Message Framing Variations

*Oxford Research Encyclopedia of Health and Risk Message Design and Processing*

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version date: 6 April 2016

**Summary**

 Many health-related message variations have been described as variations in the “framing” of the message. What different applications of “message framing” have in common is that in each case, something gets described in different ways (with researchers having a special interest in the consequences of these different descriptions). But what that “thing” is, and how the descriptions of it differ, vary across different uses of the term “framing.” In research on health-related messages, at least three different variations have been described using “framing” as a label.

 One concerns variations in consequence-based arguments in persuasive messages. In this kind of framing, what varies is the description of the antecedent or consequent in arguments designed to persuade people to adopt some course of action. For example, the antecedent in an argument designed to encourage sunscreen use might be expressed as “if you wear sunscreen” or “if you don’t wear sunscreen,” and the consequent of such arguments might emphasize sunburns or skin cancer. A second concerns variations in the description of some news event, public policy issue, or health subject. For example, news media might describe obesity as controllable or as something over which one has limited control. A third concerns variation in the description of an attribute of a course of action. For example, a surgical procedure might be described as having a “90% success rate” or a “10% failure rate.”

**Keywords**: argument framing, gain-loss framing, issue framing, attribute framing, risky-choice framing

 In health-related messages, many different message variations have been described as variations in the “framing” of the message. Indeed, the term “framing” has come into common parlance as a label for capturing the possibility of different ways of talking about something. (It will not be news for communication scholars, but apparently some people find it revelatory to learn that how you talk about things matters—that if you “frame” your message in different ways, the message’s effects might vary.) Given such breadth of colloquial application, the phenomena thereby identified naturally form something of a grab-bag rather than a conceptually tight domain.

 Even in scholarly discourse, “framing” has been used to label a great many different phenomena, to the point that some observers have urged researchers “to abandon the general term ‘framing’ altogether, and instead, distinguish between different types of framing” (Cacciatore, Scheufele, & Iyengar, 2016). This proposal has a great deal of merit, though the word may be too well established to permit much optimism about the success of the suggestion. Still, in the service of that proposal, it is possible to point to some distinct uses of the term in health communication contexts—in the hope of eventually encouraging conceptually more satisfactory treatments.

 What different applications of the term “framing” have in common is that in each case, something gets described in different ways (with researchers and message designers having a special interest in the consequences of these different descriptions). But what that “thing” is, and how the descriptions of it differ, vary across different uses of the term “framing.” In research on health-related communication, at least three different message variations have been described using “framing” as a label. One concerns variations in the description of the antecedent or consequent in consequence-based arguments in persuasive messages. A second concerns variations in the description of some news event, public policy issue, or health topic. A third concerns alternative ways of describing an attribute of a given course of action. In what follows, each of these kinds of “framing” is analyzed in greater detail. (For an alternative way of sorting out framing variations, see Levin, Schneider, & Gaeth, 1998. For discussions focused on other application areas, see Cornelissen & Werner, 2014; Dewulf, Gray, Putnam, Lewicki, Aarts, Bouwen, & van Woerkum, 2009.)

**Argument Framing**

 One common way of persuading people to adopt a given health behavior is to make arguments invoking the consequences of an action. These are conditional, “if-then” arguments, in which the antecedent is an action and the consequent is an outcome. As examples: “If you smoke, you’ll increase your risk of heart disease,” “If you exercise regularly, your mood will improve,” “If you don’t take this medication, your blood pressure will be too high,” or “If you get a colonoscopy, your risk of colon cancer will decrease.” Arguments of this sort are a familiar way of trying to convince people to follow a given course of action.

 Researchers and message designers have naturally been interested in understanding what factors influence the effectiveness of such arguments. Hence a good deal of research has been devoted to exploring the effects of variations both in the antecedents and in the consequents of such appeals—with the term “framing” commonly used to describe such variations. What follows tries to sort out these argument varieties.

**Antecedent Variation**

 One way in which consequence-based arguments can vary is in the wording of the antecedent. Specifically, the antecedent might be either performance of the advocated action or nonperformance of that action. For example, an argument for greater use of sunscreen might begin either “if you wear sunscreen” or “if you don’t wear sunscreen.”

 This variation in the phrasing of the antecedent has commonly been referred to as a contrast between a “gain-framed” message and a “loss-framed” message. In a gain-framed appeal, the antecedent is phrased in terms of performing the advocated action; in a loss-framed appeal, the antecedent is phrased in terms of not performing that action.

 Because the messages in question are persuasive messages—ones meant to influence—this variation in argument antecedents is naturally associated with a variation in argument consequents: Performing the advocated action is said to lead to desirable outcomes; not performing the advocated action is said to lead to undesirable outcomes. Thus the antecedent “if you take your high blood pressure medication” would be combined with an outcome such as “you’ll probably get to play with your grandchildren,” whereas “if you don’t take your high blood pressure medication” would be paired with “you might not get to play with your grandchildren.”

 The terms “gain-framed” and “loss-framed” are not entirely transparent labels for this message variation. After all, the “gain” from a gain-framed appeal might be avoiding a loss (“if you exercise regularly, you’ll reduce your risk of a heart attack”) and the “loss” from a loss-framed appeal might be foregoing some possible gain (“if you don’t exercise regularly, you’ll miss out on a chance to improve your mood”). In retrospect, it might have been better to use different language (perhaps “compliance-focused” and “noncompliance-focused”) so as to draw attention to the key element in this message variation, namely, the antecedent. But the terminology of “gain-framed” and “loss-framed” is too well-established to hope for any such revision.

 The question of interest to message designers, of course, is which of these two message kinds is more persuasive. This is a complicated subject, beyond the scope of this article, but at a minimum two things seem clear: Gain-framed and loss-framed messages do not generally differ in persuasiveness, and the evidence for any potential moderating factor is at best mixed. (For some relevant review discussions, see Covey, 2014; Gallagher & Updegraff, 2012; O’Keefe, 2012; O’Keefe & Nan, 2012; O’Keefe & Wu, 2012.)

**Consequent Variation**

 A second way in which such consequence-based arguments can vary is in the nature of the consequent, the outcome that is invoked. These variations have also been labeled as message “framing” variations; messages are said to be “framed” in terms of this or that consequence. At least some of these variations can be seen to represent contrasts between more abstract categories of outcomes, so it will be helpful to catalogue such variations.

 **Short-term vs. long-term consequences.** At least for some health message topics, the outcomes invoked by a consequence-based argument might be ones that occur relatively immediately or ones that occur at some temporal distance. For example, appeals encouraging sunscreen use might emphasize protection against either sunburn (short-term outcome) or skin cancer (long-term outcome). That is, messages can be “framed” in terms of short-term or long-term consequences; this argument variation is sometimes called “temporal framing.” This particular variation has been of interest because of the individual-difference variable “consideration of future consequences” (CFC). People who are high in CFC are inclined to place more emphasis on long-term outcomes, whereas those low in CFC focus on short-term outcomes. The natural hypothesis is that the relative persuasiveness of different appeals will vary depending on whether the temporal focus of the consequences mentioned in the appeal matches that of the message recipient (e.g., Kees, 2011; Zhao, Nan, Iles, & Yang, 2015).

 **Self-oriented vs. other-oriented consequences.** At least for some health message topics, the outcomes invoked by a consequence-based argument might be ones that occur to the message recipient or ones that happen to other people. For example, appeals encouraging smoking cessation might emphasize reducing one’s own health risks (consequences for self) or reducing the health risks for one’s family such as by eliminating second-hand smoke (consequences for others). That is, messages can be “framed” in terms of self-oriented or other-oriented consequences; this argument variation is sometimes called “benefit-target framing,” because what varies is the target of the claimed benefit. This kind of variation has been of interest because the more common focus for health messages is self-oriented consequences, but appeals invoking other-oriented consequences have sometimes been found to be more persuasive (e.g., Bresnahan, Zhuang, & Sun, 2013; Gardner & Leshner, 2016).

 **Prevention-oriented vs. promotion-oriented consequences.** At least for some health message topics, the outcomes invoked by a consequence-based argument might be ones that represent either prevention-oriented consequences or promotion-oriented consequences. For example, messages aimed at encouraging exercise might emphasize either reducing cardiovascular risk (prevention) or increasing stamina (promotion). That is, messages can be “framed” in terms of prevention-oriented or promotion-oriented consequences. This kind of variation has been of interest because people vary (both chronically and situationally) in their “regulatory focus”: they can be focused on achievement, improvement, making gains, and the like (promotion) or on safety, security, avoiding losses, and so forth (prevention). A number of studies have explored the hypothesis that message recipients will be more persuaded by appeals that match their regulatory motivation than by appeals that are mismatched (e.g., Latimer et al., 2008; Zhao & Pechmann, 2007; for a review, see Ludolph & Schulz, 2015).

 **Health consequences vs. non-health consequences.** At least for some health message topics, the outcomes invoked by a consequence-based argument might be health-related consequences or non-health-related consequences. For example, appeals aimed at discouraging sun exposure might emphasize either health risks (e.g., skin cancer) or effects on physical appearance (e.g., wrinkles); appeals aimed at discouraging smoking by adolescents might emphasize either lung cancer or negative social consequences (e.g., being shunned by one’s peers). That is, messages can be “framed” in terms of health outcomes or non-health outcomes. This kind of variation has been of interest because, even though appeals invoking health-related outcomes might seem most natural for encouraging health behaviors, appeals invoking non-health outcomes can sometimes be more persuasive, at least for some message recipients (e.g., Cornelis, Cauberghe, & De Pelesmacker, 2014; Kingsbury, Gibbons, & Gerrard, 2015).

 **Other substantive consequence variations.** Any sort of substantive variation in the outcomes mentioned (in consequence-based arguments) might potentially be described as a difference in “message framing.” For example, the HPV vaccine provides protection against various disease conditions, including genital warts and cancer, but arguments invoking these outcomes might not be equally persuasive to all message recipients; message designers might want to adapt (“frame”) their messages correspondingly. Leader, Weiner, Kelly, Hornik, and Cappella (2009, p. 225), for instance, found that “women may be more receptive to the vaccine if it is framed as a cervical cancer prevention tool rather than a sexually transmitted infection (STI) prevention tool” (see also Sperber, Brewer, & Smith, 2008). As another example: Gollust, Niederdeppe, and Barry (2013) investigated which consequences of childhood obesity (e.g., consequences for health or for military readiness) would be perceived as providing the strongest arguments for new government policies; they found systematic differences between subgroups, which pointed to different ways of “framing” arguments for different recipients.

 Arguably, however, underlying all of the different consequence variations that have been studied is one key variation: the perceived desirability of the consequences invoked by the argument. The relevance of the difference between (say) short-term and long-term consequences is precisely that these might be differentially appealing—and hence differentially persuasive—to different message recipients. So the common suggestion that arguments should be “framed” in ways that match this or that attribute of the message recipient often amounts to suggesting that persuaders should emphasize consequences that the recipient finds relatively more desirable (O’Keefe, 2013).

**Sorting Out Argument Framing Variations**

 For a clear picture of argument framing variations, it is essential to keep in mind the basic distinction between antecedent variations and consequent variations. Given some particular “argument framing” study, understanding its focus will require examining the antecedents and consequents of the appeals involved.

 Consider, for example, the study reported by Sherman, Mann and Updegraff (2006), intended as a study comparing gain-framed and loss-framed messages. The “gain-framed” message was titled “Great Breath, Healthy Gums Only a Floss Away.” The “loss-framed” message was titled “Floss Now and Avoid Bad Breath and Gum Disease.” As perhaps is apparent, these are in fact both gain-framed appeals (ones focused on the desirable consequences of compliance with the advocated action of flossing). The appeals differ not in their antecedent, but in their consequents: the first emphasizes promotion-focused outcomes, the second prevention-focused outcomes. That is, this experiment did not contrast a gain-framed and loss-framed message, but rather two gain-framed messages that differed in the substantive consequences invoked.

 As another example, consider the gain-framed and loss-framed messages used in Jeong et al.’s (2011) study of charitable contributions. One gain-framed appeal was “The library at Jefferson University is in need of funding. With funds, it will be able to stay open longer hours for student use and expand the book collection.” An example of a loss-framed appeal was “The cafeteria at Lincoln University is in need of funding. Without funds, it will have to cut down on menu items and increase food prices.” These are indeed gain- and loss-framed appeals, but that antecedent variation was unfortunately confounded with a variation in the kind of consequences mentioned: the gain-framed appeal invoked promotion-oriented outcomes, the loss-framed appeals invoked prevention-oriented outcomes. Any observed differences in persuasiveness thus could not be unambiguously to the antecedent variation.

**Event and Issue Framing**

 A second, very different kind of phenomenon called “framing” is variation in how news events, public policy issues, and related subjects are described in news or entertainment media; for present purposes this might be called “event/issue framing.” The paradigmatic study concerning this kind of framing examines variations in news coverage of some public policy question (not necessarily a health-related issue). A classic illustration is provided by a study in which participants saw one of two versions of a news story about a Klu Klux Klan rally. One version emphasized the free speech issue involved; the other emphasized the disruption of public order—with corresponding differences in the degree of tolerance that recipients expressed for the Klan (Nelson, Clawson, & Oxley, 1997).

 In work on event/issue framing, researchers have primarily been interested in two kinds of undertakings. One is identifying the frames used in one or another subject-matter domain. The other is studying the effects of different frames; broadly, the question is whether (or when, or how) exposure to different frames might instill, activate, or reinforce corresponding beliefs and attitudes (cognitive structures, schemas, mental “frames”).

 Most of this work addresses non-health-related issues and policies (for some reviews, see Chong & Druckman, 2007; Tewksbury & Scheufele, 2009). Moreover, because the content of event/issue frames is (naturally) necessarily tied to the particular subject matter under discussion, the substantive findings in one area of research do not usually have straightforward implications for other domains. As an example: News coverage of political campaigns commonly employs a “horserace” or “campaign strategy” frame, rather than a policy- or issue-oriented frame, giving rise to concerns about how such coverage might encourage political cynicism (see, e.g., Cappella & Jamieson, 1997). Although the contrast between these two ways of describing political campaigns is plainly useful, it is not obviously applicable to health questions.

 However, parallel useful work does exist on health-related subjects. For example, Morgan, Harrison, Chewning, Davis, and Dicorcia (2007) studied how organ donation was framed in entertainment television programming, finding that donation was commonly described in unfavorable ways. Similarly, Riles, Sangalang, Hurley, and Tewksbury (2015) identified common frames in online cancer news and then designed an experiment examining the effects of variations in cancer news framing. (For other examples, see Frederick, Saguy, Sandhu, & Mann, 2016; Guenther, Froehlich, Milde, Heidecke, & Ruhrmann, 2014; VanderKnyff, Friedman, & Tanner, 2015.) But, as on other subjects, the frames under discussion are specific to the substantive domain being examined; little attention is usually given to identifying any broader or more abstract categories of event/issue frames.

 One effort after a more abstract treatment of (some kinds of) news framings is represented by a contrast between “episodic” and “thematic” news frames (Iyengar, 1991). This contrast refers to two basic ways in which news reports can be structured. An “episodic” frame discusses issues using concrete examples and particular events. A “thematic” frame presents issues in a broader context with abstract and general supporting information. A good deal of research has taken up the question of how these frames might have different effects on beliefs and attitudes concerning non-health issues (see, e.g., Aaroe, 2011; Hart, 2011), but some work has used this contrast to illuminate health topics as well. Health-related work on this framing variation has been especially motivated by the possibility that episodic or thematic framing of health issues might influence attributions of responsibility for health (particularly, the balance between individual responsibility and social factors). For example, Shen, Lee, Sipes, and Hu (2012) investigated how these two frames might differentially affect attributions about the causes of obesity; Holton, Lee, and Coleman (2014) examined how these two frames might encourage different sorts of comments from readers of online health news stories.

**Attribute Framing**

 A third kind of framing, “attribute framing,” is represented by variations in the description of an attribute of a decision option (behavior, product, etc.); the contrast is between alternative ways of describing a given feature (attribute). The classic illustration of attribute framing is a consumer advertisement that described ground beef as being either “75% lean” or “25% fat” (Levin, 1987). Narrowly construed, such attribute framing variations have not received much research attention in health communication contexts (for an exception, see Chou & Murnighan, 2013), although a good deal of research has been devoted to such questions concerning non-health issues (for some discussion, see Freling, Vincent, & Henard, 2014).

**Outcome Likelihood Framing**

 However, the framing of one particular sort of attribute *has* been of interest to health communication researchers, namely, the likelihood of an outcome of a given course of action. The relevant experimental contrast takes the form of different ways of describing this attribute, that is, different ways of expressing the probability of some outcome from a behavior.

 In the simplest sort of experiment, a given behavior is described as leading to a given outcome with some likelihood—but the way in which that likelihood is expressed varies. One classic example involved describing a new medical treatment as having either a “50% success rate” or a “50% failure rate” (with the former leading to more favorable evaluations than the latter; Levin, Schnittjer, & Thee, 1988, Experiment 2). As other examples of this kind of message variation: In Bigman, Cappella, and Hornik’s (2010) experiment, participants heard the human papillomavirus (HPV) vaccine described either as “70% effective” or “30% ineffective.” Rose, Geer, France, and France (2014) presented participants with information about the likelihood of vasovagal symptoms (e.g., dizziness, fainting) from donating blood, but varied the presentation by saying either ”90% of donors do not experience vasovagal symptoms” or “10% of donors do experience vasovagal symptoms.”

 In these studies, the message discusses explicitly only one course of action (receiving the treatment, getting the vaccine, donating blood), with the same underlying outcome presented in each experimental condition, and with mathematically identical outcome likelihood in each condition—but with that likelihood presented (“framed”) in different ways in different experimental conditions. The central research question is how participants’ evaluations of the action (e.g., attitudes, intentions) are affected by framing.

 In a variant of this sort of experiment, participants are presented with two overt behavioral options (two courses of action rather than one) and asked to choose between them. In the different experimental conditions, the same two decision options are described, the same substantive outcome is discussed, and the likelihood of the outcome (for a given option) is mathematically identical across conditions—but the way in which that likelihood is expressed varies between conditions. For example, in one study, participants were asked to chose between alternative disease treatments, where the outcomes were presented in terms either of the probability of living or of the probability of dying (McNeil, Pauker, Sox, & Tversky, 1982). The hypothesis explored in such designs is whether the relative preference between the two alternatives will vary between experimental conditions, that is, vary depending on the language used to describe the outcomes.

**Risky Choice Framing**

 Another version of this sort of experimental design is represented by Tversky and Kahneman’s (1981) classic research circumstance, in which participants were asked to imagine that the U.S. is preparing for the outbreak of a disease that is expected to kill 600 people if nothing is done, with two alternative courses of action proposed. In one experimental condition, participants are offered a choice between options A and B: If option A is chosen, 200 people will be saved; if option B is selected, there is a one-third chance that 600 will be saved and a two-thirds chance that no one will be saved. (Notice: same long-run expected outcome, but B is the option with less certainty, that is, greater risk.) In the other experimental condition, the choice is between options C and D: If option C is chosen, 400 people will die, and if option D is chosen, there is a one-third probability that nobody will die and a two-thirds probability that 600 people will die. (Again, same long-run expected outcome, but D is the option with greater risk.)

 Participants in the first condition strongly preferred the less-risky option A, but participants in the second condition—facing the mathematically-identical choice between option C and option D—strongly preferred the more-risky option D. That is, participants were more willing to endorse a less-certain option (colloquially: were more willing to roll the dice) when the options were presented (framed) in a way that emphasized avoiding deaths than in a way that emphasized saving lives.

 The phenomenon investigated in such designs is commonly called “risky choice framing.” In this research, the central question is whether the degree to which participants are willing to endorse a riskier (less-certain) course of action is influenced by how the outcomes are expressed—in terms of lives saved or in terms of deaths. (For discussion and reviews, see Best & Charness, 2015; Druckman & McDermott, 2008; Kühberger, 1998.)

 On the surface, risky-choice framing might not look like attribute framing (and indeed is commonly treated as something different; see, e.g., Akl et al., 2011; Peng, Jiang, Miao, Li, & Xiao, 2013). In conventional attribute framing designs, a given attribute is expressed in two equivalent ways but with different language (“70% effective” versus “30% ineffective”), and a participant sees only one of these descriptions. By contrast, in risky-choice framing designs a participant is offered two non-equivalent alternatives; option A and option B, for example, have the same long-run outcome likelihood but they differ in the certainty of obtaining that outcome in the immediate circumstance. So at least superficially, risky-choice framing seems quite different from attribute framing.

 However, a closer look shows risky-choice framing to be a variety of attribute framing.

The outcome of interest in risky-choice research is not participants’ preference for (e.g.) option A over option B, and hence the relevant comparison is not between the two options offered a participant in one experimental condition (options which are indeed not equivalent). The outcome of interest is the *comparison* between preferences in the two experimental conditions: the preference for option A (over option B) and the preference for option C (over option D). For that comparison, the two sets of participants (in the two experimental conditions) face exactly identical options: The long-run expected outcomes for all four options are identical, and the choice each participant faces (between a certain and uncertain option) is identical. What varies between conditions is whether the outcomes are expressed in terms of deaths or lives saved. So risky-choice framing is a variety of attribute framing; the attribute in question is the outcome, which is described (framed) in different ways in different conditions (framed in terms of lives saved or deaths).

**Risk Communication**

 Risk communication is conventionally described as communication intended to convey information about some potential hazard. One central question in risk communication research has been the relative effectiveness of different means of presenting information about the likelihood or probability of some event. So, for example, researchers have compared percentages versus frequencies, absolute versus relative risk reduction, verbal versus numerical information, and so on (for some reviews, see Visschers, Meertens, Passchier, & de Vries, 2009; Waldron, van der Weijden, Ludt, Gallacher, & Elwyn, 2011; Zipkin et al., 2014).

 Research of this kind is usually not described as research concerning “framing.” When “framing” is used as a label for research in this area, the context is usually one in which some variation in presentation format (e.g., percentages versus frequencies) is crossed with some evaluative variation (e.g., lives saved versus lives lost, or success versus failure)—with the latter, but not the former, called a “framing” variation.

 However, a broader perspective would recognize any variation in risk information presentation format as a ‘framing” variation, in the sense that a given property (risk, that is, likelihood) is being described (presented) in different ways. And indeed some discussions do use the language of “framing” to encompass studies comparing different formats for presenting risk information (Büchter, Fechtelpeter, Knelangen, Ehrlich, & Waltering, 2014; Chandran & Menon, 2004).

 For present purposes, the point to notice is that even research not usually described as concerned with message framing should nevertheless be seen as conceptually connected to work commonly called “framing” research. Whenever the message variation under discussion amounts to different ways of describing something, that variation should be recognized as related to other studies concerned with such phenomena.

**Further Reading**

Chong, D., & Druckman, J. N. (2007). Framing theory. *Annual Review of Political Science, 10*, 103-126. doi:10.1146/annurev.polisci.10.072805.103054

Gallagher, K. M., & Updegraff, J. A. (2012). Health message framing effects on attitudes, intentions, and behavior: A meta-analytic review. *Annals of Behavioral Medicine, 43*, 101-116. doi:10.1007/s12160-011-9308-7 [erratum notice: *Annals of Behavioral Medicine, 46*, 127. doi:10.1007/s12160-012-9446-6]

Iyengar, S. (1991). *Is anyone responsible? How television frames political issues*. Chicago, IL: University of Chicago Press.

Kühberger, A. (1998). The influence of framing on risky decisions: A meta-analysis. *Organizational Behavior and Human Decision Processes, 75*, 23-55. doi:10.1006/obhd.1998.2781

Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes, 76*, 149-188. doi:10.1006/obhd.1998.2804

McNeil, B. J., Pauker, S. G., Sox, H. C., Jr., & Tversky, A. (1982). On the elicitation of preferences for alternative therapies. *New England Journal of Medicine, 306*, 1259-1262. doi:10.1056/NEJM198205273062103

Meyerowitz, B. E., & Chaiken, S. (1987). The effect of message framing on breast self-examination attitudes, intentions, and behavior. *Journal of Personality and Social Psychology, 52*, 500‑510. doi:10.1037/0022-3514.52.3.500

O’Keefe, D. J., & Jensen, J. D. (2006). The advantages of compliance or the disadvantages of noncompliance? A meta-analytic review of the relative persuasive effectiveness of gain-framed and loss-framed messages. *Communication Yearbook, 30*, 1-43. doi:10.1207/s15567419cy3001\_1

Tewksbury, D., & Scheufele, D. A. (2009). News framing theory and research. In J. Bryant & M. B. Oliver (Eds.), *Media effects: Advances in theory and research* (3rd ed., pp. 17-33). New York: Routledge.

**References**

Aaroe, L. (2011). Investigating frame strength: The case of episodic and thematic frames. *Political Communication, 28*, 207-226. doi:10.1080/10584609.2011.568041

Akl, E. A., Oxman, A. D., Herrin, J., Vist, G. E., Terrenato, I., Sperati, F., Costiniuk, C., Blank, D., & Schünemann, H. (2011). Framing of health information messages. *Cochrane Database of Systematic Reviews*, 2011 Issue 12, CD006777. doi:10.1002/14651858.CD006777.pub2

Best, R., & Charness, N. (2015). Age differences in the effect of framing on risky choice: A meta-analysis. *Psychology and Aging, 30*, 688-698. doi:10.1037/a0039447

Bigman, C. A., Cappella, J. N., & Hornik, R. C. (2010). Effective or ineffective: Attribute framing and the human papillomavirus (HPV) vaccine. *Patient Education and Counseling, 81*, S70-S76. doi:10.1016/j.pec.2010.08.014

Bresnahan, M. J., Zhuang, J., & Sun, S. (2013). Influence of smoking norms and gain/loss antismoking messages on young Chinese adults. *Nicotine and Tobacco Research, 15,* 1564-1571. doi:10.1093/ntr/ntt015

Büchter, R. B., Fechtelpeter, D., Knelangen, M., Ehrlich, M., & Waltering, A. (2014). Words or numbers? Communicating risk of adverse effects in written consumer health information: A systematic review and meta-analysis. *BMC Medical Informatics and Decision Making, 14*, article no. 76. doi:10.1186/1472-6947-14-76

Cacciatore, M. A., Scheufele, D. A., & Iyengar, S. (2016). The end of framing as we know it … and the future of media effects. *Mass Communication and Society, 19*, 7-23. doi:10.1080/15205436.2015.1068811

Cappella, J. N., & Jamieson, K. H. (1997). *Spiral of cynicism: The press and the public good*. New York: Oxford University Press.

Chandran, S., & Menon, G. (2004). When a day means more than a year: Effects of temporal framing on judgments of health risk. *Journal of Consumer Research*, *31*, 375–389. doi:10.1086/422116

Chong, D., & Druckman, J. N. (2007). Framing theory. *Annual Review of Political Science, 10*, 103-126. doi:10.1146/annurev.polisci.10.072805.103054

Chou, E. Y., & Murnighan, J. K. (2013). Life or death decisions: Framing the call for help. *PLoS One, 8*, article no. e57351. doi:10.1371/journal.pone.0057351

Cornelis, E., Cauberghe, V., & De Pelesmacker, P. (2014). Being healthy or looking good? The effectiveness of health versus appearance focused arguments in two-sided messages. *Journal of Health Psychology, 19*, 1132-1142. doi:10.1177/1359105313485310

Cornelissen, J. P., & Werner, M. D. (2014). Putting framing in perspective: A review of framing and frame analysis across the management and organizational literature. *Academy of Management Annals, 8,* 181-235. doi:10.1080/19416520.2014.875669

Covey, J. (2014). The role of dispositional factors in moderating message framing effects. *Health Psychology, 33*, 52-65. doi:10.1037/a0029305

Dewulf, A., Gray, B., Putnam, L., Lewicki, R., Aarts, N., Bouwen, R., van Woerkum, C. (2009). Disentangling approaches to framing in conflict and negotiation research: A meta-paradigmatic perspective. *Human Relations, 62*, 155-193. doi:10.1177/0018726708100356

Druckman, J. N., & McDermott, R. (2008). Emotion and the framing of risky choice. *Political Behavior, 30*, 297-322. doi:10.1007/s11109-008-9056-y

Frederick, D. A., Saguy, A. C., Sandhu, G., & Mann, T. (2016). Effects of competing news media frames of weight on antifat stigma, beliefs about weight, and support for obesity-related public policies. *International Journal of Obesity, 40*, 543-549. doi:10.1038/ijo.2015.195

Freling, T. H., Vincent, L. H., & Henard, D. H. (2014). When *not* to accentuate the positive: Re-examining valence effects in attribute framing. *Organizational Behavior and Human Decision Processes, 124*, 95-109. doi:10.1016/j.obhdp.2013.12.007

Gallagher, K. M., & Updegraff, J. A. (2012). Health message framing effects on attitudes, intentions, and behavior: A meta-analytic review. *Annals of Behavioral Medicine, 43*, 101-116. doi:10.1007/s12160-011-9308-7 [erratum notice: *Annals of Behavioral Medicine, 46*, 127. doi:10.1007/s12160-012-9446-6]

Gardner, L., & Leshner, G. (2016). The role of narrative and other-referencing in attenuating psychological reactance to diabetes self-care messages. *Health Communication, 31*, 738-751*.* doi:10.1080/10410236.2014.993498

Gollust, S. E., Niederdeppe, J., & Barry, C. L. (2013). Framing the consequences of childhood obesity to increase public support for obesity prevention policy. *American Journal of Public Health, 103,* e96-e102. doi:10.2105/AJPH.2013.301271

Guenther, L., Froehlich, K., Milde, J., Heidecke, G., & Ruhrmann, G. (2014). Effects of valenced media frames of cancer diagnoses and therapies: Quantifying the transformation and establishing of evaluative schemas. *Health Communication, 30*, 1055-1064. doi:10.1080/10410236.2014.917839

Hart, P. S. (2011). One or many? The influence of episodic and thematic climate change frames on policy preferences and individual behavior change. *Science Communication, 33*, 28-51. doi:10.1177/1075547010366400

Holton, A., Lee, N., & Coleman, R. (2014). Commenting on health: A framing analysis of user comments in response to health articles online. *Journal of Health Communication, 19*, 825-837. doi:10.1080/10810730.2013.837554

Iyengar, S. (1991). *Is anyone responsible? How television frames political issues*. Chicago, IL: University of Chicago Press.

Jeong, E. S., Shi, Y., Baazova, A., Chiu, C., Nahai, A., Moons, W. G., & Taylor, S. E. (2011). The relation of approach/avoidance motivation and message framing to the effectiveness of charitable appeals. *Social Influence, 6*, 15-21. doi:10.1080/15298868.2010.524369

Kees, J. (2011). Advertising framing effects and consideration of future consequences. *Journal of Consumer Affairs, 45*, 7-32. doi:10.1111/j.1745-6606.2010.01190.x

Kingsbury, J. H., Gibbons, F. X., & Gerrard, M. (2015). The effects of social and health consequence framing on heavy drinking intentions among college students. *British Journal of Health Psychology, 20*, 212-220. doi:10.1111/bjhp.12100

Kühberger, A. (1998). The influence of framing on risky decisions: A meta-analysis. *Organizational Behavior and Human Decision Processes, 75*, 23-55. doi:10.1006/obhd.1998.2781

Latimer, A. E., Williams-Piehota, P., Katulak, N. A., Cox, A., Mowad, L., Higgins, E. T., & Salovey, P. (2008). Promoting fruit and vegetable intake through messages tailored to individual differences in regulatory focus. *Annals of Behavioral Medicine, 35*, 363-369. doi:10.1007/s12160-008-9039-6

Leader, A. E., Weiner, J. L., Kelly, B. J., Hornik, R. C., & Cappella, J. N. (2009). Effects of information framing on human papillomavirus vaccination. *Journal of Women's Health, 18*, 225-233. doi:10.1089/jwh.2007.0711

Levin, I. P. (1987). Associative effects of information framing. *Bulletin of the Psychonomic Society, 25*, 85-86. doi:10.3758/BF03330291

Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes, 76*, 149-188. doi:10.1006/obhd.1998.2804

Levin, I. P., Schnittjer, S. K., & Thee, S. L. (1988). Information framing effects in social and personal decisions. *Journal of Experimental Social Psychology, 24*, 520-529. doi:10.1016/0022-1031(88)90050-9

Ludolph, R., & Schulz, P. J. (2015). Does regulatory fit lead to more effective health communication? A systematic review. *Social Science and Medicine, 128*, 142-150. doi:10.1016/j.socscimed.2015.01.021

McNeil, B. J., Pauker, S. G., Sox, H. C., Jr., & Tversky, A. (1982). On the elicitation of preferences for alternative therapies. *New England Journal of Medicine, 306*, 1259-1262. doi:10.1056/NEJM198205273062103

Morgan, S. E., Harrison, T. R., Chewning, L., Davis, L., & Dicorcia, M. (2007). Entertainment (mis)education: The framing of organ donation in entertainment television. *Health Communication, 22*, 143-151. doi:10.1080/10410230701454114

Nelson, T. E., Clawson, R. A., & Oxley, Z. M. (1997). Media framing of a civil liberties conflict and its effect on tolerance. *American Political Science Review, 91*, 567-583. doi:10.2307/2952075

O’Keefe, D. J. (2012). From psychological theory to message design: Lessons from the story of gain-framed and loss-framed persuasive appeals. In H. Cho (Ed.), *Health communication message design: Theory, research, and practic*e (pp. 3-20). Los Angeles, CA: Sage.

O’Keefe, D. J. (2013). The relative persuasiveness of different forms of arguments-from-consequences: A review and integration. In E. L. Cohen (Ed.), *Communication Yearbook 36* (pp. 109-135). New York: Routledge.

O’Keefe, D. J., & Nan, X. (2012). The relative persuasiveness of gain- and loss-framed messages for promoting vaccination: A meta-analytic review. *Health Communication, 27*, 776-783. doi:10.1080/10410236.2011.640974

O’Keefe, D. J., & Wu, D. (2012). Gain-framed appeals do not motivate sun protection: A meta-analytic review of randomized trials comparing gain-framed and loss-framed appeals for promoting skin cancer prevention. *International Journal of Environmental Research and Public Health, 9*, 2121-2133. doi:10.3390/ijerph9062121

Peng, J. X., Jiang, Y., Miao, D. M., Li, R., & Xiao, W. (2013). Framing effects in medical situations: Distinctions of attribute, goal and risky choice frames. *Journal of International Medical Research, 41*, 771-776. doi:10.1177/0300060513476593

Riles, J. M., Sangalang, A., Hurley, R. J., & Tewksbury, D. (2015). Framing cancer for online news: Implications for popular perceptions of cancer. *Journal of Communication, 65*, 1018-1040. doi:10.1111/jcom.12183

Rose, J. P., Geers, A. L., France, J. L., & France, C. R. (2014). Norm perception and communication for vasovagal symptoms in blood donation. *Transfusion, 54*, 2258-2266. doi:10.1111/trf.12625

Shen, F., Lee, S. Y., Sipes, C., & Hu, F. (2012). Effects of media framing of obesity among adolescents. *Communication Research Reports, 29*, 26-33. doi:10.1080/08824096.2011.639910

Sherman, D. K., Mann, T., & Updegraff, J. A. (2006). Approach/avoidance orientation, message framing, and health behavior: Understanding the congruency effect. *Motivation and Emotion, 30*, 165-169. doi:10.1007/s11031-006-9001-5

Sperber, N. R., Brewer, N. T., & Smith, J. S. (2008). Influence of parent characteristics and disease outcome framing on HPV vaccine acceptability among rural, Southern women. *Cancer Causes and Control, 19*, 115-118. doi:10.1007/s10552-007-9074-9

Tewksbury, D., & Scheufele, D. A. (2009). News framing theory and research. In J. Bryant & M. B. Oliver (Eds.), *Media effects: Advances in theory and research* (3rd ed., pp. 17-33). New York: Routledge.

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science, 211*, 453‑458. doi:10.1126/science.7455683

VanderKnyff, J., Friedman, D. B., & Tanner, A. (2015). Framing life and death on YouTube: The strategic communication of organ donation messages by organ procurement organizations. *Journal of Health Communication, 20*, 211-219. doi:10.1080/10810730.2014.921741

Visschers, V. H. M., Meertens, R. M., Passchier, W. W. F., & de Vries, N. N. K. (2009). Probability information in risk communication: A review of the research literature. *Risk Analysis, 29*, 267-287. doi:10.1111/j.1539-6924.2008.01137.x

Waldron, C.-A., van der Weijden, T., Ludt, S., Gallacher, J., & Elwyn, G. (2011). What are effective strategies to communicate cardiovascular risk information to patients? A systematic review. *Patient Education and Counseling*, *82*, 169–181. doi:10.1016/j.pec.2010.04.014

Zhao, G., & Pechmann, C. (2007). The impact of regulatory focus on adolescents’ response to antismoking advertising campaigns. *Journal of Marketing Research, 44*, 671-687.

Zhao, X., Nan, X., Iles, I. A., & Yang, B. (2015). Temporal framing and consideration of future consequences: Effects on smokers’ and at-risk nonsmokers’ responses to cigarette health warnings. *Health Communication, 30*, 175-185. doi:10.1080/10410236.2014.974122

Zipkin, D. A., Umscheid, C. A., Keating, N. L., Allen, E., Aung, K., Beyth, R., Kaatz, S., Mann, D. M., Sussman, J. B., Korenstein, D., Schardt, C., Nagi, A., Sloane, R., & Feldstein, D. A. (2014). Evidence-based risk communication: A systematic review. *Annals of Internal Medicine, 161*, 270-280. doi:10.7326/M14-0295