Communicating the Risks of Fetal Alcohol Spectrum Disorder: Effects of Message Framing and Exemplification

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Health messages can be either informative or descriptive, and can emphasize either potential losses or gains. This study, guided by message framing theory and exemplification theory, specifically investigated the combined effects of messages with loss–gain frames mixed with statistics or exemplar appeals. The findings revealed a series of main effects and interactions for loss–gain frames and statistics-exemplar appeals on fetal alcohol spectrum disorder (FASD) prevention intention, intention to know more, perceived severity, perceived fear, perceived external efficacy, and perceived internal efficacy. The gain-statistics appeal showed an advantage in promoting perceived efficacy toward FASD, while the loss-exemplar appeal revealed an advantage in increasing prevention intention, perceived severity, and perceived fear toward FASD. Limitations and implications for future research are discussed.

Because they are of child-bearing age, college women are among the populations at risk for fetal alcohol spectrum disorder (FASD). As part of a state grant to develop an FASD awareness campaign aimed at college women, this study sought to explore FASD health messages relative to two established communication contexts: message framing and exemplification.

Educated white women (the vast majority of this sample used in this study) are more likely than other groups to engage in high-risk activities such as binge drinking (Cui, 2000). This group also tends to stop drinking with the onset of pregnancy, and is at a lower overall risk for FASD than other groups (Armstrong, 2003). However, research indicates people are likely to be exposed to a number of conflicting and confusing message frames relative to the issue. Connolly-Ahern and Broadway (2008) found that media coverage of FASD in northeastern U.S. newspapers has been dominated by frames of “dangerous mothers,” “fetal wellness,” and “victimization.” Some of these frames, and related subframes, favor official sources advocating abstinence, while others privilege unofficial sources and the possibility of “safe limits” of alcohol consumption during pregnancy. There is no one, authoritative voice on the issue.

FASD is a “complex, multidimensional social problem” (Connolly-Ahern & Broadway, 2008, p. 380). The generation and interpretation of FASD message frames is equally complex and multidimensional. To untangle the roles of frames in FASD communications, this study leverages health research in the areas of loss–gain framing and exemplification. Established findings in these areas of research present a solid foundation on which to examine message effects in this important health domain.

FASD is a severe threat to babies born to mothers who consume alcohol during pregnancy. This syndrome affects an estimated 1 in 100 live births in the United States—or as many as 40,000 newborns each year (U.S. Department of Health, 2007). Effects associated with FASD include “physical, mental, behavioral, and/or learning disabilities with possible lifelong implications” (FASD Center for Excellence, 2006). There is no cure for FASD, but it is 100% preventable if pregnant women abstain from alcohol. Therefore, persuasive
messages aimed at women who may become pregnant are a critical element of FASD prevention campaigns.

For decades, health communications researchers have analyzed the effects of positive and negative message framing on people's thoughts and behavioral decisions (Rothman, Bartels, Wlaschin, & Salovey, 2006). The goal of this study is to investigate how different message appeals influence people's attitudes and behavioral intentions toward FASD. More specifically, this study aims to investigate the effects of messages with loss–gain frames combined with exemplar or statistics appeals.

THEORETICAL BACKGROUND

Prospect Theory

Prospect theory has been used as a guide for many studies regarding changes in message frames and how they promote the initiation of a healthy behavior or the continuation of a healthy behavior. Prospect theory suggests that people's behavioral decisions are sensitive to message framing. More specifically, people are more likely to avoid risks when potential gains or benefits are salient, but are more likely to take risks when potential losses or costs are salient (Tversky & Kahneman, 1981).

According to prospect theory, people can be either risk-averse or risk-seeking, depending on how their behavioral preferences are motivated. If a message emphasizes the potential benefits or good outcomes of a particular behavior, people's inclination to avoid risks will be motivated. If a message emphasizes the potential losses and negative consequences of a particular behavior, people's willingness to take risks will be motivated (Rothman et al., 2006).

Framing Health Messages

The theoretical framework constructed by prospect theory allows researchers focusing on message framing to better predict a message's persuasive impact on people's behavioral decisions. Rothman et al. (2006) propose a message-framing model in the context of health communications. Traditionally, the concept of "risk" in prospect theory has been operationalized as "uncertainty," and Rothman et al. (2006) extend this approach in the area of health. Behaviors with uncertain outcomes are likely to be perceived as risky, as opposed to behaviors with known or expected outcomes. Uncertain outcome behaviors are associated with disease detection, whereas certain outcome behaviors are associated with prevention.

Detection behaviors involve a potential risk of discovering a health problem. For example, making the decision to have a mammography or HIV (human immunodeficiency virus) test could be a risky decision; the result might not be pleasant. In this scenario, loss frames should be more effective in motivating risk-seeking detection behaviors. Prevention behaviors involve reducing the risk of getting ill or maintaining current health conditions. For example, making the decision to use a condom may prevent or reduce the risk of getting infected with sexually transmitted diseases. In this scenario, gain frames should be more effective in promoting the use of prevention behaviors (for a review see Rothman et al., 2006).

A series of empirical studies have shown that loss frames are more effective than gain frames in promoting detection behaviors such as mammography (Banks, et al., 1995; Schneider et al., 2001), breast self-examination (Meyerowitz & Chaiken, 1987), skin cancer examinations (Block & Keller, 1995), HIV testing (Kalichman & Coley, 1995), use of plaque-detecting disclosing rinse (Rothman, et al., 1999), and blood-cholesterol screening (Maheswaran & Meyers-Levy, 1990). However, the framing effect of loss frames on detection behaviors can be moderated by factors such as family history (Finney & Iannotti, 2002), race or income (Schneider, et al., 2002; Conedine, Horton, Magai, & Kukafka, 2007), the certainty of the outcome (Apanovitch, McCarthy, & Salovey, 2003), and perceived risks (Meyerowitz, Wilson, & Chaiken 1991).

The advantages of gain frames in promoting preventive behaviors have been supported by studies of framing effects across several domains, such as the use of sunscreen to prevent skin cancer (Detweiler et al. 1999; Rothman, et al., 1993), the use of condoms (Kiene, Barta, Zelenski, & Cothran, 2005), and smoking cessation (Wong & McMurray, 2002). The persuasive impact of gain frames could also be moderated by cultural characteristics of uncertainty avoidance (Reardon et al., 2006), and gender or issue involvement (Kiene, Barta, Zelenski, & Cothran, 2005).

Although a number of studies have provided fruitful evidence that gain or loss frames would effectively motivate people to either take actions to avoid risks or perform actions to seek risks, some research has found no framing effect at all (Lalor & Hailey, 1990; Lauver & Rubin, 1990). Rothman et al. (2006) proposed that the mechanism through which loss and gain frames function is still unclear, and pointed out that research on message framing has concentrated on a fairly narrow range of behaviors. More specifically, the framing effect pertaining to gain frames for "prevention behaviors that involve having to stop an unhealthy behavior is uncertain" (Rothman et al., 2006, p. S207). How message framing interacts with motivation to quit unhealthy behaviors (e.g., to quit drug use, unhealthy eating habits, binge drinking) remains unanswered. This study, which focuses on such a cessation behavior, explores these effects and interactions.

Additionally, O’Keefe and Jensen (2006) suggested that the advantage of gain frames in motivating prevention behavior is not entirely certain. Specifically, the authors did not discover statistically significant differences in persuasiveness between gain and loss frames for preventive
behaviors such as doing exercises, skin-cancer prevention, or preventing STDs. But a large difference between gain and loss frames was detected for messages advocating dental hygiene behaviors. O’Keefe and Jensen (2006) stated that the effect size they observed in this meta-analytic study was not large enough to support the hypothesis of message framing theory, which leaves room for scholars to further investigate the persuasiveness of gain or loss frames.

Exemplification Theory

Rooted in cognitive heuristics, exemplification theory “addresses the formation and modification of beliefs about phenomena and issues on the basis of samplings of experienced and directly or indirectly witnessed concrete, unitary occurrences that share focal characteristics” (Zillmann, 2006, p. S221). The theory concentrates on examining the effects under which an aggregated exemplar (or exemplars) comes to represent the whole phenomena or issue. Zillmann (2006) suggested that the presentation of the exemplars in message appeals allows a person to group himself or herself with others of his kind (e.g., a binge drinker as a case among drinkers). Through relating self to an exemplar with characteristics of a group, people’s assessments about the health risks and protective behaviors may be changed.

Brosius and Bathelt (1994) conducted a series of five experiments and revealed that using exemplars (e.g., individual stories) in message appeals has a stronger impact on people’s attitudes, judgments, and perceptions about the issue than using just statistical information (polls, general statements). The study suggested that people may have difficulties in processing “percentages, probability, and so forth” (p. 50). The researchers indicated that vividness of the episodic stories led to a higher level of involvement than the abstract messages containing only numerical or general statements.

Cox and Cox (2001) extended the investigation of the effects of exemplars by conducting a 2 (anecdotes versus statistics) \( \times \) 2 (loss versus gain) experimental study in the context of a health detection issue—the use of mammography. The findings revealed that a loss-framed anecdotal message appeal is more effective in promoting the likelihood of performing a mammogram than a gain-framed anecdotal message appeal. In addition, the study demonstrated that people who were exposed to the gain-anecdotal message appeal showed significantly less susceptibility toward breast cancer and more positive emotions. Those who were exposed to the loss-framed anecdotal message appeal demonstrated more negative emotions, such as fear. This is the only study known to the authors that has investigated the combined effects of statistics-exemplar appeals and loss–gain frames.

Cappella (2006) called for more studies to examine the effects of frame combinations within the same message. The current study is devoted to examining message effects situated in two theoretical frameworks—prospect theory and exemplification theory—within the context of FASD communications.

Given that abstaining from drinking during pregnancy is the only way to prevent FASD, the behavior decision pertaining to this issue can be categorized as a prevention action. Specifically, it is a cessation prevention behavior, or the stopping of an unhealthy activity. According to prospect theory, gain frames are more effective than loss frames in facilitating prevention behaviors. Therefore, the first hypothesis is proposed:

H1: A gain frame will lead to a higher level of behavioral intention to prevent FASD and to seek more information about FASD than a loss frame.

In summarizing the influences of exemplification effects in the domains of health and safety, Zillmann (2006) suggested that a threatening image is more likely to increase attention, affective reactions, consciousness of the risks, and motivations for protective behaviors. Using text-only message appeals, this study hypothesizes:

H2: An exemplar appeal will elicit a higher level of perceived severity than a statistics appeal.

Cox and Cox (2001) found that exposure to loss-exemplar message appeals elicit negative emotions, including fear. This study proposed the following hypothesis:

H3: A loss-exemplar message appeal will elicit more fear than a gain-exemplar message appeal.

In addition, the study was curious about the combined effect of statistics-exemplar appeals and loss–gain frames on perceived efficacy. Therefore, the study proposed the following question:

RQ1: What are the effects of statistics-exemplar appeals and loss–gain frames on the perceived efficacy toward FASD?

In summary, this study aims to explore the persuasive impact of loss–gain frames and statistics-exemplar appeals on attitudes, affective responses, and behavioral intention toward FASD.

**METHOD**

**Participants**

Participants were 213 female students recruited from undergraduate classes at a Northeastern university. The students received a small portion of extra credit for participating in the study. They ranged in age from 18 to 25 years \( (M = 19.98, SD = .87) \), with 83.1% describing themselves as White/Caucasian, 6.1% as Asian, 4.2% as Hispanic, 4.2%...
as African-American, and 2.3% as other. Two female participants reported that they were pregnant at the time they participated in the research, whereas three participants stated that they had been pregnant before. These five female participants were kept in the following statistical analyses. Less than 2% of the participants indicated that they would want to get pregnant in the next few months or the next year.

Experimental Design

The study employed a 2 (loss versus gain frames) × 2 (statistics versus exemplar appeals), between-subjects factorial experimental design in which participants read one of the four designed health messages about FASD. Subsequent to reading the messages, participants were asked to complete a questionnaire.

Message Design

The four messages were formatted to look like newspaper public service announcements. The messages contained only text and were specifically created for this study. The four different combinations of messages examined in this study included: (1) loss-statistics message appeal; (2) gain-statistics message appeal; (3) loss-exemplar message appeal; and (4) gain-exemplar message appeal. Statistics appeals emphasized numbers, and exemplar appeals vividly depicted an individual’s story. Gain appeals focused on children born without FASD, while loss appeals focused on children born with FASD. The stimulus materials were successfully pretested using a within-subjects design on a smaller group of participants to ensure that the desired manipulations were clearly perceived by message receivers.

Procedure

Participants were invited to participate in the study in a regular classroom environment and were randomly assigned to one of the four experimental conditions. After reading the messages, participants were asked to complete a paper-and-pencil questionnaire with measures of postexperimental attitudes, affective responses and behavioral intentions. The manipulation-check questions were placed after the questions concerning the postexperimental effects. The final portion of the questionnaire asked participants to provide their demographic information.

Measures

**FASD prevention intention.** The questions assessing FASD prevention intention asked, “What is the likelihood

\[ \text{Intention to know more.} \] Another question was constructed to evaluate the likelihood that participants would like to know more information related to FASD by searching for more information. This question asked, “What’s the likelihood that you will search for more information related to Fetal Alcohol Spectrum Disorder after reading the message?”

**Perceived severity.** Two items were constructed to evaluate the degree to which participants believed that FASD was a severe disease. Participants were asked, “Please rate your perception of Fetal Alcohol Spectrum Disorder on the following four scales. I think Fetal Alcohol Spectrum Disorder is...” Ratings were on 10-point semantic differential scales on the following word pairs: “not dangerous/very dangerous” and “not a severe health problem/a very severe health problem.” An index of perceived severity was constructed by calculating the means of the two items \( M = 8.95, SD = 1.34, \) Cronbach’s \( \alpha = .77 \).

**Perceived fear.** Fearful reactions to the messages were assessed by asking participants, “Please indicate the extent to which the message made you feel,” followed by a series of emotions. Ratings were on a 10-point scale (0 = not at all and 10 = a lot). Five items, including frightened, tense, nervous, anxious, and uncomfortable, were used to encompass fear. The mean of the five items \( M = 4.08, SD = 2.24 \) was computed to create an index of perceived fear, Cronbach’s \( \alpha = .83 \).

**Perceived external efficacy.** Three statements were constructed to evaluate participants’ beliefs that FASD, as a disease, could be prevented. Participants were asked to indicate the degree to which they agreed or disagreed with the statements on a 10-point Likert-type scale (1 = strongly disagree to 10 = strongly agree). The three statements were “Fetal Alcohol Spectrum Disorder and related syndromes are preventable”; “Avoiding drinking during pregnancy can prevent Fetal Alcohol Spectrum Disorder and related syndromes”; and “Fetal Alcohol Spectrum Disorder and related syndromes are difficult to prevent.” An index of perceived external efficacy of FASD prevention was formed by reverse-coding the “difficult to prevent” item and then calculating the mean of these three items \( M = 9.07, SD = 1.15, \) Cronbach’s \( \alpha = .73 \).

**Perceived internal efficacy.** Three statements were included to assess participants’ beliefs about their ability to prevent FASD. Participants were asked to indicate
the degree to which they agreed or disagreed with the statements on a 10-point Likert-type scale (1 = strongly disagree to 10 = strongly agree). The first statement simply proposed, “I can prevent FASD.” The second statement indicated that “Preventing FASD is easy for me.” The third statement stated, “Preventing FASD is difficult for me,” which was reverse-coded before computing the mean (M = 9.13, SD = 1.37). An index of perceived internal efficacy of FASD-preventive behaviors was formed, Cronbach’s α = .74.

**Manipulation check.** Participants were asked to evaluate the degree to which they agreed or disagreed with each of the four statements concerning manipulation checks on a 10-point Likert-type scale (1 = strongly disagree to 10 = strongly agree). The questions related to the manipulation check were placed at the end of the questionnaire to prevent participants’ possible awareness of the purposive manipulation. A series of independent-sample t-tests indicated that the manipulation of the message features was successful. Participants who viewed the loss-framed message (M = 8.66, SD = 1.81) reported a significantly higher mean on the question of “The message communicates the negative implications of drinking during pregnancy” than those who viewed the messages containing gain frames (M = 7.27, SD = 2.87), t(159) = 3.97, p < .001. Similarly, participants who were exposed to the gain-framed messages (M = 6.81, SD = 2.83) showed a significantly higher mean when asked whether they agreed that “The message communicates the positive implications of not drinking during pregnancy” than those who were exposed to loss-framed messages (M = 5.10, SD = 3.14), t(180) = −3.90, p < .001. Participants who viewed the exemplar appeal (M = 8.10, SD = 2.05) reported a significantly higher level of agreement on the statement of “The message uses mainly a personal example to communicate the implications of drinking during pregnancy” than those who viewed statistics appeals (M = 2.97, SD = 2.27), t(185) = −16.15, p < .001. Those who were exposed to statistics appeals (M = 8.63, SD = 1.63) showed a significantly higher level of agreement on the statement of “The message uses mainly factual information to communicate the implications of drinking during pregnancy” than those who were exposed to exemplar appeals (M = 5.29, SD = 2.51), t(149) = 10.67, p < .001.

**RESULTS**

A 2 (loss versus gain frames) × 2 (statistics versus exemplar appeals) multivariate analysis of variance (MANOVA) was conducted to examine participants’ general responses toward the multiple dependent variables: FASD prevention intention, intention to know more, perceived severity, perceived fear, perceived external efficacy, and perceived internal efficacy. This analysis revealed a main effect for the loss–gain frames, with Wilks’ Λ = .91, F(6, 178) = 2.91, p < .05, partial η² = .09, and a significant loss–gain frames × statistics-exemplar appeals interaction, Wilks’ Λ = .92, F(6, 178) = 2.48, p < .05, partial η² = .08. Table 1 reports the means and the standard deviations of all the dependent variables as well as the t-test results across all experimental conditions.

In order to examine whether gain frames would result in higher FASD prevention intention and intention to know more than loss frames (H1), independent-sample t-tests were conducted. Participants in the gain conditions reported a higher level of FASD prevention intention (M = 8.95, SD = 1.79) than participants in the loss conditions (M = 8.47, SD = 2.07), t(88) = −3.44, p < .05. This was because participants in the gain-statistical conditions (M = 9.25, SD = 1.46) were more likely to take prevention action than those in the loss-statistical condition (M = 8.39, SD = 2.07), t(88) = −2.37, p < .05. There was no statistically significant difference between the gain and loss frames in terms of intention to know more. H1 was therefore partially supported. It is also worth noting that in the univariate analysis, there was a significant loss–gain × exemplar-statistics interaction on intention to know more, which is consistent with the interactions reported in the section on perceived severity and fear in that exemplar appeals appear to be more effective when combined with loss frames.

**Perceived severity.** Univariate analysis for perceived severity yielded no significant main effect of appeal

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<tr>
<th>Dependent Measures</th>
<th>Exemplar Appeals</th>
<th>Statistics Appeals</th>
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<tr>
<td></td>
<td>Gain Frames</td>
<td>Loss Frames</td>
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<tr>
<td>FASD prevention intention</td>
<td>8.65 (2.05)</td>
<td>8.56 (2.09)</td>
</tr>
<tr>
<td>Intention to know more</td>
<td>2.85 (1.78)</td>
<td>3.86 (2.44)</td>
</tr>
<tr>
<td>Perceived severity</td>
<td>8.71 (1.53)</td>
<td>9.39 (1.79)</td>
</tr>
<tr>
<td>Perceived fear</td>
<td>3.33 (1.66)</td>
<td>5.20 (2.48)</td>
</tr>
<tr>
<td>Perceived external efficacy</td>
<td>9.01 (1.20)</td>
<td>9.34 (0.85)</td>
</tr>
<tr>
<td>Perceived internal efficacy</td>
<td>8.52 (1.56)</td>
<td>8.64 (0.93)</td>
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*Note. Numbers in cells and parentheses are means and standard deviations of all experimental conditions. Means sharing the same subscripts differ at p < .05.*
type on perceived severity, but there was a significant loss–gain frames × statistics-exemplar appeals interaction, $F(1, 183) = 5.60, p < .05$, partial $\eta^2 = .03$. The analysis revealed that participants who were exposed to loss-exemplar message appeals ($M = 9.39, SD = .79$) reported significantly higher levels of perceived severity of FASD than those who were exposed to gain-exemplar message appeals ($M = 8.94, SD = 1.35$), $t(81) = -2.00, p < .05$. Exemplar appeals did result in greater perceived severity of FASD, but only when combined with loss message frames. H2 was partially supported (see Figure 1).

**Perceived fear.** The univariate analysis for perceived fear toward FASD revealed a significant main effect for loss–gain frames, $F(1, 183) = 10.99, p < .01$, partial $\eta^2 = .06$, and a significant statistics-exemplar appeals × loss–gain frames interaction, $F(1, 183) = 5.32, p < .05$, partial $\eta^2 = .03$. In support of H3, loss-exemplar appeals elicited significantly more fear ($M = 5.20, SD = 2.48$) than gain-exemplar appeals ($M = 3.33, SD = 1.66$), $t(70) = 4.11, p < .001$. Indeed, the difference in the exemplar conditions accounted for the overall main effect for the loss–gain frames, as there was no significant difference for the statistics appeals between the loss and gain frames (see Figure 2).

**Perceived external efficacy.** RQ1 inquired about the effects of loss–gain frames and statistics-exemplar appeals on perceived efficacy. A significant loss–gain frames × statistics-exemplar appeals interaction was obtained through the univariate analysis for perceived external efficacy, $F(1, 183) = 5.42, p < .05$, partial $\eta^2 = .03$. A series of independent-sample t-tests was conducted for pairwise comparison of the four means associated with external efficacy. None of the results were significant at the .05 level (two-tailed). However, when observing the mean directions, it was clear that the significant loss–gain frames × statistics-exemplar appeals interaction on external efficacy discovered in the ANOVA test was primarily due to the slightly higher mean for the gain-statistics message appeal ($M = 9.40, SD = .92$) compared with the loss-statistics message appeal ($M = 8.95, SE = 1.48$), $t(83) = -1.84, p = .07$. This finding revealed that for messages focusing on statistics, the gain frame promotes perceived external efficacy, and for messages focusing on exemplars, the loss frame promotes perceived external efficacy (see Figure 3). A similar interaction effect was evident for perceived internal efficacy, but it did not achieve statistical significance, $F(1, 183) = 3.18, p = .08$. However, echoing the results for perceived external efficacy, an independent-samples t-test confirmed that participants who viewed gain-statistics messages ($M = 8.96, SD = 1.24$) reported significantly higher levels of internal efficacy than those who viewed loss-statistics messages ($M = 8.39, SD = 1.37$), $t(96) = 2.14, p < .05$. These findings indicate that for messages focusing on statistical information, gain frames are more likely to promote external and internal efficacy.

In summary, this study revealed a mix of main effects and interactions for messages that combined loss–gain frames and statistics-exemplar appeals on prevention intention, intention to know more, perceived severity, perceived fear,
perceived external efficacy and perceived internal efficacy in the context of FASD.

DISCUSSION AND CONCLUSION

Concentrating on the issue of FASD, this study has provided empirical evidence that may extend existing research on message framing and exemplification effects. As hypothesized, gain frames tended to promote FASD prevention intention, and exemplar appeals tended to promote greater perceived severity (although only when combined with loss frames). Additionally, the loss-exemplar message successfully elicited significantly higher levels of fear than the gain-exemplar message appeal. Participants who had read the story of a baby suffering from FASD reported significantly stronger negative affect than those who read the message containing the happy story of the baby living free of the disease. This result extends prior research by further exploring the relationship between loss–gain frames and exemplar appeals. While exemplar appeals elicit significantly greater levels of fear when loss-framed, the same is not true of statistics appeals; messages focusing on numbers or general statements elicit the same level of fear whether loss or gain framed.

Previous studies have suggested that messages with exemplars increase the consciousness of risk and severity of an issue (see Zillmann, 2006.) This argument is partially supported by the current study, which revealed that exemplar appeals could increase the perceived severity of FASD, but only when the message appeals focuses on the losses associated with drinking during pregnancy.

This study also included measures of external and internal efficacy, and examined the effects of loss–gain frames and exemplar-statistics appeals on each. While the loss-exemplar message appeal successfully enhanced perceived severity and perceived fear toward FASD, a different effect was evident for perceived efficacy toward the prevention of FASD. The gain-statistics message appeal demonstrated a significantly stronger impact on perceived external efficacy than loss-statistics message appeal, and a similar result was evident for perceived internal efficacy. This finding suggests that to increase people’s confidence in preventing FASD, messages that contain statistics and general statements regarding the issue, with an emphasis on the benefits of preventing FASD, are more effective.

The prevention of FASD requires abstention from alcohol during pregnancy. The behavior pertinent to FASD is therefore not a detection action but a prevention action, which can be achieved by ceasing (or not initiating) an unhealthy behavior. Many studies have suggested that gain frames have an advantage in promoting prevention behaviors, whereas loss frames are more effective in motivating detection behaviors (for a review see Rothman et al., 2006). By including exemplar-statistics manipulations in the design, this study added a level of complexity, and the operation of the manipulated independent variables became more complex as well. This study revealed that loss frames were more effective in promoting preventative behavior, but not for seeking more information on the disease. These results may therefore represent a starting point for further investigation on a particular type of preventive behaviors—prevention approaches that require cessation of a behavior. As Rothman et al. (2006) has suggested, the mechanics through which message framing effects operate on this particular domain remain unclear.

In summary, a mixed pattern was observed in this study, through which the combination of exemplar appeal with loss frames and statistics appeal with gain frames each had its unique advantages in predicting attitudes, beliefs, affective responses, and behavioral intentions toward FASD.

Limitations and Future Studies

The primary limitation of this experiment was that participants overwhelmingly viewed the threat of FASD as distant from them—less than 2% of participants said they are going to get pregnant in near future. In addition, participants overwhelmingly believed that they could and would change their behavior prior to becoming pregnant. In response to an open-ended, thought-response item that participants completed immediately after reading the stimulus material, the most common thought was some variation of “I will not drink while pregnant.”

Women in college, as a group, do not view FASD as something that could happen to them. This issue distance, therefore, could explain the mixed impact of message factors on behavioral intention. Additional research on combined message frames would be informative, perhaps controlling for existing intentions toward the issue (Wong & McMurray, 2002). Gain-statistics messages were effective in increasing efficacy, but it may not be necessary to increase efficacy among populations who already believe they can and will undertake the preventative behavior. Such an approach could aid in designing different messages for populations with different levels of intention toward the behavior.

These results should also be considered in light of the disease studied: FASD. This condition is somewhat different from other health conditions in that the mother’s behavior is the only cause, and only prevention. Therefore, loss exemplars imply irresponsible behavior by the mother and gain exemplars imply responsible behavior by the mother. While it is possible to separate gain/loss frames from perceptions of responsibility/irresponsibility for many, if not most, diseases, this is not the case with FASD, and perceptions of responsibility may factor into results.

Finally, the separation of adoption/maintenance behaviors and avoidance/cessation behaviors may lead to more interesting and consistent results. Is ceasing a behavior more like a detection behavior? Does the fact that avoiding FASD...
requires the cessation of a (presumably) enjoyable behavior amount to a perceived risk? If so, prospect theory would predict that loss-framed messages would be more effective, as suggested by the results of this study.

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