

When do gain-framed health messages work better than fear appeals?

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Past literature reviews of gain-framed versus loss-based health messages have been inconsistent and inconclusive. To resolve this and provide a clearer pattern, this review focuses on the individual or person-specific characteristics of target audiences. The results indicate that by answering the following four questions about a target audience, one can predict whether a gain-framed or a loss-based health message will be more effective. 1) Is there a low (versus high) level of involvement in the issue? 2) Is there a high (versus low) certainty of the outcome? 3) Is there a low (versus high) preference for risk? 4) Is there a heuristic (versus piecemeal) processing style? The profiling of audiences on these factors has two distinct benefits; it resolves many of the seeming inconsistencies in past positive–negative and gain–loss message research (such as fear appeals working better with experts than nonexperts) and it helps predict which type of message will be most effective with a given audience.

INTRODUCTION

Message framing is one of the most researched, yet least conclusively understood, phenomena in health communication. Positive or gain-framed messages are sometimes effective, but negative or loss-based messages (such as fear appeals) are often favored by the public health community.^{1–3} Although there are certain situations in which either gain-framed or loss-framed messages have been shown to be effective, there is wide disagreement on what is causing these variations.^{2,4} Much of the existing investigations into the causes of these differences has focused on message characteristics, situational (context) characteristics, and demographic characteristics.⁵ What has been largely overlooked in public health and nutrition is how individual (person-specific) differences in the perceptions and processing style of the target audience could predict whether a

positive message or a negative fear appeal will be most effective.

This review proposes that whether a loss-framed or a gain-framed message is effective depends largely on the perceptions and processing style of the target audience. This also explains why negative or loss-framed messages are extremely effective with health professionals but less effective with target audiences that have reduced involvement and familiarity with the topic. While the professionals producing the messages create messages that they would find effective, different messages are more likely to influence a general audience. Taking these unique characteristics into account through audience-centered messaging is critical, and the effectiveness of health messaging depends on it.

This review provides an overview of positive or gain-framed messages and negative or loss-framed messages and discusses four key individual (person-specific)

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differences in terms of how they influence a person's predisposition toward gain- or loss-framed messages. Examples are provided to show how various target audiences would respond differently to various types of appeals. Future research directions are outlined along with implications for using an audience-centered framework to make more conclusive sense of past research and to better predict when gain-framed messages might be more effective than loss-framed messages.

TYPES OF HEALTH MESSAGES

Health messages are commonly classified as gain framed or loss framed. Although the terms "positive" and "negative" have also been used for messaging, referring to health messages as gain framed or loss framed has become more common, especially in the social sciences. Gain- and loss-framed messaging can also encompass the terms "positive" and "negative," as gain-framed messages can involve gaining something positive or negative and loss-framed messages can involve losing something positive or negative.

Gain-framed messages

Gain-framed messages focus on the benefits that can be acquired by adhering to a health message and following a suggested course of action. Examples of positive gain-framed messages include the following: "By eating healthfully, people can gain positive body image or energy" or "By using sunscreen, people can attain healthy skin."^{3,6,7} While gain-framed messages are thought to be more effective when a behavior or a medical procedure is preventative,⁷ such as exercising, eating healthy foods, applying sunscreen, or using mouthwash,^{7,8} why they vary so widely in their effectiveness is not known.

Gain-framed messages can also be negative; for instance, when a message describes something negative that a person would receive by not listening to the message at hand. Examples of this include the threat of gaining weight or becoming diabetic by not eating healthfully or the threat of acquiring skin cancer by not using sunscreen.

Loss-framed messages

As with gain-framed messages, loss-framed messages can be either positive or negative. The audience of a loss-framed health message can be told they will either lose something negative by message adherence (a positive message) or lose something positive by not adhering to a health message (a negative message). Examples

of positive loss-framed messaging include: "Eat healthy foods and lower your cholesterol!" "Wear sunscreen and lower your risk of skin cancer!" "Reduce the portion size of your food and you will lose weight!" Negative loss-framed messages include statements such as, "Eat healthy foods or lose years off your life!" and "Go outside without sunscreen and lose your healthy skin!" and "If you drink and drive you will lose your license!" Loss-framed messaging has been found to be most impactful when advocating for actions aimed at early detection or prevention of a medical condition, such as performing breast self-exams to detect breast cancer or using a mouthwash to prevent plaque buildup.^{7,8}

The propensity for people to follow loss-framed messages when detection behavior is involved is thought to be driven by the human tendency to engage in more "risky" behavior when losses are feared.⁷ Because one has the risk of detecting an illness by engaging in a detection behavior such as performing a breast self-exam, loss-framed messaging was traditionally thought to be more powerful than gain-framed messaging in detection scenarios.⁷ However, the advantage of loss-framed messaging over gain-framed messaging for detection behaviors was found to be quite slight in a recent meta-analysis by O'Keefe and Jensen,⁹ leading to further confusion as to when to deploy gain-framed or loss-framed messaging.

INDIVIDUAL CHARACTERISTICS FAVORING POSITIVE GAIN-FRAMED MESSAGES

Although some researchers have explored when gain-framed versus loss-framed messages will be most effective, there is wide variation in the results that has led to little useful or predictable guidance. Previous literature has focused on the context and content of health messages when describing their proper application for success. When context and content are the main focus, there are mixed findings about which message type is more successful, as shown in [Table 1](#).

While some of the factors in [Table 1](#) are attributed to the context of the situation or message characteristics, they also suggest potentially powerful individual differences among people. Thus, while the health outcome of a behavior can be either more certain or less certain, what is more important is how that degree of certainty is perceived by a specific person in a target audience. For example, if a person believes that by not using sunscreen skin cancer will almost certainly occur, then that person will respond differently to a recommendation to use sunscreen than someone who is more skeptical. Such person-specific factors as level of subject knowledge and degree of certainty can be considered

Table 1 Individual (person-specific) characteristics that determine message effectiveness.

Characteristic	Situations in which gain-framed messaging may be more effective ^a	Situations in which loss-framed messaging may be more effective ^a
Level of involvement in the issue	Low involvement: e.g., nutrition information for the general public	High involvement: e.g., breast cancer screening for high-risk individuals
Certainty of outcome	Outcome certain: e.g., belief that getting HIV vaccine through a trial would prevent contraction of HIV	Outcome uncertain: e.g., breast self-exams
Preference for risk	Risk-averse behavior: e.g., using sunscreen	Risk-seeking behavior: e.g., prostate exams
Need for cognition (processing style)	Heuristic processing: e.g., promoting exercise to the general public	Piecemeal processing: e.g., promoting healthy eating to registered dietitians

Abbreviation: HIV, human immunodeficiency virus.

^aThe examples provided are unique to this review and were not drawn from other sources.

along with two additional processing dimensions (need for cognition and heuristic versus piecemeal processing style) to provide a more audience-centered perspective.

Low (versus high) level of subject knowledge

Understanding a person's level of involvement, understanding, or interest in a particular subject, such as nutrition or physical activity, also helps explain the confounded findings for message effectiveness.^{4,7,10,11}

For people who are highly knowledgeable about the behavior that a message promotes, loss-framed messaging may generally be more effective.^{7,11} This is because those who are highly involved and/or interested in an issue have the specific knowledge to enable them to respond to fear-based, negative messages that activate their loss aversion response. For example, in the context of breast self-exams or screening mammography, where women would be highly involved and interested, loss-framed messages were more effective and were evaluated more positively.^{12,13} If an audience has a high level of self-efficacy regarding the targeted behavior, they are also better able to respond to any negative feelings invoked by loss-framed messages.¹⁴

In contrast, when examining audience members who are less highly involved in the specific issue that a message promotes, positive messaging has been found to work better.⁷ For instance, "Eating broccoli will help your skin look younger" instead of "You will prematurely age if you don't eat broccoli." These audiences do not have the level of detailed knowledge that fear-based, negative messaging requires in order to be effective. Therefore, as predicted by the elaboration likelihood model, these less-involved audiences tend to pay attention to peripheral aspects of a health message, causing them to react more favorably to gain-framed positive messages.¹¹ Since the majority of people to whom health messages are targeted are probably not highly involved or interested in the issue, gain-framed positive messages may actually be more successful.

However, a person's responsiveness also depends on whether the individual has a prevention orientation

or a detection orientation, and positive loss-framed messages can be surprisingly effective for individuals with prevention orientations.^{6,15,16} For instance, when a person has a prevention-focused orientation, such as using sunscreen to prevent cancer, even those with high levels of involvement with the subject respond better to positive loss-framed messages. In the context of detection behavior such as having a skin cancer exam, those with high levels of involvement respond better to negative, loss-framed messages.^{2,6,16–18}

High (versus low) certainty of an outcome

Certainty has been explored by several researchers and been found to impact message effectiveness.^{12,19–21}

Previous research has used the contexts of a human immunodeficiency virus (HIV) vaccine trial, HIV testing, and breast self-exams to investigate the relationship between certainty and message framing. In one study, Evangelini et al.²⁰ found that individuals exposed to gain-framed messages were more likely to participate in an HIV vaccine trial when they believed the outcome was certain, i.e., that by getting the HIV vaccine they would not get HIV. Conversely, in a study of breast self-exams and breast cancer, Meyerowitz and Chaiken¹² found that when people were less certain of the outcome of changing their behavior, i.e., there was no guarantee that performing the breast self-exam would result in early detection of breast cancer, a loss-framed message was most effective, such as "Research shows that women who do not perform breast self-exams have a decreased chance of finding a tumor in the early, more treatable stage of the disease."

Perception of whether the potential health outcomes related to a specific behavior is certain or uncertain varies greatly by individual. For example, some people may be certain that exercising will lead to better health in the future. However, others may view exercise as a very uncertain activity, with no guarantee that specific goals such as weight loss or better health will be achieved.²² Similarly, a dietitian may be highly certain that a particular food ingredient is unhealthy,

whereas a nondietitian may be much more skeptical. This personalization of the definition of certainty can explain why some studies have found initially conflicting results. For instance, the study of Apanovitch et al.²¹ advocating HIV testing for at-risk women experimentally manipulated the certainty with which the women believed they would test positive. Whether or not a woman was actually at risk for testing positive for HIV was less influential than whether or not the woman perceived herself to be at risk for testing positive. When a woman believed with certainty that her test would be negative, loss-framed messages were more impactful than gain-framed messages.²¹ However, when a woman was uncertain, there was no difference in the efficacy between loss- and gain-framed messaging.²¹ These results indicate that determining an audience's perception of outcome certainty may be influential in determining the type of health messaging to champion.

Low (versus high) tolerance for risk

Prospect theory, or how humans make decisions in the face of risk, helps explain why certainty of an outcome can influence whether gain- or loss-framed messages are more powerful. Prospect theory suggests that people act in a risk-averse fashion when positive gains are salient or certain, and that they act in a risk-seeking fashion when losses are salient or certain.²³ Therefore, when a positive outcome is certain, gain-framed messaging is predicted to be more effective, whereas when loss is perceived to be certain, loss-framed messaging is proposed to be more impactful.^{8,15,23} In a risk-seeking situation such as a breast self-exam, which involves the risk of detecting breast cancer, loss-framed messages worked better,¹⁶ such as, "If you don't take the 'risk' of doing a breast self-exam, you might not detect breast cancer until it is too late to save your life."¹² In contrast, risk-averse behavior is more effectively communicated through gain-framed messages, such as "Keep your skin free of skin cancer by applying sunscreen."

In one study of gain- and loss-framed messages, Dijkstra et al.¹⁰ examined the intentions of participants to consume fruits and vegetables (a risk-averse behavior) after being exposed to gain- or loss-framed messaging that promoted fruit and vegetable consumption. Results indicated that, consistent with prospect theory, gain-framed messages increased consumption intentions when they had been personalized with the participant's name, whereas loss-framed messages that were personalized invoked a negative reaction and decreased consumption intentions.

It is important to note that an individual's tolerance for risk (often framed by economists as a preference for risk) is not to be confused with foolishness or ignorance

of the risks. Instead, it refers to what a person is willing to give up in order to behave in a healthy manner. Consider an outbreak of bovine spongiform encephalopathy (mad cow disease) during which people are told the risk of acquiring the disease by eating contaminated meat is 1%. This could lead a risk-averse person to totally avoid eating beef because a 1% risk is not worth the potential consequence of infection, but it could lead that person's spouse to think that a 1% risk is not high enough to avoid eating a favorite food. Similarly, knowing there is a risk associated with not having a prostate exam may not be worth the inconvenience of setting up an exam or experiencing the discomfort for one person, but it would be compelling for another. In such a scenario, the first man would have a higher preference for risk and the second would have a lower preference for risk.

Heuristic (versus piecemeal) processing style

The fourth moderator of message success is a person's cognitive processing style. This is often referred to as one's need for cognition. Some people have a general tendency to deliberate on decisions and evaluations, while others are much less interested. This difference is also referred to as heuristic versus piecemeal processing. For individuals who process information more heuristically, i.e., who think big picture instead of small picture because they are not informed of all of the details or do not possess intimate knowledge of a topic, gain-framed positive messages are more effective.^{8,15} Because people who use heuristic processing are not focused on the details of the health message, they are influenced to a greater degree by the message's superficial features, such as the source, length, credibility, and design.^{4,24–27}

In one study of the message types that best promote exercise, Jones et al.²⁷ found that when the message was portrayed as coming from a credible source, positive, gain-framed messages were most effective, as people with a low need for cognition could enlist heuristic thinking patterns. Conversely, for individuals with a more intimate knowledge of the message topic, such as skin cancer risk or nutrition, piecemeal processing that takes into account the details of the message is more common. For those with a high need for cognition and those who favor piecemeal processing, negative messages are more effective.⁴

Although it is generally believed that a person favors one style versus another, i.e., that a person has a higher or a lower need for cognition, the processing style employed can be very topic specific. That is, an individual's level of knowledge can determine, at least in part, whether a message will be considered heuristically or in a piecemeal manner. If a person has little

knowledge of a topic, it will be more difficult to process the details of a message, so that person may have a lower need for cognition when considering the message. Similarly, the amount of time, level of energy, and level of distraction a person has can also affect the need for cognition, i.e., when time and energy are limited and the level of distraction is high, a message is more likely to be considered in a heuristic manner. As an example, a single mother with three children who is working two jobs would be more likely to favor heuristic processing than a stay-at-home mother of two whose husband earns a comfortable income.

DISCUSSION

Past efforts to reconcile the inconsistencies between the effectiveness of gain- and loss-framed messages have been unsuccessful. They generally focused on message characteristics, situation characteristics, or demographic characteristics, and all were found to inconsistently explain differences in findings. In contrast, applying a more audience-centered focus to the evaluation of how individuals in a target market think about an issue appears to be a useful way to understand the results of gain-based versus loss-based messages. *Ex post*, it provides a means of organizing previously inconsistent findings from past research. *A priori*, it helps predict which type of message will be most effective with specific target segments.

Why loss-framed messages are often ineffective

In the public health arena, the concept of “audience-centered” messaging has the greatest implications for health-message producers. These individuals tend to differ from the audiences towards whom their messages are targeted in meaningful ways, such as their level of involvement with or knowledge of the subject matter. This means that a general audience is likely to respond differently to the health message produced than the person who produced it. [Table 2](#) provides illustrations and organizes them in a manner that shows how the different characteristics of health-message audiences influence the types of health messages that are likely to have the strongest impact.

Health professionals and the general population process information differently. First, when thinking about health behaviors, health professionals use a more piecemeal orientation than a heuristic one. Health professionals are able to think in a systematic way and to avoid using heuristic thinking because they have a large base of relevant knowledge and are often highly involved in the issue.^{11,28} Health-message audiences, on the other hand, are usually not highly involved in the targeted health issue

and may not have a large knowledge base to help inform their decisions; they, therefore, rely more heavily on heuristic processing.²⁸ Research demonstrates that individuals with piecemeal, systematic processing (e.g., health-message producers) respond better to negative, fear-based, loss-framed messages while those with heuristic processing (e.g., health-message audiences) respond better to positive, gain-framed messages.^{4,8,11,15,28}

Another way that health-message producers process information differently is in their orientation toward health behavior as a duty rather than a choice. Those whose job is to promote health behavior and create health messages may feel it is their duty to “practice what they preach” and keep themselves healthy. Healthy behavior for them is not a choice but a necessity, a part of their means of self-support. In contrast, many health-message audiences have no responsibility to comply with healthy behavior, so compliance is perceived as a choice rather than a duty. When healthy eating is viewed as a choice, research has shown positive messages to be more successful, and when it is viewed as a duty, negative messaging is more effective.¹⁵

A third crucial difference between message producers and message audiences is in their orientation towards detection versus prevention. Frequent exposure to health messages and the serious consequences that can result from lack of compliance may instill fear in message producers, while message audiences are not as afraid due to their relative lack of awareness of how serious the consequences of noncompliance can be. As a result, message producers tend to respond better to loss-framed messages that seek to avert serious health crises such as diabetes, skin cancer, obesity, and preventable accidents. However, message audiences tend to respond better to prevention-oriented messages or what some have coined the “apple-a-day theory” based on gain-framed, positive messages.^{6,15} General audiences thus tend to respond with more excitement about positive things that they can do to prevent health problems, such as eating the proverbial apple, rather than to fear-based messaging encouraging activities to detect disease, such as getting a dental check-up to prevent gum disease. Previously discussed research supports this notion.^{1,2,8,29}

The tendency for gain- or loss-framed messaging to work better with audiences who are risk averse and risk seeking, respectively, explains why gain-framed messaging has also been more successful when advocating health prevention behavior, while loss-framed messaging has been more successful when aimed at detection behavior. For example, Latimer et al.³⁰ performed a systematic review of message framing that involved the promotion of physical activity. The results showed that gain-framed messages were more effective than

Table 2 Characteristics of specific audiences that suggest positive versus negative messaging could successfully increase vegetable intake.

Audience	Characteristics favoring positive or gain-framed messaging	Characteristics favoring negative or loss-framed messaging	Conclusion	Example of targeted message ^a
Professional females who cook infrequently	- Risk-averse behavior	- High involvement - Piecemeal processor - Outcome uncertain	Negative or loss-framed messages may be most effective, particularly for females who cook infrequently	By not eating foods that improve your immune system (like mushrooms) you're more likely to develop breast cancer
Single males who live alone	- Low involvement - Heuristic processor - Risk-averse behavior	- Outcome uncertain	Positive gain-framed messages may be most effective	Keep your prostate healthy with mushrooms
"Helicopter" parents who work at home	- Risk-averse behavior	- High involvement - Outcome uncertain - Piecemeal processor	Negative or loss-framed messages may be most effective, particularly with mothers who cook frequently	Without vitamin B ₆ in vegetables such as bell peppers, your child's brain cells won't effectively communicate with each other
Mothers who receive assistance through the WIC nutrition program who cook infrequently	- Low involvement - Risk-averse behavior - Heuristic processor	- Outcome uncertain	Positive gain-framed messages may be most effective	Vitamin B ₆ in bell peppers will improve how your child thinks
Competitive athletes	- Risk-averse behavior	- Piecemeal processor - High involvement - Outcome uncertain	Negative or loss-framed messages may be most effective, particularly among those who cook	Without the omega-3 fatty acids in foods like kale, you're at risk for inflammation and arthritis
College students who eat on campus	- Low involvement - Heuristic processor - Risk-averse behavior	- Outcome uncertain	Positive gain-framed messages may be most effective	Eating kale helps fight inflammation

Abbreviations: WIC, Women, Infants, and Children.

^aThe examples provided are unique to this review and were not drawn from other sources.

loss-framed messages for encouraging physical activity, which is a prevention behavior. As discussed above, actions aimed at preventing cancer are often more appealing to the risk-averse who have been found to respond best to gain-framed messaging, while detecting cancer is seen by many as more appealing to the risk seeking, for whom loss-framed messaging would be most powerful.^{15,31}

This distinction between the types of messaging that work better in prevention or detection situations has also been questioned in a recent meta-analysis by O'Keefe and Jensen⁹ and in a study on breast cancer screening behavior by Consedine et al.³² Both studies indicated that for detection behaviors, the impact of gain- versus loss-framed messages was not significantly different. Research examining how gain- and loss-framed messages impact healthy eating and physical activity practices, which are generally preventive behaviors employed by the risk averse, is also inconclusive.^{33–35} In a series of three studies examining messaging to increase fruit and vegetable intake, the likelihood of using a flavonoid spread, and the propensity to use folic acid supplements, Brug et al.³⁴ did not find any differential impact of gain framing versus loss framing. Furthermore, van Assema et al.³⁵ found no significant differences in intentions to eat a low-fat diet or more fruits and vegetables when healthy eating messages were framed in terms of gain versus loss.

With these results in mind, it may be important to not just base the type of message used on what a health professional considers prevention or detection behavior but on what an individual perceives to be prevention or detection behavior. Latimer et al.⁵ argue that if people perceive a prevention behavior as risky, such as the use of sunscreen because of its chemical content, then loss-framed messaging may be more powerful. Therefore, the messaging would focus on the audience's perception and not strictly on the surrounding context. Targeting the message to the audience's dispositional characteristics has also been found to be helpful when encouraging physical activity. Latimer et al.³⁶ as well as Gallagher and Updegraff³⁷ found that when participants who defined physical activity as a health-promotion activity were shown promotion-oriented or intrinsically oriented messages about physical activity, they increased their activity level to a greater degree than when they were shown messages with a prevention or extrinsic orientation. Additional research has elucidated similar findings, i.e., both types of messaging (loss framed and gain framed) were effective with different audiences depending on whether the audiences were more detection or prevention focused.^{1,2,15} If health-message producers are able to determine the target audience's perception of whether the desired behavior is a risk-averse prevention behavior

or a risk-seeking detection behavior and base the decision to use gain- or loss-framed messaging on that information, then the messaging may be much more effective.

IMPLICATIONS

By focusing the message on the intended audience, and not the message producers, messages can be crafted to elicit greater audience responsiveness and compliance.^{38,39} Research on the effectiveness of gain- and loss-framed messages has often focused on context and content of the messages. Previous research examined a variety of possible explanations for when gain- and loss-framed messaging was successful. While these studies were impressively thorough, their contradictory results make it difficult to apply their findings to health messaging in general. To date, there has been no unifying rule, only a series of hypotheses that work in specific experimental situations but are difficult to generalize. How can message producers communicate with message audiences in a way that will both increase the audience's compliance and improve public health? Amidst a tangled web of hypotheses and experiments that span more than 35 years, the present review posits that the common, untangled thread is the level of audience involvement and interest in a health issue.

Rethinking the use of loss-framed and gain-framed messaging

Though the individual characteristics of message producers mean that they respond better and are more compliant with loss-framed messages, general audiences respond better to a different type of message, i.e., positive, gain-framed messages.^{11,15,28} The emphasis of this literature review on the importance of targeting health messages to the characteristics of audiences, not the characteristics of message producers, is advantageous for the following reasons: 1) this approach allows for clearer and more efficient communication with the audience at hand; 2) it enables the creation of personalized messages that encourage the highest degree of compliance by the target audience; and 3) it fosters an appreciation of the target audience's individuality, emphasizing the important ways in which they are different from the message producers.

A focus on audience-centered messaging could be particularly useful in the health information and advertising culture that currently exists. Commonly used negative, loss-framed messages such as "smoking kills you" not only cause a negative effect, they also are ineffective at decreasing the behavior they are seeking to curb. This is a lose-lose situation. Unless such messages are directed towards specialized audiences with detailed knowledge of

the subject, these loss-framed messages will leave audiences with a negative attitude and an unstable feeling. Using the anti-smoking example above, the audience learns what not to do, but they do not learn how to quit the behavior. They consequently have negative energy and nowhere to channel it. Positive, gain-framed messaging does the opposite. It creates an actionable message that is effective with a general audience of people who are likely to have limited knowledge of the message's topic, such as lung cancer, even though they may be highly knowledgeable in other areas of personal interest. Gain-framed messaging also leaves these audiences with a positive feeling and a motivated attitude toward the behavior at hand. For example, if a health message was framed as "If you quit smoking using this help line, you can save almost \$2,000 a year," the audience will know what to do, they will know how to do it, they will have an incentive, and they will have a positive feeling about their ability to quit.

Future research could focus on examining the effects of tailoring message type to an audience that has a specific interest, such as messages on soda consumption targeted to dietitians. Such studies could directly compare message efficacy of gain-framed messages for both that group and a control group, and loss-framed messages for that group and a control group, similar to the 2009 study of van't Riet et al.,⁴ in which participants were randomized to receive gain- or loss-framed messages that promoted smoking cessation. This type of research would ideally help elucidate the most successful and efficient means of framing health messages.

CONCLUSION

The audience-centered messaging approach discussed in this article posits that, in general, because most people are not highly involved in health behaviors, gain-framed messages are likely to be the most successful type for encouraging adherence and compliance. Since most audiences do not have the highly specific and detailed health knowledge that the message producers possess, they are less susceptible to fear-based, loss-framed messaging than the producers. In order to achieve compliance with health- and nutrition-related messages, it is crucial to focus on the important differences between message producers and message audiences and to take those differences into account when deciding when to use gain-framed versus loss-framed messages.

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