

# Do Loss-Framed Persuasive Messages Engender Greater Message Processing Than Do Gain-Framed Messages? A Meta-Analytic Review

Daniel J. O’Keefe & Jakob D. Jensen

*Greater fear arousal is associated with greater engagement with persuasive messages, and negative information and events are more potent than their positive counterparts. Hence loss-framed persuasive appeals, which emphasize the undesirable outcomes of non-compliance with the communicator’s recommendations, should elicit greater message processing than do gain-framed appeals, which emphasize the desirable outcomes of compliance. But a meta-analytic review (based on 42 effect sizes,  $N = 6,378$ ) finds that gain-framed messages engender slightly but significantly greater message engagement than do loss-framed messages. This effect is apparently not a result of whether the appeals refer to obtaining or averting negative (e.g., “skin cancer”) rather than positive (e.g., “attractive skin”) outcomes.*

*Keywords: Gain-Framed; Loss-Framed; Message Engagement; Message Framing; Persuasive Appeals*

The amount of processing that message recipients give to persuasive messages has been identified as an important determinant of the nature of persuasive processes and effects. Dual-process models of persuasion, such as the elaboration likelihood model (Petty & Cacioppo, 1986; Petty & Wegener, 1999) and the heuristic-systematic

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model (Chaiken, 1987; Todorov, Chaiken, & Henderson, 2002), emphasize that as the amount of message processing varies so can the role that various elements play in influencing persuasive outcomes. For instance, where the communicator’s credibility serves as a peripheral cue, increases in message processing commonly are associated with a decreased impact of credibility variations on persuasive effects (and an increased impact of argument-quality variations; see, e.g., Petty, Cacioppo, & Goldman, 1981).

A variety of factors have been identified as influencing the amount of processing message recipients give to persuasive messages. Many of these factors concern either some characteristic of the receiver (e.g., need for cognition; for a review, see Cacioppo, Petty, Feinstein, & Jarvis, 1996) or the relationship between the receiver and the topic of advocacy (involvement or personal relevance; e.g., Johnson & Eagly, 1989, 1990; Petty & Cacioppo, 1990). Obviously, however, it may also be valuable to explore how intrinsic features of messages might engender greater message scrutiny.

Among the various message features that might influence the degree of message processing, one natural candidate is whether the message’s appeals are gain-framed or loss-framed. A “gain-framed” appeal emphasizes the desirable consequences associated with compliance with the advocated viewpoint; a “loss-framed” appeal emphasizes the undesirable consequences associated with noncompliance. Considerable research has addressed the question of the relative persuasiveness of gain-framed and loss-framed persuasive appeals (for some reviews, see O’Keefe & Jensen, 2006; Salovey, Schneider, & Apanovitch, 2002), but it is an open question whether gain- and loss-framed appeals systematically differ in the amount of message processing that they engender.

There are two reasons to suppose that loss-framed appeals will generally produce greater engagement with a message than will gain-framed appeals. The first is the observed effects of fear-arousing appeals on message processing. Abstractly, a fear appeal message has two components: One presents material designed to induce fear or anxiety (about a possible threatening event); the other presents a recommended action aimed at avoiding the fearful consequences. Although fear appeals need not be phrased using gain- and loss-framed language, implicitly (if not explicitly) the fear-arousal component emphasizes the disadvantages of noncompliance (“if you don’t floss regularly, you can suffer horrible gum disease”) and the recommended-action component emphasizes the advantages of compliance (“if you floss regularly, you can avoid gum disease”).

Fear-inducing messages (compared to messages not inducing fear) often evoke greater message processing, as reflected in larger numbers of issue-relevant thoughts, increased differentiation of strong and weak arguments, and so forth (e.g., Baron, Logan, Lilly, Inman, & Brennan, 1994; Meijnders, Midden, & Wilke, 2001; Slater, Karan, Rouner, & Walters, 2002). There are limits to this effect, as when chronic issue-relevant fear reduces message processing (Jepson & Chaiken, 1990). But the common finding that greater fear arousal is associated with greater message processing gives reason to suspect that loss-framed appeals—conceptually akin to the fear-induction component of a fear appeal—might correspondingly evoke greater message engagement than will gain-framed appeals.

The second reason to suspect that loss-framed appeals will be more engaging is the phenomenon of negativity bias, that is, heightened impact of and sensitivity to negative information (for a review, see Cacioppo, Gardner, & Berntson, 1997). This “robust psychological phenomenon” (Cacioppo & Gardner, 1999, p. 206) has a variety of manifestations. For example, gains and losses are psychologically asymmetrical such that persons are generally more sensitive to losses than to otherwise-equivalent gains; specifically, people are more likely to prefer a risky (versus less-risky) decision option if the option is presented in a way that emphasizes avoiding possible losses rather than obtaining possible gains (the classic study is Tversky & Kahneman, 1981; for a review, see Kuhberger, Schulte-Mecklenbeck, & Perner, 1999). Negative information has a disproportionate impact on evaluations or decisions compared to otherwise-equivalent positive information (e.g., Hamilton & Zanna, 1972; Lutz, 1975; for reviews, see Kanouse, 1984; Rozin & Royzman, 2001; Skowronski & Carlston, 1989). Negative stimuli are preferentially detected—that is, detected at lower levels of input or exposure than are positive stimuli (e.g., Dijksterhuis & Aarts, 2003). Finally, negative events generally evoke stronger and more rapid reactions (of various sorts) than do positive events (for a review, see Taylor, 1991); for instance, negative events evoke more cognitive work than do positive events (Peeters & Czapinski, 1990). Taken together, these various indications of negativity bias suggest that loss-framed appeals, which emphasize the negative consequences of noncompliance, should be more engaging than gain-framed appeals.

In short, research on fear appeals and on negativity bias underwrites the hypothesis that loss-framed messages will generally produce greater message engagement than will gain-framed messages. As it happens, a large number of studies have offered empirical evidence on this question, collecting data on message-processing indices such as memory for message content, number of message-related thoughts, responsiveness to argument-quality variations, and the like. These studies have never previously been systematically collected or analyzed. In what follows, we report a meta-analytic review of this research.

The primary research question is whether gain- and loss-framed messages differ in the degree to which they engage receivers’ attention and thought. However, any such differences might be influenced by the phrasing of the message appeals. As noted by several commentators (e.g., Dillard & Marshall, 2003; Wilson, Purdon, & Wallston, 1988), gain- and loss-framed appeals can each take two forms, with the resulting four possibilities represented in a  $2 \times 2$  array in which the contrasts are (1) whether the outcome described is a desirable or an undesirable one and (2) whether the outcome is described as one that is attained (achieved, made more likely) or avoided (averted, made less likely). Thus a gain-framed appeal might take the form “If you perform the advocated action, desirable outcome X will be obtained” or the form “If you perform the advocated action, undesirable outcome Y will be avoided.” A loss-framed appeal might take the form “If you do not perform the advocated action, desirable outcome X will be avoided” or the form “If you do not perform the advocated action, undesirable outcome Y will be obtained.”

That is, messages can vary in their linguistic representation of the kernel state of the consequence under discussion. The kernel state is the basic, root state mentioned in the message’s description of the consequence. For example, in an appeal such as “If you have a skin examination, you will reduce the risk of developing skin cancer,” the kernel state is “skin cancer,” an undesirable state; hence this appeal emphasizes the desirable consequences of compliance by discussing an undesirable kernel state (“skin cancer”) that will be avoided. By comparison, “If you have a skin examination, you will increase your chances of having healthy skin” is an appeal describing a desirable kernel state (“healthy skin”) that will be attained by compliance.

Differences in the relative engagingness of gain- and loss-framed appeals might depend on kernel-state phrasing. In particular, differences in engagingness between gain- and loss-framed appeals might be accentuated when the gain-framed appeal has desirable kernel states, when the loss-framed appeal has undesirable kernel states, or when both circumstances obtain; conversely, differences might be minimized when the gain-framed appeal has undesirable kernel states, when the loss-framed appeal has desirable kernel states, or when both conditions obtain.

In addition to considering the phrasing of the kernel states as a potential moderator, we also examined variation in the topic of advocacy—specifically, the contrast between messages advocating disease-detection behaviors and those advocating disease-prevention behaviors. There has been substantial discussion of the role that this variable might play in influencing the persuasive effects of gain- and loss-framed appeals (e.g., Rothman & Salovey, 1997; Salovey et al., 2002), but little attention has been given to whether this variable might moderate message-engagement effects. Although there does not appear to be any good a priori reason to suppose that the engagingness (as opposed to persuasiveness) of gain- and loss-framed messages will vary depending on the advocacy topic, the frequency with which this moderating variable is invoked in discussions of gain-loss framing persuasion effects recommended its examination here.

Finally, we considered variation in the empirical indicators of message engagement (i.e., the particular means of assessing engagement). The extent of message processing can be reflected in a variety of measures, including memory for message materials and the number of message-related thoughts, but effects might vary across these indicators.

## **Method**

### *Identification of Relevant Investigations*

#### *Literature search*

Relevant research reports were located through personal knowledge of the literature, examination of previous reviews and textbooks, and inspection of reference lists in previously located reports. Additionally, reports were identified through computerized database searches through at least August 2006 of ABI-INFORM, CINAHL (Cumulative Index of Nursing and Allied Health Literature), Current Contents,

Dissertation Abstracts, EBSCO, ERIC (Educational Resources Information Center), Linguistics and Language Behavior Abstracts, MEDLINE, and PsycINFO, using various appropriate combinations of terms such as *framing*, *framed*, *frame*, *appeal*, *message*, *persuasion*, *persuasive*, *gain*, *positive*, *positively*, *benefit*, *loss*, *negative*, *negatively*, *threat*, and *valence*.

#### *Inclusion criteria*

Studies selected for inclusion had to meet two criteria. First, the study had to compare persuasive messages that varied with respect to gain-loss message framing. A gain-framed message is one that emphasizes the desirable consequences of compliance (including the attainment of desirable states and the avoidance of undesirable states); a loss-framed message is one that emphasizes the undesirable consequences of noncompliance (including the attainment of undesirable states and the avoidance of desirable states). Excluded by this criterion were studies that confounded a gain-loss framing manipulation with other manipulations (e.g., Gonzales, Aronson, & Costanzo, 1988), studies that compared a gain-framed appeal with a combined gain-and-loss appeal (e.g., Wilson, Wallston, & King, 1990), and studies with similarly imperfect realizations of the gain-loss framing contrast (e.g., Gierl, Helm, & Satzinger, 2000).

Second, appropriate quantitative data relevant to message-engagement effects had to be available; when not provided in the report, we sought information from authors. Excluded by this criterion were studies of other outcomes such as persuasive effects (e.g., attitude change) or credibility perceptions (e.g., trustworthiness) and studies for which appropriate quantitative information could not be obtained (e.g., Buzaglo, 1997; Meyerowitz & Chaiken, 1987; Miller et al., 1999; Smith & Petty, 1996, Experiment 2).

#### *Outcome Variable and Effect-Size Measure*

##### *Outcome variable*

The outcome of interest was message engagement. In the relevant primary research, message engagement was assessed in various ways, including measures of the number of issue-relevant thoughts and memory for (e.g., recall of) message content.

##### *Effect-size measure*

Every comparison between a gain-framed message and its loss-framed counterpart was summarized using  $r$  as the effect-size measure. When not reported as correlations, results were converted to  $r$  using formulas provided by Johnson (1993) and Rosenthal (1991). Differences indicating greater engagement with gain-framed messages than with loss-framed messages were given a positive sign. When a study provided multiple indices of message engagement, effects were averaged to yield a single  $n$ -weighted summary using the  $r$ -to- $z$ -to- $r$  transformation procedure.

### *Moderating Factors*

#### *Kernel-state phrasing*

The kernel states in each appeal were identified; a kernel state is the basic, root state mentioned in the message's description of the consequence under discussion. We coded each appeal as containing exclusively desirable kernel states (e.g., "healthy heart," "attractive skin"), exclusively undesirable kernel states (e.g., "heart disease," "skin cancer"), a combination of desirable and undesirable kernel states, or as indeterminate with respect to kernel-state phrasing (as when insufficient detail was available).

#### *Topic of advocacy*

Three broad subjects of advocacy were distinguished: disease-detection behaviors (e.g., skin cancer examinations), disease-prevention behaviors (e.g., minimizing sun exposure), and other topics (e.g., consumer advertising).

#### *Assessment of message engagement*

Cases were classified on the basis of the means by which the receiver's degree of engagement with the message was assessed. Four categories were distinguished: number of message-related thoughts, memory for the message (e.g., recall of message material), other assessments (e.g., responsiveness to argument-quality variations, knowledge improvement following exposure), and multiple assessments.

#### *Coding reliabilities*

Codings for these variables were completed independently by the authors for a sample of 20 cases. Intercoder reliabilities (percent agreement and Cohen's kappa, respectively) were .90 and .85 for kernel-state phrasing in gain appeals, .90 and .85 for kernel-state phrasing in loss appeals, .95 and .91 for topic, and .95 and .92 for means of assessing message engagement. Discrepancies were resolved by discussion. The first author coded the remaining cases.

#### *Unit of Analysis*

The fundamental unit of analysis was the message pair, that is, the pair composed of a gain-framed message and its loss-framed counterpart. A measure of effect size was recorded for each distinguishable message pair found in the body of studies. If a study included more than one message pair and reported data separately for each pair, each message pair was treated as providing a separate effect-size estimate (e.g., Lee, Brown, & Blood, 2000). When a given investigation was reported in more than one outlet, it was treated as a single study and analyzed accordingly. The same research was reported (in whole or in part) in Allen (1969), Dembroski (1969), Evans, Rozelle, Lasater, Dembroski, and Allen (1970), Lasater (1969), and Rozelle, Evans, Lasater, Dembroski, and Allen (1973), recorded under Evans et al. (1970); in Benz Scott (2000) and in Benz Scott and Curbow (2006), recorded under the former; and in Knapp (1989) and Knapp (1991), recorded under the former.

*Meta-Analytic Procedures*

The individual correlations (effect sizes) were initially transformed to Fisher's  $z$ s; the  $z$ s were analyzed using Borenstein and Rothstein's (2005) random-effects procedures (see also Hedges & Vevea, 1998; Shadish & Haddock, 1994), with results then transformed back to  $r$ . A random-effects analysis was employed in preference to a fixed-effects analysis because of an interest in generalizing across messages (Jackson, 1992).

**Results***Overall Effect*

Effect sizes were available for 42 cases. Particulars for each included case are contained in Table 1; detailed results appear in Table 2. As indicated in Table 2, gain-framed messages produced significantly greater message engagement than did loss-framed messages (mean  $r = .058$ ,  $p = .004$ ).<sup>1</sup>

*Moderating Factors**Desirable versus undesirable kernel states*

As Table 2 indicates, for gain-framed appeals, in 29 cases, either the appeals mentioned both desirable and undesirable kernel states or the kernel-state phrasing could not be determined; when gain-framed appeals mentioned exclusively desirable or undesirable kernel states, gain- and loss-framed appeals did not significantly differ.

For loss-framed appeals, in 24 cases, either the appeals mentioned both desirable and undesirable kernel states or the kernel-state phrasing could not be determined; when loss-framed appeals mentioned exclusively desirable or undesirable kernel states, gain- and loss-framed appeals did not significantly differ.

The available cases did not provide evidence concerning all possible combinations of kernel states. No study compared gain-framed appeals using undesirable kernel states to loss-framed appeals using desirable kernel states; only one study compared gain- and loss-framed appeals that both had desirable kernel states; and 29 studies contained at least one appeal that either had indeterminate kernel-state phrasing or contained both desirable and undesirable kernel states. In the five cases in which the gain-framed message had desirable kernel states and the loss-framed message had undesirable kernel states, gain-framed messages induced significantly greater message engagement than did loss-framed messages: mean  $r = .172$ , 95% CI limits of .031 and .307,  $p = .017$ ;  $Q(4) = 13.6$ ,  $p = .009$ . In the seven cases in which both appeals had undesirable kernel states, the mean  $r$  was  $-.002$ , 95% CI limits of  $-.097$  and .093,  $p = .964$ ;  $Q(6) = 12.1$ ,  $p = .060$ .

*Advocacy topic*

Gain-framed appeals produced significantly greater message engagement than did loss-framed appeals for messages advocating disease prevention behaviors (mean

**Table 1** Cases Analyzed

Study	<i>r</i>	<i>N</i>	Codings <sup>a</sup>
Benz Scott (2000) immediate	.071	197	2/3/3/1
Benz Scott (2000) future	.045	197	2/3/3/1
Block (1993) self-exam	-.203	57	1/2/1/1
Block (1993) sun exposure	.153	58	2/2/1/1
Broihier (1990)	-.106	138	2/2/1/2
Cheng & Cameron (2004)	-.016	70	2/3/3/1
Cheng & Leshner (2003)	-.128	72	2/4/4/4
Evans, Rozelle, Lasater, Dembroski, & Allen (1970)	.266	234	2/1/1/2
Fischer & Nabi (2001) sunscreen	.010	79	2/3/1/3
Fischer & Nabi (2001) skin exam	.248	87	1/3/1/3
Gronhaug & Rostvig (1978)	.243	58	2/4/4/2
Hashimoto (2002)	.028	166	2/2/1/3
Jayanti (2001)	.129	23	2/4/4/2
Jones, Sinclair, & Courneya (2003)	.047	192	2/3/3/2
Jones, Sinclair, Rhodes, & Courneya (2004)	.024	413	2/3/3/2
Knapp (1989) health	.028	38	2/3/1/2
Knapp (1989) social	-.042	40	2/1/1/2
Lee, Brown, & Blood (2000) self-examination	-.073	137	1/1/2/1
Lee et al. (2000) sunscreen/clothing	.208	132	2/2/1/1
Lowenherz (1991)	.100	83	2/4/4/2
Maheswaran & Meyers-Levy (1990)	-.014	98	1/3/3/4
Martin & Lawson (1998)	.175	177	3/1/1/2
McArdle (1972)	.383	80	3/1/1/2
McCall & Ginis (2004)	.219	40	2/3/3/2
Meyers-Levy & Maheswaran (2004)	.018	147	2/3/3/4
Millar & Millar (2000)	.131	278	2/3/3/1
Rothman, Martino, Bedell, Detweiler, & Salovey (1999) Study 2	-.044	120	3/2/2/1
Salmon, Loken, & Finnegan (1985)	.010	210	2/1/1/3
Shen (2005) Study 1 flu shot	-.056	286	2/2/1/1
Shen (2005) Study 1 obesity	-.006	286	2/3/3/1
Shen (2005) Study 1 skin cancer	.008	286	2/2/1/1
Shen (2005) Study 2 glaucoma exam	.048	252	1/4/4/1
Shen (2005) Study 2 pedestrian safety	.152	252	3/4/4/1
Shen (2005) Study 2 smoking	.293	252	2/4/4/1
Shiv, Britton, & Payne (2004) Experiment 1	-.139	215	3/3/1/1
Smith & Petty (1996) Experiment 1	-.281	60	3/4/4/3
Sullivan (2005)	.156	162	2/3/3/2
Turner (2004)	-.041	260	3/4/4/4

*(Continued)*



**Table 1** Continued

Study	<i>r</i>	<i>N</i>	Codings <sup>a</sup>
Urban, Stout, Zimet, & Blake (2006)	.000	100	1/4/4/3
Wong & McMurray (2002)	.306	66	2/4/4/3
Ying (2001) concrete	.060	140	1/3/3/2
Ying (2001) abstract	.027	140	1/3/3/2

<sup>a</sup>The coding judgments, in order, are: topic category (1 = disease detection, 2 = disease prevention, 3 = other); gain kernel-state language (1 = desirable states, 2 = undesirable states, 3 = both desirable and undesirable states, 4 = indeterminate); loss kernel-state language (1 = undesirable states, 2 = desirable states, 3 = both desirable and undesirable states, 4 = indeterminate); and message-engagement assessment (1 = number of thoughts; 2 = memory for message; 3 = other; 4 = multiple assessments).

**Table 2** Summary of Results

	<i>k</i>	<i>N</i>	Mean <i>r</i>	95% CI	Power <sup>a</sup>	<i>Q</i> ( <i>df</i> )
All cases	42	6,378	.058	.018, .098	–	96.5(41)***
Gain-appeal kernel language						
desirable	6	878	.129	–.012, .266	.54	20.4(5)***
undesirable	7	957	–.002	–.097, .093	.58	12.1(6)
both	18	3,065	.039	.002, .077	–	18.3(17)
indeterminate	11	1,478	.079	–.023, .180	.77	33.9(10)***
Loss-appeal kernel language						
undesirable	17	2,403	.057	–.019, .132	.93	51.3(16)***
desirable	1	137	–.073	–.238, .096		
both	13	2,360	.052	.012, .093	–	6.9(12)
indeterminate	11	1,478	.079	–.023, .180	.77	33.9(10)***
Advocacy topic						
disease prevention	27	4,203	.076	.030, .121	–	52.6(26)**
disease detection	8	1,011	.021	–.051, .094	.60	9.0(7)
other	7	1,164	.034	–.104, .172	.67	32.1(6)***
Engagement assessment						
number of thoughts	16	3,075	.043	–.019, .105	.97	43.4(15)***
memory for message	15	1,958	.111	.043, .178	–	27.8(14)*
other	7	768	.047	–.071, .165	.49	15.2(6)*
multiple assessments	4	577	–.032	–.114, .050	.39	1.1(3)

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

<sup>a</sup>Power for detecting a population effect size of  $r = .10$ , assuming large heterogeneity, with a random-effects analysis, .05 *alpha*, and a two-tailed test (Hedges & Pigott, 2001).

$r = .076$ ,  $p = .001$ ) but not for messages advocating disease-detection behaviors (mean  $r = .021$ ,  $p = .561$ ) or other behaviors (mean  $r = .034$ ,  $p = .627$ ). Across all nonprevention cases, mean  $r = .026$ , with 95% CI limits of  $-.049$  and  $.101$ ,  $p = .494$ ;  $Q(14) = 41.2$ ,  $p < .001$ .

#### *Engagement assessment*

Gain-framed appeals displayed significantly greater engagement than loss-framed appeals with measures of memory for message material (mean  $r = .111$ ,  $p = .001$ ) but not with measures of the number of postmessage thoughts (mean  $r = .043$ ,  $p = .177$ ) or with other (mean  $r = .047$ ,  $p = .433$ ) or multiple (mean  $r = -.032$ ,  $p = .445$ ) measures. Combining across nonmemory measures, mean  $r = .033$ , 95% CI limits of  $-.015$  and  $.081$ ,  $p = .177$ ;  $Q(26) = 62.8$ ,  $p < .001$ .

## **Discussion**

### *Message Framing and Message Engagement*

Contrary to expectation, loss-framed messages are not more engaging than gain-framed messages. In fact, gain-framed appeals are statistically significantly more engaging than loss-framed appeals. To be sure, this difference is relatively small ( $r = .06$ ),<sup>2</sup> and the effect might be limited to disease-prevention messages or to effects on message memory. However, what is important about this result is not the small but statistically significant advantage for gain-framed appeals but rather the failure to find a significant advantage for loss-framed appeals. Given that negative information and events are more potent than their positive counterparts and given that fear-arousing messages commonly evoke greater message processing, the absence of any advantage for loss-framed appeals is notable.

### *Kernel-state phrasing*

The observed overall result is not a consequence of the kernel-state phrasing of the appeals. For instance, the greater engagingness of gain-framed appeals is not a consequence of those appeals having consistently used undesirable kernel-state phrasing (and the loss-framed appeals having consistently used desirable kernel-state phrasing). In the 13 gain-framed messages that referred to only one valence of kernel state, 6 used desirable kernel-state phrasing and 7 used undesirable phrasing; in the 18 loss-framed messages that referred to only one valence of kernel state, 17 were phrased in undesirable language. If anything, this pattern of message phrasing should have made the loss-framed appeals more engaging than the gain-framed appeals, given that the loss-framed appeals more commonly invoked negative kernel states.

Moreover, considering jointly kernel-state phrasing and gain-loss framing, loss-framed appeals expressed in terms of undesirable kernel states should be significantly more engaging than gain-framed appeals expressed in terms of desirable kernel

states—but in fact exactly the opposite result obtains. That is to say, under conditions that might be expected to maximize the usual potency of negative information over positive information, a “positive” message (a gain-framed appeal phrased in terms of desirable states) is actually significantly more engaging than a “negative” message (a loss-framed appeal phrased in terms of undesirable states).

#### *Limited effects?*

The greater engagingness of gain-framed appeals might seem to be limited to effects on memory for the message or to messages advocating disease-prevention behaviors, because other circumstances commonly do not yield statistically significant differences in message engagement between framing conditions. But the data contain some indications that the effects may not be limited in these ways. For prevention cases, the effect on message memory and on number-of-thoughts were strikingly similar: Gain-framed appeals dependably led both to better memory for the message [mean  $r = .094$ ,  $k = 11$ , 95% CI limits of .015 and .173,  $p = .021$ ;  $Q(10) = 18.6$ ,  $p = .046$ ] and to more message-related thoughts [mean  $r = .082$ ,  $k = 10$ , 95% CI limits of .006 and .156,  $p = .034$ ;  $Q(9) = 25.2$ ,  $p = .003$ ] compared to loss-framed appeals. For nonprevention cases, the effect on message memory was dependable [mean  $r = .153$ ,  $k = 4$ , 95% CI limits of .010 and .289,  $p = .036$ ;  $Q(3) = 8.2$ ,  $p = .042$ ], but the effect on number-of-thoughts was not [mean  $r = -.026$ ,  $k = 6$ , 95% CI limits of  $-.131$  and  $.080$ ,  $p = .636$ ;  $Q(5) = 13.8$ ,  $p = .017$ ]; however, these two effects are based on small numbers of cases and so are not secure as one might like. Still, there are hints here that the greater engagingness of gain-framed messages may be rather general.

#### *Explaining the observed effects*

In no subset of cases were loss-framed messages observed to generate significantly greater message processing than gain-framed messages. In each analyzed subset of cases, either gain-framed appeals induced greater processing or there was no significant difference between gain- and loss-framed appeals. Of course, given the small number of cases available for analysis in some of the subsets of interest (and consequent low statistical power), some of the observed nonsignificant differences are perhaps not too surprising. Still, the present results give no evidence supporting any supposition that loss-framed appeals engender greater message processing than do gain-framed appeals, either generally or under the specific circumstances examined here.

All of this, of course, makes for something of a conundrum. If loss-framed appeals (or undesirable kernel states) had proved significantly more engaging than their gain-framed (or desirable-kernel-state) counterparts, a ready explanation would have been at hand, in the form of the accumulated research evidence indicating greater potency of negative information, greater message processing induced by fear, and so forth. The opposite result is not so easily explained.

One possible explanation is that loss-framed appeals might be more likely than gain-framed appeals to evoke reactance (Brehm & Brehm, 1981). The parallel with guilt appeals—which have been known to evoke negative reactions (e.g., Coulter &

Pinto, 1995; see O’Keefe, 2000, pp. 83–84)—is striking. Each emphasizes some undesirable aspect of failing to do what the message recommends and so might easily be seen as hectoring in tone and unpleasant to engage. But if this is the explanation, then the fear-arousal components of fear appeals—which emphasize the undesirable consequences of failing to do what the message recommends—should commonly evoke similarly negative reactions, but, as previously indicated, greater fear arousal characteristically enhances message processing (e.g., Slater et al., 2002).

Another possibility is that gain-framed messages (and especially gain-framed messages expressed in terms of desirable kernel states) seem more optimistic or more infused with positive affect than loss-framed appeals (and especially loss-framed appeals expressed in terms of undesirable kernel states), and consequently recipients may be inclined to engage gain-framed appeals more closely. Even given that (for instance) negative events are weighted more heavily in decision making, thinking about negative events is not necessarily a more attractive prospect than thinking about positive events—and hence extensive processing of loss-framed messages would not necessarily be more likely than extensive processing of gain-framed messages. Anticipated affect has been found to influence various intentions and actions (e.g., Abraham & Sheeran, 2004; Mellers & McGraw, 2001), including message exposure choices (e.g., Zillmann & Bryant, 1985), so perhaps it might correspondingly guide the degree to which a recipient engages a message.

This line of reasoning nicely accommodates the possibility that the greater engagingness of gain-framed appeals might be limited to, or especially pronounced in, messages advocating disease-prevention behaviors; such behaviors characteristically promise happy endings. By contrast, if the topic of advocacy is such as to make it difficult for gain-framed appeals to lead message recipients to experience (or to expect to experience) optimism or positive affect as a consequence of thinking closely about the message, then (this reasoning might suggest) on such topics gain-framed appeals might not be any more engaging than loss-framed appeals. For example, recipients of messages advocating disease-detection behaviors are unlikely to find it affectively positive to contemplate the prospect of learning that one has some disease.

### *Caveats, Limitations, and Future Research*

As with any literature review, the conclusions here are necessarily circumscribed by the research evidence in hand. For example, we found no studies examining potential differences in message engagement between gain-framed messages with undesirable kernel states and loss-framed messages with desirable kernel states. And given the preponderance of disease-prevention studies thus far, it would plainly be useful to know more about potential differences in message engagement produced by gain-loss framing variations on other topics.

Even so, it seems apparent that there is no empirical basis for supposing that loss-framed appeals will typically—or ever—be more engaging to recipients than are gain-framed appeals. On the contrary, gain-framed appeals appear generally to be slightly more engaging than are loss-framed appeals, and they appear never to be dependably

less engaging—despite the greater potency of negative information and the greater engagingness of fear-inducing messages. Future research will want to address how and why this surprising effect arises.

## Notes

- [1] Each of these 42 effect sizes is based on a unique human sample (and distinct message pair) and thus is statistically independent of the others, with the exception of the six effect sizes from Shen's (2005) two within-subjects experiments. Replacing those six cases with mean effects for Shen's Study 1 ( $r = -.018$ ,  $N = 286$ ) and Study 2 ( $r = .166$ ,  $N = 252$ ) yields 38 cases with results virtually identical to those from the analysis of 42 cases: mean  $r = .056$  ( $N = 5,302$ ), 95% CI limits of .014 and .098,  $p = .008$ ;  $Q(37) = 78.4$ ,  $p < .001$ .
- [2] By comparison, the overall  $k$ -weighted average effect of need-for-cognition on message-engagement outcomes, expressed as a correlation, is .15. The specific mean effects are .17 for information recall ( $k = 23$ ), .16 for responsiveness to argument-quality variations ( $k = 11$ ), and .10 for number of thoughts ( $k = 10$ ; Cacioppo et al., 1996, pp. 229–231).

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