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Effects of Issue Involvement and Framing of a Responsible Drinking Message on Attitudes, Intentions, and Behavior

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To decrease the prevalence and the amount of alcohol consumption among students, health messages advocating responsible alcohol behavior can be used. However, it is unclear whether responsible drinking messages are most effective when they use a gain frame, presenting the advantages of responsible drinking, or a loss frame, presenting the disadvantages of irresponsible drinking. This study tests the effects of framing and the moderating role of involvement with the issue of responsible drinking. A three-wave, between-subjects, experimental study was conducted, in which participants ($N = 90$) were exposed to either a gain- or loss-framed message about responsible drinking behavior at Wave 2. At all three waves, attitudes, intentions and behavior toward responsible drinking were measured. Results showed that for participants with low issue-involvement, a gain frame led to more positive attitudes and intentions toward responsible alcohol use, whereas a loss frame did not have any effects for them. For participants with high issue involvement, a loss frame led to more positive attitudes and intentions toward responsible alcohol use, whereas a gain frame did not have an effect on attitude and only a delayed effect on intention. However, there were no effects of frame and issue involvement on adhering to the guideline of responsible alcohol use and average drinking behavior.

A group that is particularly at risk for adverse health consequences of drinking alcohol are students. Drinking is not only highly prevalent among students, it can also take excessive forms as they often drink five or more alcoholic beverages on one occasion (Boot, Rosiers, Meijman, & Van Hal, 2010; Johnston, 2010). Therefore, it is important to decrease drinking among students and make them drink more moderate amounts per occasion (Hingson, Zha, & Weitzman, 2009). One of the instruments that can be used to reach this goal are health messages advocating responsible alcohol use. However, there is no consensus about how these messages should be designed to be most effective at influencing the drinking behavior of students in healthy ways.

An important distinction in research on health message design is the difference between gain- and loss-framed messages. A gain-framed message presents the advantages of engaging in a health behavior, whereas a loss-framed message presents the disadvantages of not engaging in a health behavior (Rothman & Salovey, 1997). For example, a message that states that adhering to a guideline of responsible alcohol use will make your memory function better is a gain-framed message, whereas a message that states that failing to adhere to a guideline of responsible alcohol use will make your memory function worse is a loss-framed message. Both messages

advocate the position that the guideline for responsible alcohol use should be adhered to, but this position is framed in terms of either gains or losses.

Even though framing has been studied extensively in messages advocating different types of health behavior (see Gallagher & Updegraff, 2012; Rothman, Bartels, Wlaschin, & Salovey, 2006), research on framing effects in the context of student alcohol use is still scarce. The few studies that have been done have yielded different effects using different outcome measures. Gerend and Cullen (2008) measured drinking behavior 1 month after reading an anti-alcohol message and found that a gain-framed message about short-term consequences of alcohol use resulted in a lower frequency of alcohol use, compared with a loss-framed message. However, Quick and Bates (2010) used measures of college students' attitudes toward preventing excess drinking and intentions to decrease alcohol intake, but found no overall effects of framing in an anti-binge-drinking message. Duhachek, Agrawal, and Han (2012) measured intentions to binge-drink after a message aimed at discouraging binge drinking. Their results showed no overall advantage of either gain or loss frames on intentions to binge-drink. These conflicting results may be explained by the different outcome measures used (see Gallagher & Updegraff, 2012).

However, it is likely that other factors also play a role in the inconsistent findings, because meta-analyses including different types of health behaviors have shown that framing effects are generally small and dependent on the specific behavior advocated (O'Keefe & Jensen, 2007, 2009). These findings have led to calls for more refined accounts of framing effects

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by specifying conditions under which either gain frames or loss frames are effective (Covey, 2014; Latimer, Salovey, & Rothman, 2007). In other words, it is important to identify moderators that influence when different frames are effective. Because the way a message is processed has been shown to influence the relative effectiveness of gain and loss framed messages (Meyers-Levy & Maheswaran, 2004), this study focuses on a potential moderator that influences message processing. Issue involvement has been found to affect message processing (Chaiken, 1980; Petty & Cacioppo, 1986) and the extent to which message recipients are involved with the issue of responsible alcohol use may thus also function as a moderator of framing effects in alcohol messages.

Issue involvement refers to how personally relevant people find an issue (Maheswaran & Meyers-Levy, 1990; Petty & Cacioppo, 1986). Some people may think it is important to limit their drinking, whereas others may think this issue is not very important. Issue involvement has been found to influence the processing of messages; when issue involvement is high, systematic processing will occur, whereas when issue involvement is low, heuristic processing will occur (Chaiken, 1980). Systematic processing refers to effortful processing in which the message content is actively evaluated. Heuristic processing entails relatively little effort in evaluating the message when recipients rely on more superficial cues in the message (Chen & Chaiken, 1999). This type of message processing depending on issue involvement influences when negative information (loss frame) and when positive information (gain frame) is more important in forming judgments. During systematic processing, which occurs when issue involvement is high, negative information receives greater weight than positive information (Maheswaran & Meyers-Levy, 1990; Meyers-Levy & Maheswaran, 2004). This means that the negatively formulated information in the loss frame should lead to more persuasive effects for recipients who process the message systematically, as a result of high issue involvement. Thus, recipients with high issue involvement are expected to have more positive attitudes, intentions, and behavior in line with the message recommendations when they have read a loss frame. On the contrary, recipients who have low issue involvement process the message heuristically (Chaiken, 1980). When processed in this way because of low issue involvement, messages with a gain frame are expected to be more persuasive because the positively framed information serves as a cue that triggers positive responses (Meyers-Levy & Maheswaran, 2004). Thus, recipients with low issue involvement are expected to have more positive attitudes, intentions, and behavior in line with the message recommendations when they have read a gain frame.

Some studies have investigated the moderating role of issue involvement in framing effects for health behaviors other than alcohol use (see Covey, 2014). However, mixed results were found for different behaviors. For example, Brug, Ruiters, and Van Assema (2003) found no interaction effects of framing and issue involvement on attitudes and intentions toward healthy eating. On the contrary, Maheswaran and Meyers-Levy (1990) and Meyers-Levy and Maheswaran (2004) showed that when participants were highly involved, a

loss-framed message led to more positive attitudes toward behavior that reduces the risk of coronary heart disease, than a gain-framed message, whereas a gain-framed message led to more positive attitudes and intentions, when participants were low involved. Similarly, Jung and Villegas (2011) found that high-involved participants had a more positive attitude toward a loss-framed message about quitting smoking, whereas low-involved participants had a more positive attitude toward a gain-framed message. Unfortunately, these researchers did not include further measures of persuasive effects, such as attitudes toward quitting, intentions to quit, and actual behavior.

To our knowledge, there are no studies that investigate the moderating role of issue involvement in framing effects in the context of alcohol use. However, as moderating effects have been found for topics that are somewhat similar to decreasing alcohol use like quitting smoking, this might also hold for alcohol consumption. It can be expected that involvement with the issue of responsible alcohol use is relevant for university students because there is a range of motivations why they drink (Baer, 2002), which likely influences their extent of involvement. For example, students who are motivated to drink to cope with negative emotional states, often drink heavily and will probably not find responsible alcohol use very important, whereas social motivations to drink are associated with more moderate drinking (Kuntsche, Knibbe, Gmel, & Engels, 2005). To be able to effectively target framed messages at these different groups who likely differ in their involvement with responsible drinking, our study investigates whether gain frames and loss frames have different effects depending on students' level of issue involvement. Because previous findings are mixed and limited to attitudes toward health topics other than alcohol use, we ask the following research questions:

Research Question 1: Does issue involvement moderate the effect of framing on the attitude toward responsible alcohol use?

Research Question 2: Does issue involvement moderate the effect of framing on the intention to engage in responsible alcohol use?

Research Question 3: Does issue involvement moderate the effect of framing on actual alcohol use behavior?

Method

Procedure

The study consisted of three waves of online data collection. At Wave 1, baseline measures were collected for attitudes toward responsible drinking, intentions to drink responsibly, and actual drinking behavior. In addition, involvement with the issue of responsible drinking was measured in this wave, as well as demographics.¹ At Wave 2, two weeks after Wave 1, participants were exposed to a message advocating responsible alcohol use on their computer screen. Participants read either a gain-framed version of this message or a loss-framed version of this message. After reading the message,

¹There were also some other measures collected, but these are not relevant to the analysis presented here.

participants completed the measures about attitudes and intentions toward responsible drinking and actual behavior. At Wave 3, 1 week after Wave 2, participants again completed the attitudes, intentions and behavior measures. All materials and measures were administered in Dutch.

In both versions of the message, the guideline for responsible use was introduced first. The definition of responsible drinking was taken from the Guideline for a healthy diet by the Health Council of The Netherlands (2006). Because all participants were female, they were given the guideline for women, which is not more than one standard glass of alcohol per day. Next, the consequences of responsible alcohol use were presented in either a gain or a loss frame. The gain-framed version presented positive consequences of adhering to the guideline (e.g., better memory and concentration), whereas the loss-framed version presented the opposite, negative consequences of not adhering to the guideline (e.g., worse memory and concentration). Both versions of the message concluded with tips to adhere to the guideline of responsible alcohol use and a final framed tagline (the full text of the messages can be obtained from the first author).

Participants

A total of 146 female students² participated in the first wave of the study. They were recruited from communication classes, in which most students were communication majors. At Wave 2, 103 students answered the questionnaire, representing a dropout rate of 29.5%. However, the remaining students did not differ from the dropouts on age, issue involvement, attitudes, intentions or alcohol use at Wave 1 (all $ps > .30$), indicating that the dropout was random. At Wave 3, 90 participants answered the questionnaire, representing a dropout rate of 12.6%. Again, the dropouts did not differ from the students who participated in all 3 waves (all $ps > .40$). The data from the 90 participants who answered the measures at all three time waves are used for the analyses.

Of this final sample of female participants, the mean age was 21.4 years ($SD = 2.38$). On average, the participants had consumed 1.4 ($SD = 1.45$) standard glasses of alcohol per day in the week before Wave 1, and had not adhered to the norm of a maximum of one standard glass of alcohol on 1.9 ($SD = 1.63$) days in the week before Wave 1.

Measures

Demographics that were measured were gender and age. Involvement with the issue of responsible drinking was measured with ten 7-point semantic differential items completing the stem: "I think that drinking a maximum of one standard glass of alcohol a day is..." The adjectives completing the scales were drawn from Zaichkowsky (1985), for example, *unimportant–important*, *irrelevant–relevant*, *means nothing to me–means a lot to me*. As the items showed good internal

consistency ($M = 3.68$, $SD = 1.34$; Cronbach's $\alpha = .93$), they were averaged to make a scale. Higher scores reflected more involvement with responsible drinking.

Attitudes toward responsible drinking, intentions to drink responsibly and actual drinking behavior were measured at all three waves. Measures were based on Ajzen (2006). Attitudes were measured with five 7-point semantic differential items completing the stem: "If I drink a maximum of one standard glass of alcohol a day, then I think that is...". The adjectives completing the scales were *bad–good*, *unhealthy–healthy*, *unwise–wise*, *unenjoyable–enjoyable*, and *unpleasant–pleasant*. The items were averaged to make a scale for each wave (Cronbach's α Wave 1 = .89, Wave 2 = .85, Wave 3 = .88). Higher scores reflected more positive attitudes toward responsible drinking.

Intentions to drink responsibly were measured with the average of three 7-point Likert-type items (Cronbach's α Wave 1 = .84, Wave 2 = .85, Wave 3 = .94). Based on the recommendations by Ajzen (2011) these were as follows: "I intend to drink a maximum of one standard glass of alcohol a day in the next two weeks," "I am sure I will drink a maximum of one standard glass of alcohol a day in the next two weeks," and "I plan to drink a maximum of one standard glass of alcohol a day in the next two weeks." Higher scores reflected a stronger intention to drink responsibly.

Drinking behavior was measured with seven questions, based on the Daily Drinking Questionnaire (Collins, Parks, & Marlatt, 1985). Participants were asked to indicate for each day of the past week how many standard glasses of alcohol they had drunk. A standard glass was defined as a beer glass of 250 ml, a wine glass of 100 ml, and a glass for spirits of 35 ml, based on the guideline for responsible drinking by the Health Council of The Netherlands (2006). These are units that our participants are familiar with because it is common to drink alcohol from these types of glasses, and the metric system is used in The Netherlands. Answer options ranged from 0 to 25 or more. Two measures of alcohol behavior were calculated from these data. First, adherence to the guideline was calculated by counting how many days in the past week participants drank a maximum of one glass of alcohol. Second, average alcohol consumption per day in the past week was calculated.

Results

Attitudes and Intentions

To answer Research Question 1: Does issue involvement moderate the effect of framing on the attitude toward responsible alcohol use, a general linear model analysis with framing as between subjects factor, time of measurement as within subjects factor and issue involvement as covariate was performed, in which the interaction between the covariate and other factors was included. This analysis indeed showed an interaction between framing, issue involvement and time, $F(2, 172) = 3.86$, $p < .05$, $\eta^2 = .039$. Comparisons of estimated means (see Table 1) at low ($M - 1 SD$) and high ($M + 1 SD$) levels of issue involvement showed that for low involved participants, the gain-framed message made

²A total of 44 male students also participated in the first wave of the study, of which 23 participated in all three waves. This reflects the composition of the classes in which there were more female students than male students. Because 23 participants are too few to do meaningful analyses, we left these out of the reports of the results.

attitudes more positive at T2 and T3 compared with T1, whereas the loss frame did not change their attitudes. For high involved participants, the loss frame made attitudes more positive at T3 compared with T1 (T2 did not differ from either), whereas the gain frame did not change their attitudes (see Figure 1).

To answer Research Question 2: Does issue involvement moderate the effect of framing on the intention to engage in responsible alcohol use, a similar general linear model analysis was performed. This analysis also showed an interaction between framing, issue involvement and time, $F(2, 172) = 8.67, p < .001, \eta^2 = .083$. Comparisons of estimated means (see Table 1) at low ($M - 1 SD$) and high ($M + 1 SD$) levels of issue involvement showed that for low involved participants, the gain-framed message made attitudes more positive at T2 and T3 compared with T1, whereas the loss frame did not change their attitudes. For high involved participants, the loss-frame made attitudes more positive at T2 and T3 compared with T1, whereas the gain frame did not change their attitudes from T1 to T2 or T3, even though attitudes were more positive at T3 compared with T2 (see Figure 2).

Behavior

To answer Research Question 3: Does issue involvement moderate the effect of framing on actual alcohol use behavior, two general linear model analyses were performed with framing as between subjects factor, time of measurement as

Table 1. Estimated means (and standard errors) for attitudes toward responsible drinking, intentions to drink responsibly and actual drinking behavior by type of frame, level of issue involvement and time

	Low involvement ($M - 1 SD$)		High involvement ($M + 1 SD$)	
	Gain frame	Loss frame	Gain frame	Loss frame
Attitudes				
Time 1	3.65 (0.26) _a	4.25 (0.32)	5.45 (0.31)	4.64 (0.28) _a
Time 2	4.79 (0.22) _b	4.33 (0.28)	5.51 (0.27)	5.21 (0.24) _{ab}
Time 3	4.78 (0.19) _b	4.43 (0.25)	6.01 (0.24)	5.63 (0.21) _b
Intention				
Time 1	1.94 (0.32) _a	2.62 (0.41)	4.36 (0.39) _{ab}	2.98 (0.35) _a
Time 2	2.90 (0.32) _b	2.16 (0.41)	3.50 (0.39) _a	3.95 (0.35) _b
Time 3	3.10 (0.37) _b	2.35 (0.47)	4.69 (0.45) _b	4.65 (0.41) _b
Adhering				
Time 1	4.82 (0.32)	4.39 (0.38)	5.43 (0.39)	5.20 (0.33)
Time 2	5.08 (0.29)	4.68 (0.34)	5.62 (0.36)	5.55 (0.30)
Time 3	4.78 (0.43)	4.00 (0.51)	5.50 (0.52)	5.32 (0.45)
Average				
Time 1	2.76 (0.27)	2.60 (0.34)	2.07 (0.33)	2.10 (0.30)
Time 2	2.25 (0.22)	2.51 (0.27)	1.94 (0.26)	1.94 (0.24)
Time 3	2.32 (0.19)	2.12 (0.24)	1.80 (0.23)	1.51 (0.21)

Note. Different subscripts indicate significant differences within conditions. Adhering refers to the measure of days per week the guideline was adhered to. Average refers to the measure of average drinking per day in the past week.

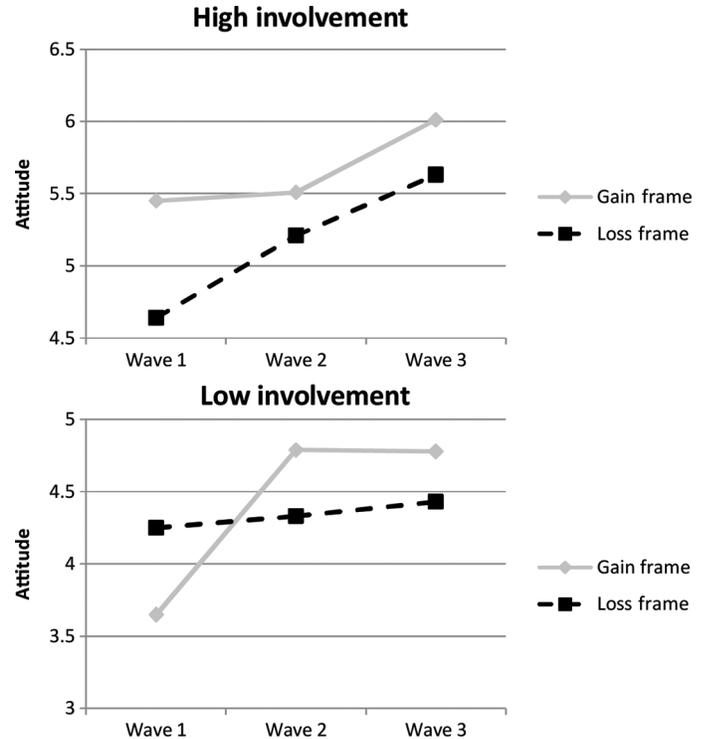


Fig. 1. Plots of three-way interaction of message framing by involvement and time on attitudes toward responsible alcohol use.

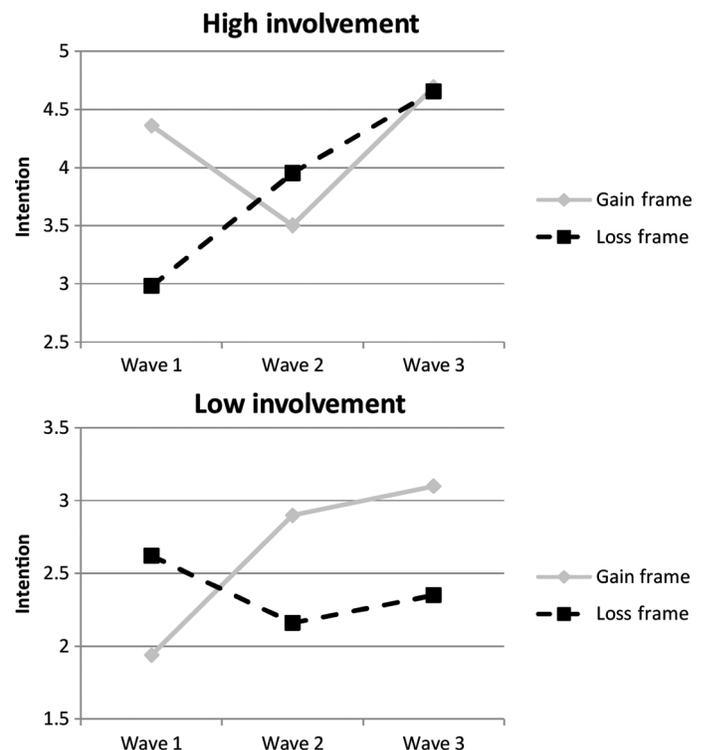


Fig. 2. Plots of three-way interaction of message framing by involvement and time on intentions toward responsible alcohol use.

within subjects factor and issue involvement as covariate was performed, in which the interaction between the covariate and other factors was included. Neither the analysis for adherence to the guideline, $F(2, 172) = 0.10$, $p = .90$, nor the analysis for average alcohol consumption per day, $F(2, 172) = 0.46$, $p = .64$, showed an interaction between framing, issue involvement, and time. Thus, alcohol use did not differ over time as a result of framing and issue involvement.

Discussion and Conclusion

Our study addresses the moderating role of issue involvement in framing effects of a message advocating responsible alcohol use. The results regarding attitudes (Research Question 1) and intentions (Research Question 2) show that for participants with low issue involvement, a gain frame led to more positive attitudes and intentions toward responsible alcohol use, whereas a loss frame did not have any effects for them. For participants with high issue involvement, an opposing pattern was observed; a loss frame led to more positive attitudes and intentions toward responsible alcohol use, whereas a gain frame did not have an effect on attitude and only a delayed effect on intention. These results are in line with theory on information processing (Maheswaran & Meyers-Levy, 1990; Meyers-Levy & Maheswaran, 2004). Issue involvement had a moderating role in framing effects on attitudes and intentions immediately after exposure. High-involved readers likely processed the message more intensely, during which the negative information in the loss frame was given more weight, thus exerting an immediate influence on their attitudes and intentions toward responsible drinking. In contrast, low-involved readers likely processed the message more superficially, during which the positive information in the gain frame functioned as a cue triggering immediate positive responses.

Our study is the first to show effects of issue involvement and framing of a message about responsible drinking on attitudes and intentions of students. These results follow up on O'Keefe and Jensen's (2007) meta-analysis that did not find main effects of gain versus loss frames for preventive behaviors other than dental hygiene behaviors. For attitudes and intentions, which is what many of the studies they included used as dependent measures, we have shown that issue involvement can play a role in framing effects. Even though one frame is not more effective than the other is for all recipients, this account can be extended by including issue involvement, such that attitudes and intentions of low involved recipients are influenced by the gain frame and of high involved recipients by the loss frame.

Results regarding actual alcohol consumption (Research Question 3) showed no effects of issue involvement and framing. Both adherence to the guideline for responsible alcohol use and average consumption per week did not change as a result of framing and issue involvement. Because a reduction of actual alcohol consumption is the goal of most alcohol campaigns, these results mitigate the usefulness of tailoring messages to the issue involvement of recipients.

However, it should be taken into account that this study used one short message and small increases in attitudes and intentions often do not translate into behavioral effects (Webb & Sheeran, 2006). Nonetheless, repeated exposure to such messages that have small effects, may potentially cumulatively affect actual behavior.

Our results are inconsistent with Gerend and Cullen's (2008) findings, who found an effect of a gain-framed message on reduced alcohol consumption. However, they only found this for a message that focused on short-term effects of alcohol use, but not for a message that focused on long-term effects of alcohol use. The message we used included both short- and long-term consequences. Perhaps the information we gave about long-term consequences weakened our message. In addition, their participants may generally have had low issue involvement, which could have increased the effectiveness of the gain frame. Future research should study temporal context (short-term consequences vs. long-term consequences) and issue involvement in one study to gain insight in combined effects.

Our study has several limitations. One limitation is that the sample consisted only of women. This limits generalizability of the results only to women. Future research should also test these effects for men. In addition, issue involvement was measured rather than manipulated. Even though it is possible to manipulate involvement with some types of health behaviors (Maheswaran & Meyers-Levy, 1990; Meyers-Levy & Maheswaran, 2004), it seems unlikely that involvement with behaviors that are well-known to participants can be manipulated effectively in an experiment. Therefore, the present study used preexisting scores to identify high and low-involved participants. Last, the study used only one message in which framing was manipulated. Perhaps specific features of the message had an influence on the effects of issue involvement and framing, like the type of arguments (e.g., instrumental vs. affective). Future research should test the effects with different types of messages and explore the cumulative effects of multiple exposures to test whether this would affect actual behavior.

As there are only a few studies investigating framing effects on alcohol consumption among students, future research should test additional moderators for messages aimed at responsible alcohol use (see Covey, 2014). For example, Broemer (2002) showed that ambivalence is a moderating factor of framing effects on several health behaviors. When people are highly ambivalent about a behavior, loss frames are more effective, whereas when people have low ambivalence, gain frames are more effective. In the case of alcohol use, this is likely a moderator because students can be aware of negative health consequences, but still think it is fun to drink (Baer, 2002). Another potential moderator of framing effects on responsible alcohol use is self-efficacy. For responsible alcohol use, self-efficacy refers to people's belief that they are able to limit their drinking. Loss-frames may be more effective for people who have high self-efficacy (Covey, 2014).

We conclude that effects of framing on attitudes and intentions about responsible drinking are dependent on the

issue involvement of students. Loss-framed messages have effects on attitudes and intentions of students who are high involved with the issue of responsible drinking, and gain-framed messages have effects on attitudes and intentions of students low-involved with this issue. However, measures of actual drinking do not follow this pattern. Effects of one message exposure were not strong enough to influence behavior.

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