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Sensation Seeking as a Moderator of Gain- and Loss-Framed HIV-Test Promotion Message Effects

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This study used an experiment (N = 504) to test whether the fit between sensation-seeking disposition and frame enhances the persuasiveness of gain- and loss-framed HIV test promotion messages. Gain- and loss-framed messages may be consistent with low and high sensation seekers’ disposition with respect to risk behavior. We hypothesized that a loss-framed message would be more persuasive for high sensation seekers and that a gain-framed message should be more effective for low sensation seekers. We also expected elaboration to mediate the interaction. Results demonstrated the hypothesized interaction. When the message frame fit with the viewer’s way of thinking, the persuasive power of the message was enhanced. The mediation hypothesis was not supported. Practical implications for targeting and message design are discussed.

The HIV/AIDS epidemic continues to affect the lives of millions, with no widely available vaccine or cure. The burden of disease is disproportionately high in communities of color; the rate of infection is 8 times higher for Black Americans relative to Whites (Centers for Disease Control and Prevention [CDC], 2014a). Furthermore, although Black women represent 13% of the U.S. population, more than 60% of new infections among women and 29% of all new infections occur among Black women (CDC, 2014a, 2014b). One viable strategy for reducing transmission is through increased HIV testing (CDC, 2003), particularly in communities that have been disproportionately affected. Knowledge of positive serostatus may prompt initiation of treatment, which is likely to reduce viral load and the likelihood of transmission (Quinn et al., 2000), even for those who do not change risk behaviors. There is cost-effective prevention value in expanded HIV testing (Holtgrave, 2007; Sanders et al., 2005).

Messages that promote health behaviors, like HIV testing, often highlight the benefits of engaging in the behavior (gains) or the negative consequences of failure to engage in the behavior (losses). The framing literature that aims to provide practical guidance for health communication message design was largely spurred by the suggestion that the effects of gain- and loss-framed messages may vary systematically depending on the function of the health behavior, such that loss frames should be more effective than gain frames for detection behaviors and vice versa for prevention behaviors (Rothman & Salovey, 1997). However, the risk implication thesis, which argues that individuals will associate detection behaviors (e.g., HIV testing) with the risk of an unpleasant outcome (i.e., of discovering a positive result) and therefore be more affected by a loss frame, should only hold insofar as individuals actually associate the detection behavior with the risk of an unpleasant outcome (Rothman, Wlaschin, Bartels, Latimer, & Salovey, 2008).

Several meta-analyses have shown mixed results for the risk implication framework. These studies suggest that the contingency of framing effects based on the risk implications of the behavior is not the most complete explanation of framing effects (O’Keefe & Jensen, 2006, 2007, 2009). However, much of the work included in the meta-analyses overlooks the central role of individual differences in disposition. Instead, these studies focus on the heuristic that uses a detection/prevention distinction to derive hypotheses (Covey, 2014; Rothman et al., 2008).

Evidence is mounting that demonstrates that individuals’ construal of the risk associated with a behavior, rather than its function, affects responses to framed messages (Apanovitch, McCarthy, and Salovey, 2003; Bartels, Kelly, & Rothman, 2010; Gallagher, Updegraff, Rothman, & Sims, 2011). When behaviors are considered risky, loss-framed messages are more persuasive; when behaviors are considered relatively safe, gain-framed messages are more persuasive (Bartels et al., 2010). This study contributes to the theoretical understanding of the ways in which individual differences in disposition, which are conceptually and empirically related to perceived risk, moderate the effectiveness of gain- and loss-framed messages.
Sensation Seeking as Framing Effect Moderator

This study examines whether sensation seeking moderates the effectiveness of framed HIV test promotion messages. Sensation seeking is positively associated with both actual risk behaviors (Jones, 2004) and perceived HIV/AIDS risk, particularly among young women (Horvath & Zuckerman, 1993). Horvath and Zuckerman (1993) argued that appraisals of risk for HIV are based on (rather accurate) knowledge of transmission routes. Consequently, although high sensation seekers (HSS) are likely to engage in a variety of risky sexual behaviors, they are also likely to acknowledge that their own risk of testing positive is heightened. HSS also have a higher tolerance for risk, which explains why HSS might engage in relatively risky sexual behavior and acknowledge their heightened risk of exposure to HIV. We anticipate that responses to framed messages may vary based on individuals’ sensation-seeking tendencies, because sensation seeking is associated with perceived risk. Consequently, sensation seeking should qualify the effect of gain- and loss-framed messages in ways consistent with perceived risk. Thus, we utilize sensation seeking, which offers a great deal of utility in terms of public communication message design, placement, and targeting, to test propositions derived from prospect theory.

Gain and Loss Message Frames

According to prospect theory, when a decision is framed in terms of gains, people tend to be risk averse in their choices. When a decision is framed in terms of losses, they are more willing to accept risk (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981). By extension, under conditions of risk (i.e., of unpleasant outcomes), loss-framed messages are more influential than gain frames, whereas people are more sensitive to gains under conditions of low risk (Rothman, Martino, Bedell, Detweiler, & Salovey, 1999; Rothman & Salovey, 1997).

Rothman and Salovey (1997) argued that prevention behaviors should be associated with little perceived risk because they reduce future risk. Detection behaviors should be associated with relatively higher perceived risk because individuals run the risk of discovering an illness. Thus, gain-framed messages should be more effective for promoting prevention behaviors and loss-framed messages should be more effective for detection behaviors.

Studies testing message frames for prevention behaviors have tended to show an advantage for gain-relative to loss-framed messages in a variety of contexts, including sunscreen use (Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999; Rothman, Salovey, Antone, Keough, & Martin, 1993), physical exercise (Gray & Harrington, 2011; Jones, Sinclair, & Courneya, 2003), condom use (Linville, Fischer, & Fischhoff, 1993), and safe driving (Millar & Millar, 2000). Studies focused on detection behaviors have tended to show an advantage for loss frames in a range of behavioral domains, including breast screening (Banks et al., 1995; Cox & Cox, 2001; Finney & Iannotti, 2002; Schneider et al., 2001), breast self-examination (Meyerowitz & Chaiken, 1987), HIV testing (Kalichman & Coley, 1995), and dental hygiene (Rothman et al., 1999).

However, several studies have failed to find significant framing effects and others have found effects only among subsamples of respondents (Rothman & Updegraff, 2010). Furthermore, recent meta-analyses have offered mixed evidence for the risk implication thesis (O’Keefe & Jensen, 2006). Although O’Keefe and Jensen (2007) showed a significant, small advantage for loss frames among detection behaviors, this effect appeared to be driven by a single class of behaviors (breast cancer). Another meta-analysis found a main effect for gain-framed messages among prevention behaviors. Once again, however, those findings also appeared to be driven by a single class of behaviors (dental hygiene). In another meta-analysis (O’Keefe & Nan, 2012), there was no main effect for gain-framed messages promoting vaccination. Similarly, there were no significant differences in the effects of gain- and loss-framed sun protection messages on attitudes, intentions, or behaviors (O’Keefe & Wu, 2012).

In summary, there is some evidence for the contingency of framed message effects on the function of the behavior, but meta-analyses provide mixed support and suggest that important moderators have not been taken into account in the analysis1 (Covey, 2014; Gallagher & Updegraff, 2011). These findings may have resulted from variability across individuals in how specific behaviors within a disease category are construed (Latimer, Salovey, & Rothman, 2007; Rothman & Updegraff, 2010). The effectiveness of a given message frame should depend on the amount of risk an individual associates with the behavior rather than the function of the behavior (Rothman et al., 1993). In line with this contention, Bartels and colleagues (2010) manipulated the construal of a fictitious health behavior by describing it as one designed to detect a health benefit or problem. Gain-framed messages were more effective when the test was described as serving to detect a health benefit, and there was a reversal in frame effectiveness when the behavior was described as detecting a health problem. Message effectiveness was a function of whether there was risk associated with the function of the detection behavior (benefit vs. problem) rather than the detection function per se. This evidence suggests that the perceived risk associated with a behavior is an important moderator of framing effects.

Disposition as a Moderator of Message Frame

A rapidly growing body of research focuses on the ways in which differences in how individuals think about goals (i.e., regulatory focus; Higgins, 1997) or differences in sensitivity to positive and negative outcomes (Sherman, Mann, & Updegraff, 2006) affect responses to framed language (Updegraff & Rothman, 2013). Behavioral activation and inhibition systems regulate approach and avoidance behavioral tendencies (Mann, Sherman, & Updegraff, 2004). Individuals with dominant BAS are highly attuned to rewards and positive cues, whereas people with dominant BIS are more responsive to negative or punishment cues (Sherman et al.,

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1This is likely because of the scarcity of studies examining risk-related moderators during the period covered by the meta-analyses.
Persuasion is enhanced when there is fit between disposition and message frame, such that BIS-dominant people are more persuaded by loss-framed messages and BAS-dominant people are more persuaded by gain-framed messages (Gerend & Shepherd, 2012; Sherman, 2006).

Similarly, regulatory focus theory suggests that people experience predominant motivational orientations that regulate either approach or aversive behavioral tendencies (Higgins, 2000; Mann et al., 2004; Updegraff, Sherman, Luyster, & Mann, 2007). Individuals with different motivational orientations tend to use different techniques in the pursuit of goals (Higgins, Roney, Crowe, & Hymes, 1994). Promotion-focused individuals are sensitive to positive outcomes and use eager or approach strategies to attain goals. Prevention-focused individuals are attuned to the presence or absence of negative outcomes and use vigilant or avoidance means for achieving goals. Gain and loss frames emphasize promotion and prevention concerns, respectively (Lee & Aaker, 2004).

Through a series of experiments, Lee and Aaker (2004) showed that the regulatory focus highlighted in a message interacts with the message frame such that there is fit between a promotion-focused message and a gain frame and between a prevention-focused message and a loss frame. Fit enhances elaboration and persuasion (Higgins, 1997, 2000; Kees, Burton, & Heinz-Tangari, 2009) because it leads to greater ease of processing and engagement with the message, which is translated into more positive attitudes toward the object (Avnet & Higgins, 2006; Higgins, Idson, Freitas, Spiegel, & Molden, 2003).

Scholars have suggested connections between the risk implication framework and other dispositional frameworks. Rothman and colleagues (2008) argued that behaviors that detect health problems are likely to evoke prevention-focused ways of thinking because they are likely to be associated with uncertainty or risk of negative outcomes. When individuals consider engaging in health promotion behaviors (e.g., sunscreen use), the characteristics of the behavior (i.e., resulting in positive outcomes) are likely to induce a promotion focus (see also Rothman & Updegraff, 2010). Thus, it is plausible that perceived risk associated with a behavior induces motivational disposition in systematic ways.

Lee and Aaker (2004) also argued that perceived risk leads people to think in ways consistent with a prevention or promotion focus. They argued that the vulnerability experienced when perceived risk is high induces a prevention focus, and a loss-framed message fits with that way of thinking. When perceived risk is low, positive outcomes are more salient, resulting in a promotion focus. Gain-framed messages fit well with promotion-focused thinking. When the message frame is compatible with the individual’s way of thinking, message processing is more fluent, which promotes persuasion (Lee & Aaker, 2004, Experiments 2, 3, 5). Consistent with this argument, Hull (2012) found that the effect of message frame, contingent on perceived risk, was mediated through elaboration of message content. We anticipate that other individual differences in disposition may also relate to perceived risk and systematically moderate the effects of message frames.

**Sensation Seeking**

Sensation seeking is an individual difference that is associated with a need for arousal and the willingness to take risks in order to obtain it (Stephenson & Southwell, 2006; Horvath & Zuckerman, 1993). HSS are susceptible to boredom; prefer novel; and engage in exciting experiences (e.g., skydiving) and other risky behaviors (Everett & Palmgreen, 1995), including risky sexual practices (e.g., unprotected sex, multiple sex partners; McCoul & Haslam, 2001; Sheer & Cline, 1994) and substance use (Donohew et al., 2000; Lang, Shin, & Lee, 2005). Low sensation seekers (LSS) do not exhibit the same need for arousal or willingness to engage in risky behavior to obtain desired levels of arousal.

Sensation seeking is a commonly studied individual difference in health communication because of its utility for audience segmentation and targeting. HSS tend to engage in behaviors that are known risk factors for HIV transmission. This audience segment may also exhibit risk perceptions that reflect their heightened risk status in this context (Horvath & Zuckerman, 1993) but may not change risk behaviors because of a high tolerance for risk. Consequently, sensation seeking may moderate the effects of framed messaging in ways consistent with perceived risk. However, sensation seeking may provide more robust practical guidance than perceived risk in terms of message development and targeting.

Sensation seeking provides clear guidance in terms of targeting and message design, particularly if it moderates the effectiveness of framed messages. According to the activation model of information exposure (Donohew, Palmgreen, & Duncan, 1980; Stephenson & Southwell, 2006), HSS have a high need for stimulation and are consequently more likely to attend to content that has high message sensation value (MSV; i.e., that is fast paced, intense, suspenseful; Lang, 2006; Palmgreen, Donohew, Lorch, Hoyle, & Stephenson, 2001) to satisfy that need. Thus, segmenting the audience in terms of this individual difference has implications for message construction and placement—messages targeting HSS should have high MSV and appear in and around programming with high MSV (Donohew, Palmgreen, & Lorch, 1994; Palmgreen et al., 1995).

Although sensation-seeking targeting (Palmgreen et al., 2001) provides guidance with respect to the structural features of a message and placement of the message, it does not suggest what the content of the message should be or which appeals may be most persuasive (Cappella, 2006). When used in conjunction with message framing, sensation-seeking targeting may offer guidance with respect to audience segmentation, the channels through which to reach the target audience, promising structural features (i.e., audiovisual intensity, complexity, pace) and delivery strategies (i.e., narrative; Donohew et al., 1994; Morgan et al., 2003), as well as which persuasive appeal to utilize.

Although individual differences in perceived risk, regulatory focus, and motivational orientation are useful in terms of audience segmentation, they are relatively limited in practical utility. Perceived risk may provide an indication for when to use framed messaging, but it does not provide
guidance regarding other message design features or where to place the message to enhance the likelihood of exposure. Behavioral inhibition/activation and regulatory focus are useful for message design but do not provide guidance with regard to placement and structural features of messages.

We anticipate that sensation seeking may provide valuable theoretical insight into the contingency of framing effects that is of great practical utility. Because HSS may acknowledge their heightened HIV risk status, a message that highlights potential losses resulting from failure to seek HIV testing should be more effective relative to gain frames. Gain-framed messages should be more persuasive for LSS, who are likely to be in a risk-averse mindset, because of the relatively low perceived risk associated with testing. We suggest a fit hypothesis for the interaction between sensation seeking and message frame.

Hypothesis 1: The effect of message frame will be contingent on sensation-seeking status, such that a gain-framed message should be more persuasive than a loss-framed message among LSS, whereas a loss-framed message should be more persuasive among HSS.

Elaboration as a Mediator of the Matching Effect

Messages that match the disposition of the viewer are likely to appear more relevant, and this has been shown to enhance attention to—and scrutiny of—message content (Rothman & Updegraff, 2010; Updegraff et al., 2007). Recent studies have demonstrated that a match between the disposition of the viewer and the message frame enhances elaboration by positively influencing the viewers’ ability to recall information in the message (Aaker & Lee, 2001) and discern strong from weak arguments (Updegraff et al., 2007). Fit also increases the number of thoughts generated and the extent to which those thoughts are focused on the arguments in the message (Hull, 2012; Rothman & Updegraff, 2010).

We anticipate that when there is congruency between message frame and sensation-seeking status (LSS/gain frame, HSS/loss frame), the framed message should be consistent with viewers’ way of thinking regarding risk associated with the behavior, which should heighten attention to and engagement with the message content (Aaker & Lee, 2001; Higgins et al., 2003; Updegraff et al., 2007), which should promote persuasion.²

Hypothesis 2: The interaction between message frame and sensation seeking will be mediated through elaboration of message content.

²When arguments are strong. From the elaboration likelihood model (ELM) perspective, strong arguments consider outcomes that are relevant to the audience. Under conditions of high elaboration, weak arguments generate negative responses and are discounted. Strong arguments generate positive responses that are integrated into cognitive structures (O’Keefe, 2008). Among women in the gain- and loss-framed conditions, message elaboration and intentions demonstrated a moderate correlation, controlling for pretest intentions (partial r = .36, p < .001), which implies that the arguments were rather strong (O’Keefe, 2008).

Method

Design and Procedure

The experiment used a 2 (message frame: gain/loss) × 2 (sensation seeking: high/low) between-subjects design to test the effects of framed HIV test promotion messages. Respondents were invited to participate in an online health messages study in which they completed a pretest assessing sensation seeking and demographics. They were then randomly assigned to a condition, exposed to stimuli, and directed to the posttest. On average, participants took 19 minutes, 28 seconds, to complete the study (Mdn = 16 minutes).

Participants

Survey Sampling International randomly recruited participants from a universe of panel members using a random number generator. Recruitment criteria maximized the relevance of the messages and statistical power. Criteria were race (Black and White, for comparison), gender (female), age (18–25), unmarried status, having ever engaged in heterosexual intercourse, and HIV status (positive or unknown). Only women were invited to participate in the study because women of color experience a dramatically disproportionate HIV burden relative to White women (20 times the rate of transmission; CDC, 2012), and messages were developed based on beliefs about HIV/AIDS expressed by women of color (Siegel, Raveis, & Gorey, 1998). The final sample for the gain- (n = 236) and loss- (n = 268) framed messages was 51% Black and 49% White, and the average age of the participants was 22 years (SD = 2.22).

Messages

Textual messages were adapted from previous research (De Wit, Das, & Vet, 2008; Hullett, 2006; Kalichman & Coley, 1995; Meyerowitz & Chaiken, 1987) to reflect beliefs regarding HIV and testing (Siegel et al., 1998). Messages (≈350 words) were rated at a fourth-grade reading level based on the Flesch-Kincaid readability index. Messages were pilot tested among sample of Black (31%) and White (69%) women between the ages of 18 and 25 years (M = 22, SD = 1.97) using identical procedures to ensure that framed messages were equally legible and equally understandable (N = 60). Results indicated no significant differences between messages (p > .10).

Messages featured a young Black woman who was living with HIV describing the reasons she did not think she was at risk, the reasons she sought testing, and the consequences of testing in terms of health and social outcomes (see the Appendix). In order to maximize internal validity with regard to framing effects, messages contained text only, with no additional visual cues.

Measures

Age, gender, ethnicity, and sexual orientation were assessed using single-item measures. Behavioral intention was assessed using three items rated on a 5-point scale ranging from...
(1) disagree to (5) agree: “I plan to/intend to/will get tested for HIV/AIDS in the next 3 months.” These items were combined to create a scale (M = 3.15, SD = 1.52; α = .99).

Sensation seeking was measured using the reduced form of the Brief Sensation Seeking Scale (Stephenson, Hoyle, Palmgreen, & Slater, 2003). Respondents were asked to rate their agreement with each of the following statements on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree): “I would like to explore strange places,” “I like to do frightening things,” “I like new and exciting experiences, even if I have to break the rules,” and “I prefer friends who are exciting and unpredictable.” These items demonstrated good internal consistency and were averaged to create a sensation-seeking scale (M = 3.21, SD = 0.95; α = .80). This item was then dichotomized using a median split (Donohew et al., 2000; Palmgreen et al., 2001).

Message elaboration (Stephenson, 2003) was assessed using four items rated on a 5-point scale (1 = not at all to 5 = very much): “Overall, how much did the HIV public service announcement make you (a) think about the arguments for getting tested for HIV, (b) think rather than feel, (c) think about the consequences of getting tested that are shown in the public service announcement, (d) think about how getting tested might affect my life?” The mean of these items was used to create a scale (M = 3.71, SD = 0.99; α = .80).

Manipulation checks were adapted from previous research (Maheswaran & Meyers-Levy, 1990) and rated on a 7-point scale (1 = strongly disagree to 7 = strongly agree): “The HIV testing message I read highlighted the good (M = 4.80, SD = 1.64) and bad (M = 4.61, SD = 1.77) things that could happen if I get tested for HIV.” Participants were also asked how difficult (1) or easy (5) it was to understand the message (M = 4.49, SD = 0.83).  

Perceived risk was measured using three items rated on a 5-point scale (1 = extremely unlikely to 5 = extremely likely): “If you get tested, how likely is it that the test results will be positive?” “How likely is it that you have HIV?” and “How likely is it that you will get HIV in the future?” These items demonstrated good internal consistency and were averaged to create a scale (α = .86). This scale demonstrated severe positive skewness (M = 1.61, SD = 0.92) to the extent that nearly 50% of respondents reported “extremely unlikely” (=0). Consequently, as in previous research (Apanovitch et al., 2003; Hull, 2012), this item was dichotomized such that very low perceived risk = 0; all other categories were collapsed to represent some perceived risk (=1).

Analysis

Moderated mediation analysis was conducted using the PROCESS macro for SPSS (Hayes, 2013), with intentions as the outcome and elaboration as the mediator predicted by frame exposure, sensation seeking, and their interaction (see Figure 1). In addition to providing an estimate of the conditional direct and indirect effects of model predictors on the outcome, PROCESS probes the interaction and provides an estimate of the conditional direct and indirect effect of the interaction term (through elaboration) at multiple levels of the moderator (Hayes, 2013).

Results

Manipulation Checks

Responses to the loss frame manipulation check were significantly different between participants in the gain condition (M = 4.40, SD = 1.78) and loss condition (M = 4.81, SD = 1.74), t(497) = −2.58, p = .01. The difference between the gain condition (M = 4.94, SD = 1.51) and loss condition (M = 4.67, SD = 1.76) for the gain frame manipulation check was not statistically significant, although the means were in the expected directions, t(495) = 1.82, ns. No significant difference was found between the gain condition (M = 4.43, SD = 0.86) and loss condition (M = 4.55, SD = 0.80) in terms of whether the message was easy or difficult to understand, t(499) = −1.66, ns. In order to check our assumptions regarding a positive relationship between sensation seeking and perceived risk, we conducted a chi-square test, which supported our expectations, \( \chi^2(1, N = 504) = 5.86, p < .05 \).

Hypothesis Tests

The fit hypothesis was tested using analysis of variance. Results suggested an interaction between message frame and sensation seeking, F(1, 500) = 3.40, p = .03, one-tailed.  

This finding was directionally consistent with the fit hypotheses, such that there was a reversal of frame effectiveness favoring the gain frame among LSS and the loss frame among HSS. Post hoc tests revealed that the significance of the interaction effect was primarily driven by the differential effectiveness of the loss-framed message among HSS relative to LSS (see Figure 2).  

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\(^3\)O’Keefe (2003) argued that manipulation checks are most appropriately conceptualized as cognitive mediators. Consistent with this argument, a mediation analysis was conducted examining the manipulation checks as mediators. There was no significant mediation by the manipulation check items.

\(^4\)Because we proposed a directional hypothesis, we report one-tailed tests of significance. However, the two-tailed p value was double that of the one-tailed test—in this case, the two-tailed p = .06.
The moderated mediation analysis demonstrated that the effect of message frame on behavioral intention was contingent on sensation seeking (see Table 1). When the outcome was intention, there was a significant interaction between frame and sensation seeking ($B = .63$, $p < .05$), controlling for elaboration (see Figure 3). The conditional direct effects of frame on intention at both levels of sensation seeking were significant and directionally consistent with our hypotheses. The indirect effect of message frame through elaboration, qualified by sensation seeking, was not significant, as indicated by confidence intervals that encompassed zero. Thus, results indicated that there was an effect of message frame that was contingent on sensation seeking, but the effect was not mediated through elaboration of message content. These findings supported the hypothesized interaction but not mediation.

Discussion

This study provides support for the expectation that the fit between viewer disposition and message frame promotes persuasion. The effects of framed messages on intentions to seek testing were contingent on sensation seeking in this study. Among HSS, the loss frame was more persuasive; among LSS, the gain frame was more effective.

Sensation seeking provides a potentially robust variable in terms of indicating who might engage in risky behaviors (Palmgreen et al., 2001). High sensation seeking is associated with substance use and number of sex partners, which are jointly associated with HIV risk (Wingood & DiClemente, 1998). Understanding the ways in which persuasion might be enhanced among HSS is a promising audience segmentation strategy. Sensation seeking has also been shown to be particularly high among youth. Given that current estimates suggest that almost half of youth who are living with HIV have not been tested and are unaware of their status (CDC, 2012), promoting testing—particularly among groups who carry a heavy disease burden—has promise as a strategy for reducing HIV transmission and prolonging and improving the quality of life for those living with HIV (Cohen et al., 2011). Although preliminary, this evidence suggests that practitioners should consider segmenting audiences by sensation-seeking tendencies to enhance the persuasiveness of testing messages by matching message frames to audience predispositions.

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**Table 1.** Indirect effect of message frame on intention through elaboration contingent on sensation seeking

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$B$</th>
<th>SE</th>
<th>$t$</th>
<th>$p^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mediator variable model (DV = elaboration)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>2.95</td>
<td>.43</td>
<td>6.83</td>
<td>.00</td>
</tr>
<tr>
<td>Frame</td>
<td>1.77</td>
<td>.27</td>
<td>0.66</td>
<td>.51</td>
</tr>
<tr>
<td>Sensation seeking</td>
<td>0.60</td>
<td>.28</td>
<td>2.13</td>
<td>.03</td>
</tr>
<tr>
<td>Frame × Sensation Seeking</td>
<td>−0.18</td>
<td>.17</td>
<td>−1.01</td>
<td>.32</td>
</tr>
<tr>
<td>Dependent variable model (DV = intentions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>1.90</td>
<td>.63</td>
<td>3.00</td>
<td>.00</td>
</tr>
<tr>
<td>Elaboration</td>
<td>0.66</td>
<td>.06</td>
<td>10.57</td>
<td>.00</td>
</tr>
<tr>
<td>Frame</td>
<td>−0.94</td>
<td>.38</td>
<td>−2.50</td>
<td>.01</td>
</tr>
<tr>
<td>Sensation seeking</td>
<td>−0.81</td>
<td>.40</td>
<td>−2.05</td>
<td>.04</td>
</tr>
<tr>
<td>Frame × Sensation Seeking</td>
<td>0.63</td>
<td>.25</td>
<td>2.57</td>
<td>.01</td>
</tr>
<tr>
<td>Conditional direct effects at levels of sensation seeking (DV = intentions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensation seeking Low = 1</td>
<td>−0.31</td>
<td>.16</td>
<td>−1.89</td>
<td>.06</td>
</tr>
<tr>
<td>High = 2</td>
<td>0.32</td>
<td>.18</td>
<td>1.74</td>
<td>.08</td>
</tr>
</tbody>
</table>

Note: Condition 1 = gain, Condition 2 = loss. $N = 504$. $R^2 = .20$. DV = dependent variable.

$^a$ps are two-tailed.

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5Note that the $p$ values reported by the macro are two-tailed. Given that the analysis tested a priori hypotheses, the appropriate $p$ value is half of that reported (i.e., one-tailed LSS, $p = .03$; HSS, $p = .04$) in Table 1.
Understanding whether individual differences in sensation seeking regulate responses to gain and loss frames promises a great deal of utility in terms of guiding the construction of persuasive messages. This study complements evidence-based recommendations about the structure and placement of persuasive messages (Stephenson & Southwell, 2006). This study suggests that HIV test promotion messages targeting those who are likely to be at heightened risk should utilize loss-framed appeals rather than gain-framed appeals. Other research suggests that messages targeting HSS should include high MSV content (i.e., they should be novel, intense, complex, surprising, etc.) and be placed in high sensation value contexts (Everett & Palmgreen, 1995; Palmgreen et al., 2001). For LSS, the implications are reversed.

This study also adds to a growing body of literature examining potential mediators and moderators of framed message effects. Although this evidence suggests that the fit between a participant’s sensation-seeking disposition and frame enhances persuasion, we did not find support for elaboration as a mediator of message effects. Alternative explanations are plausible. Matching the message to viewer sensation-seeking status may affect initial attention to the message but not how deeply the message is processed. Other aspects of the message (i.e., MSV) that may serve to sustain attention were not matched to sensation-seeking disposition in this study. Fit may also enhance persuasion through enhanced fluency, such that messages matched to viewer disposition may be easier to process and thus more persuasive as a result of the subjective experience (Lee & Aaker, 2004; Rothman & Updegrove, 2010). Fit also results in an experience of feeling right about the decision, which heightens the perceived value of the outcome and importance of the subject of the decision (Higgins et al., 1994, 2003). Feeling right also enhances perceived message effectiveness and the perception of correctness in one’s judgment (Cesario, Grant, & Higgins, 2004) and leads people to attach more value to the behavior itself (Higgins, 2000). These mechanisms may be emotional rather than cognitive in nature. Furthermore, if “stimuli that are novel, signal, or motivationally relevant are encoded automatically,” as scholars have argued (Lang, 2006, p. S60), elaboration may not be the appropriate mechanism for capturing the process.

Although this study provides evidence that sensation seeking interacts with message frame to affect intentions, MSV was not measured or manipulated in this study. Thus, speculation about the potential for matching MSV to sensation-seeking preferences and message frame, although theoretically informed (i.e., Palmgreen et al., 1995), is fruitful ground for future research. However, the sensation-seeking targeting approach has demonstrated effectiveness in terms of utilizing messaging focused on negative outcomes, similar to loss frames among HSS (Noar et al., 2014; Palmgreen et al., 2001; Zimmerman et al., 2007). In this study, hypotheses tested the effects of a single set of framed HIV test promotion messages among young women. Although we anticipate the process by which framed messages influence viewers to be stable across populations, the content of the messages developed for this study highlighted beliefs relevant to young women of color. Consequently, the results of the study may not generalize beyond the sample characteristics.

This study supports current theorizing about the moderating impact of individual differences in disposition on framed message effects. We demonstrated that HSS are more persuaded by loss-framed language, whereas LSS are more sensitive to gain frames. We speculate that these results are consistent with a fit explanation that may result from a mechanism other than elaboration of message content.

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References


Appendix: Stimuli

Sexual intercourse can put you at risk for HIV. The more sex partners you have, the larger the risk, but even one sexual encounter can transmit the virus. Make sure you know your HIV status!

Shanera is a 22-year-old, African American woman. She has HIV. She got it from her boyfriend. We asked Shanera about how she got infected. She said, “I never thought I would get HIV. I have had two serious boyfriends, but other than that I only hooked up with a few people. Most of the time, I thought I was being safe. I didn’t use a condom all of the time though. But, I never had sex with more than one person during the same time period! How could this have happened to me? I know what HIV is, but I thought that it could only happen to people who get around and have lots of unsafe sex. My ex-boyfriend told me he wasn’t having sex with other people. I trusted him.” She went on to explain how her friends convinced her to get tested: “One of my girls insisted that we all get tested together. So, I got tested with my friends on National HIV Testing Day and I found out that I am HIV positive. I never thought that I would get HIV, but I did. I found out early so was able to start treatment early. That can help me to stay healthier for longer. /I wish I would have known sooner. Then I could have started treatment early. That could have helped me stay healthier for longer. ]” Do you have HIV/AIDS? Are you sure? [Gain the opportunity to know for sure/Don’t lose out on the opportunity to know for sure.] You can catch HIV/AIDS through sexual contact, by sharing needles and/or syringes, or through transfusions of infected blood. Even if you don’t have symptoms like fatigue, weight loss, night sweats, that does not mean you don’t have HIV. If your partner doesn’t show signs of infection, it does not mean that he doesn’t have the virus. If you care about your health, you need to get tested for HIV/AIDS. By [getting/not getting] this simple test, you can [gain/lose out on] benefits like emotional support and the opportunity for treatment that may keep you healthy. [Take advantage of/Don’t miss] this opportunity. Get tested today!