers, 1994; see Brug, Campbell, and Van Assema 1999; Skinner, Campbell, Rimer, Curry, and Prochaska, 1999, for reviews).

**Tailoring under high elaboration conditions.** [Under high elaboration conditions, tailoring or matching a message to an individual could lead to biased message processing.] For example, arguments that are tailored to address individual concerns (for example, about "cost") could be perceived to be stronger than those that are not so tailored (for example, about "social benefits"), even though there are no differences (or even a reverse difference) in actual argument quality. Consider, for example, that people may be more likely to fill in positive interpretations for matched than mismatched arguments. Alternately, tailored arguments could address health concerns about which the individual has a biased store of issue-relevant knowledge. This could lead to an ability bias even when the individual has an accuracy motivation. That is, the person's biased store of knowledge might enable the person to see the merits in some types of arguments more easily than other types. Finally, people might have more

confidence in the thoughts that they generate to tailored rather than non-tailored messages, leading thoughts in response to those messages to have a greater impact on attitudes (see Cesario, Grant, and Higgins, 2004).

## **Illustrative Research on Tailoring**

In a prototypical tailoring experiment, Oenema et al., (2005) collected an initial set of data on Dutch participants' fat, fruit, and vegetable intake, as well as a variety of demographic and general information (for example, height, weight, etc.). Participants were assigned to one of three conditions. Tailored message participants received a communication providing feedback about their food intake and its relationship to that of peers, as well as information about how to change or maintain eating habits (depending on current intake and motivation to change). Generic nutrition information participants received information stressing the importance of a low-fat, high-fruit and vegetable diet and information about how to change eating habits based upon common Dutch consumption patterns. Control participants did not receive any health information. Results indicated that the tailored message was perceived to be more personally relevant, individualized, and new than the generic nutrition information. Additionally, participants in the tailored information group spent more time with the information than did generic information participants. Most importantly, intention to change was greater among the tailored-message participants than those in either of the control groups. Mediation analyses indicated that these differential intentions were mediated by perceptions of personal relevance and by perceived individualization. The increased reading time suggests that the perceived relevance led recipients to engage in greater processing of the message and thus change in this instance probably occurred by the central route processing.

Although many studies within the health literature have tailored arguments to match the specific dimensions of concern the individual had expressed in that particular health domain, messages have also been matched on the basis of other, more general, characteristics. For example, Brock et al. (1990) conducted a study in which they tailored persuasive messages to match the self-schemas of the message recipients. To create the tailored messages, they first contacted a pool of over 7,000 former customers of a weight-loss company with a letter from the (fictitious) "Center for Personality Research." Using a card-sorting procedure and adjective-rating task, participants indicated their overall personality types. Brock et al. (1990) used these data to classify participants into one of four "schema sets" (for example, warm-communicative-compassionate). These same individuals were later sent a packet of materials from the weight-loss company. The materials included an insert that was tailored to either match or mismatch the schema set of the recipient and a business reply card that could be used to re-activate membership with the company. Control group participants received an insert designed to be neutral with regard to schema set. Results indicated that individuals who received an insert stringently matched to their schema set were over 12 percent more likely to return the business reply card than were individuals who received a mismatched insert. These results lend support to the hypothesis that tailoring messages to individuals' self-schemas can be another effective means of tailoring.



In addition, some work has shown that simply tailoring the message format to match some aspect of the recipient can increase persuasion. For example, Bakker (1999) reasoned that individuals who are high or low in their need for cognition (Cacioppo et al., 1982) would respond differently to messages presented in a way that made them appear easy or more difficult to process. Need for cognition is an individual difference variable that corresponds to a person's propensity to engage in and enjoy effortful cognitive activities (Cacioppo et al., 1982). In this experiment, high school students were exposed to one of two messages about AIDS and STDs. Although the messages contained essentially the same information, one message was presented in a concise, written format, whereas the other message was presented in a cartoon format. Bakker (1999) reasoned that low need for cognition individuals should be particularly motivated to think about the cartoon message because it would appear easier and more enjoyable to process. High need for cognition individuals, on the other hand, could be more motivated to process the written message because it would appear to be more interesting and important. He reasoned that the cartoon message could actually inhibit persuasion among high need for cognition participants by creating additional distraction or by leading to negative cognitive responses (for example, about the potentially "childish" or simplistic nature of the message format). Results indicated that participants in both the cartoon and written message conditions had significantly more knowledge about AIDS after reading the message than participants in a no-message control group. However, analyses on attitudes toward condom use indicated a main effect of message type as well as a significant need for cognition by message type interaction. The main effect was such that individuals in both the cartoon and written message conditions showed more positive attitudes towards condom use than participants in the no-message control group. The interaction, however, indicated that low need for cognition individuals expressed more positive attitudes toward condom use after reading the cartoon message than the written message, and high need for cognition individuals indicated more positive attitudes toward condom use after reading the written message than the cartoon message. Thus, message format appears to be an additional type of tailoring or matching variable that can have a significant impact on health attitudes and behaviors

## **Interpreting Tailoring Research**

The research examples of tailoring just described demonstrate self-matching effects with three different types of manipulations. Oenema, et al. (2005) tailored their arguments to match the specific concerns of the message recipients (the most typical tailoring procedure); Brock et al. (1990) matched the arguments to aspects of the individuals' personality schemas; and Bakker (1999) matched the format of the message to the individuals' cognitive processing style. Though it is certainly possible to obtain similar findings for very different reasons, it is possible that each of these results share an important underlying similarity. That is, each of the studies reviewed above matched an aspect of the persuasive message to a corresponding aspect of the message participant and may have therefore influenced persuasion as a result of the self-match.

Although each of the studies found increased persuasion under matched, rather than mismatched conditions, the precise mechanism responsible for each finding is not

entirely clear. Recall that according to the ELM, a given variable like a message match can serve in multiple roles, depending on the overall level of elaboration present in the persuasion context. Consequently, additional manipulations and measures are necessary to draw strong inferences about the processes operating in each experiment. The authors of the experiments just reviewed all favored the explanation that matching increased thinking about the message, and this idea has strong support in the literature (Brug, et al., 1999; Skinner et al., 1999; Updegraff et al., 2007). If one assumes that in the studies just reviewed the arguments presented were strong and that elaboration was not constrained at high or low levels by other variables, this explanation would be quite plausible and consistent with the ELM. However, other researchers have provided support for the idea that self-matching can have other effects besides increasing elaboration, such as biasing elaboration in a favorable direction (Cacioppo, et al., 1982; Lavine and Snyder, 1996), serving as a peripheral cue (DeBono 1987), or affecting thought confidence (Cesario et al., 2004). Thus, in the absence of empirical process indicators, multiple explanations for the findings previously presented are possible. For example, in the Bakker (1999) study, was a cartoon more effective than a written message for individuals low in need for cognition because the cartoon served as a simple cue, or because it increased processing of the strong message arguments? Given that the individuals were low in need for cognition, it seems unlikely that the cartoon served in one of the roles reserved for high elaboration conditions, such as biasing the ongoing processing of affecting thought confidence. In any case, the multiple roles reviewed previously in this chapter provide examples of how the same effects could be obtained via different processes under different elaboration conditions. As noted earlier, the ELM holds that it is important to understanding the underlying processes of change because of the strength properties that follow from the different processes.

Despite the strong support for greater perceived relevance of and attention to tailored messages, the underlying mechanism behind many tailoring studies remains ambiguous. For example, the greater perceived relevance and individualization in the Oenema et al. (2005) experiments could have led to more positive behavioral intentions for all of the reasons outlined above. Personal relevance and individualization could have served as a cue (for example, “This is for me, so I like it!”), as an indicator of greater elaboration, as a high-elaboration biasing agent, or as a magnifier of confidence in any favorable thoughts generated. Hence, measures of perceived relevance may not be sufficient to conclusively determine the underlying mechanism.

Other studies have provided more conclusive evidence for the proposed mechanism of greater elaboration. For example, Kreuter et al. (1999) found that participants generated more positive cognitive responses in response to tailored messages. Though not significant, results further suggested that the total number of thoughts generated in response to the message was highest among individuals who read the tailored messages. Thus, it seems plausible that, in the Kreuter et al. (1999) experiment, at least, tailoring increased message elaboration.

Similarly, Ruiters et al. (2006) used a subtle means to assess information processing. Specifically, they exposed participants to a tailored or non-tailored message while they were simultaneously engaged in a secondary, tone-detection task. The task required them to listen to a series of high and low tones and push a button whenever they

heard the (infrequent) high tone. A dependent variable in the study was a measurement of participants' P300 responses, which are a pattern of brain activation associated with attending to infrequent events. The authors reasoned that if greater allocation was devoted to the message (relative to the tone task), it should be reflected in smaller P300 responses. That is, if participants were paying more attention to the tailored message (and hence, less attention to the tone task), one should find smaller P300 responses to the infrequent high tones in the tailored versus the non-tailored message conditions. This is what they observed. This type of measure has the added benefit of being an unobtrusive implicit measurement, rather than a self-reported one.

From the standpoint of understanding the processes responsible for self-matching effects, it would be very useful to include a manipulation of argument quality in future research designs.<sup>3</sup> Argument quality manipulations can provide an additional source of information about the role of the variable by indicating the extent of elaboration (Petty and Cacioppo, 1986). That is, if a variable (like tailoring) increases persuasion equally when both strong and weak arguments are presented, and argument quality makes little difference, then tailoring is likely to be operating as a peripheral cue. If, on the other hand, tailoring increases sensitivity to differences in argument quality, then it may be increasing objective message elaboration. If such were the case, tailoring would increase persuasion when the message arguments were strong, but would decrease persuasion when the message arguments were weak. When an argument quality main effect is found in conjunction with a main effect of the experimental variable, the variable may be biasing the already high levels of elaboration. Of course, to fully examine the multiple roles for message tailoring, it would be necessary to include a manipulation of tailoring and argument quality along with a manipulation of the extent of thinking.

It is also useful to assess ancillary measures such as the number and valence of thoughts generated and the confidence people have in their thoughts to help determine the underlying processes of persuasion. Additional measures of cognitive processing such as message recall, reading times, or self-reported effort can provide further information about the extent of elaboration, though they are imperfect when utilized in isolation.

Of course, using multiple manipulations and measurements can be difficult to achieve in practice. Field settings can often provide pragmatic limitations on the types of manipulations and measures that one is able to implement. More importantly, sometimes there would be ethical concerns associated with providing weak arguments for engaging in positive health behaviors. No doubt, this is likely one of the reasons for the limited use of argument quality manipulations in health communication research to date. However, argument quality manipulations have been used in some experiments (for example, Rosen, 2000; Updegraff et al., 2007), and when combined with a thorough debriefing including distribution of appropriate materials, argument quality effects can provide important insight into the functioning of variables like tailoring. More likely, treatments can be pilot tested in a controlled laboratory context in which strong and weak arguments are used in order to understand the mechanisms behind an effect (for example, is the variable operating as a cue or increasing thinking). Then, once the desired outcome is obtained, the treatment can be taken to the field where only strong arguments would be used.

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# Implications for Practitioners

This chapter has reviewed the theoretical underpinnings of the Elaboration Likelihood Model of persuasion, along with some relevant empirical support. In addition, we provided examples of social psychological and health-related research, examining the effects of message tailoring or self-matching, and discussed the possible mechanisms by which these effects occur. In concluding this chapter, we briefly provide suggestions for using the Elaboration Likelihood Model to derive more effective health communications and persuasion interventions.

First, to effect durable and impactful attitude change, [practitioners should attempt to increase the elaboration of the message recipients]—the extent to which people relate the ideas in the message to their prior knowledge and beliefs (Petty and Cacioppo, 1986). A common problem noted by researchers in the area of health communication is that recipients of health messages are often unmotivated to carefully process the materials they receive (Scott, 1996; Scott and Ambrosion, 1994). This might lead some scholars to forward the suggestion that developers of health messages should put their energies toward injecting peripheral cues into their communications. Although, this could have a positive short-term impact, long-lasting attitude changes are unlikely to result from this strategy. Instead, procedures that increase the formation of highly elaborated, accessible, well-integrated and confidently held attitudes will be most likely to result in actual and sustained behavioral change.

One means of inducing elaboration is by increasing the perceived personal relevance of the communication (Johnson and Eagly, 1989; Petty and Cacioppo, 1979b). As reviewed above, different kinds of message matching or tailoring could be effective in this regard (Kreuter et al., 1999; Petty, Wheeler, and Bizer, 2000), even for those who are prone to engaging in low-effort cognitive strategies (Bakker, 1999; Wheeler et al., 2005). Making individuals feel personally responsible or accountable for their own health outcomes could likewise increase attention to health-related communications (see Petty, Harkins, and Williams, 1980; Tetlock, 1983). Additionally, if individuals feel that their current health beliefs or practices place them in the minority, they may elaborate more on the message to resolve the surprise that can result from being discrepant from others (Baker and Petty, 1994). Other variables impacting message elaboration have been reviewed extensively elsewhere (for example, Petty and Wegener, 1998a; Petty, Wheeler, and Tormala, 2003), and could prove useful in health communication campaigns.

In addition to these motivational variables, ability variables can also affect message elaboration. Thinking about health communications should be higher when the communications are presented in a medium that permits self-pacing (for instance, by using written, rather than audio or video media; for example, Chaiken and Eagly, 1976), in an environment without distractions (for example, Petty, Wells, and Brock, 1976), and in language that is easily understood by the recipients (for example, Hafer, Reynolds, and Obertynski, 1996). Because the language used to describe health conditions and treatments is often quite technical, this latter prescription may require pretesting on the recipient population to ensure that the language is not perceived to be too technical. Perceptions that the message is too technical can decrease elaboration by affecting

perceived ability to process it, even though actual ability may be adequate for elaborative processing (see for instance, Yalch and Elmore-Yalch, 1984). The educational background of the targets of many health communications could inhibit their ability to process verbal information, and such limitations should be taken into account.

High levels of elaboration will increase the impact of argument quality. Thus, the use of strong arguments is another important aspect of any health intervention. Argument strength can be determined by pre-testing arguments on subsets of the target population. [Particularly effective messages can be developed when the concerns of the target population are measured and arguments are developed to address each concern.] More fine-grained procedures can be used to isolate sub-populations of the larger population that share similar concerns. For example, single individuals with multiple partners may be more interested in condom efficacy for preventing sexually transmitted diseases, whereas married individuals with a single partner may be more interested in condom efficacy for preventing pregnancy. Once developed, the tailored arguments can be pre-tested, not only to ensure that they are perceived as cogent by the target segments, but that they also elicit favorable thoughts rather than counterarguments. Adjustments can be made on the basis of such pretests before a more wide-scale distribution of the materials. Argument tailoring can thus serve as one means of ensuring that each population receives arguments that are perceived to be relevant and are compelling (Kreuter et al., 2000). Recent technological advances have made tailoring procedures increasingly efficient and affordable. Of course, as we noted above, tailoring the message arguments is only one type of self-matching strategy that might be used effectively to increase message elaboration and effectiveness.

Last, assessment of the intervention's efficacy should be conducted, and adjustments should be made on the basis of the findings. An important element in such an assessment is a measure of the recipients' attitudes. As noted earlier, message learning can occur in the absence of attitude change (Helweg-Larsen and Collins, 1997; MacNair et al., 1991), and differing levels of attitude change can occur with equal increases in knowledge (Bakker, 1999). Also, since all attitude change is not the same, indicators of the strength of the changed attitude, such as the accessibility of the attitude or the confidence in the attitude, should also be assessed (Petty and Krosnick, 1995).

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## Summary

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This chapter has presented the Elaboration Likelihood Model as a useful framework for interpreting and predicting the impact that health communications have on subsequent attitudes and behavior. The model proposes that attitudes can be formed as the result of different types of processes. Peripheral route processes are those that involve minimal cognitive effort and instead rely on superficial cues or heuristics as the primary bases for attitude change. Central route processes are those that involve effortful cognitive elaboration and rely on careful scrutiny of issue-relevant information and one's own

cognitive responses as the primary bases for attitude change. Although each category of process can sometimes result in attitudes with similar valence, the two routes to change typically lead to attitudes with different consequences. High effort central route processes are more likely to lead to attitudes that are persistent over time, resistant to counterattack, and influential in guiding thought and behavior than are peripheral route processes (Petty and Krosnick, 1995). Because enduring attitude and behavioral change is likely to be a key goal of any health communication campaign, promoting attitude formation via central route processes is important. Consequently, [using techniques that increase the perceived relevance of the communication and the quality of the arguments will promote achievement of the health promotion program goals.] A thorough understanding of these principles should result in more effective health communication campaigns thereby favorably influencing public health.

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# Footnotes

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<sup>1</sup> A complete review of message tailoring work is beyond the scope of this chapter.

<sup>2</sup> It should be noted that our aim here is not to assess the validity of stage models. As noted by Weinstein, Rothman, and Sutton (1998), the fact that personalization or tailoring can alter persuasion outcomes does not bear on the validity of stage models.

<sup>3</sup> It might be argued that tailoring itself constitutes a manipulation of argument quality. However, the goal of most tailoring research is to uncover the dimensions of an object or issue that are important for a person (for example, price, social consequences, etc.). The information that is presented on these dimensions, however, can constitute strong (for example, “this treatment is less expensive than all others”) or weak (for example, “this treatment costs just slightly more than all others”) evidence in favor of the position advocated.