
The use of message framing to promote sexual risk reduction in young adolescents: a pilot exploratory study

Deepa R. Camenga^{1,4}, Kimberly D. Hieftje^{2,4}, Lynn E. Fiellin^{2,4,*},
E. Jennifer Edelman^{2,4}, Marjorie S. Rosenthal^{1,4} and Lindsay R. Duncan^{3,4}

¹Department of Pediatrics, Yale School of Medicine, New Haven, CT 06520, USA, ²Department of Internal Medicine, Yale School of Medicine, New Haven, CT 06520, USA, ³Department of Kinesiology and Physical Education, McGill University, Montreal, Quebec, H2W 1S4, Canada ⁴Yale's play2PREVENT Lab

*Correspondence to: L. E. Fiellin. E-mail: lynn.fiellin@yale.edu

Received on June 26, 2013; accepted on December 17, 2013

Abstract

Few studies have explored the application of message framing to promote health behaviors in adolescents. In this exploratory study, we examined young adolescents' selection of gain- versus loss-framed images and messages when designing an HIV-prevention intervention to promote delayed sexual initiation. Twenty-six adolescents (aged 10–14 years) participated in six focus groups and created and discussed posters to persuade their peers to delay the initiation of sexual activity. Focus groups were audio-recorded and transcribed. A five-person multidisciplinary team analyzed the posters and focus group transcripts using thematic analysis. The majority of the posters (18/26, 69%) contained both gain- and loss-framed content. Of the 93/170 (56%) images and messages with framing, similar proportions were gain- (48/93, 52%) and loss-framed (45/93, 48%). Most gain-framed content (23/48, 48%) focused on academic achievement, whereas loss-framed content focused on pregnancy (20/45, 44%) and HIV/AIDS (14/45, 31%). These preliminary data suggest that young adolescents may prefer a combination of gain- and loss-framing in health materials to promote reduction in sexual risk behaviors.

Introduction

Adolescent pregnancy and sexually transmitted infections (STIs) remain serious public health issues.

Overall, 48% of high-school students have had sex, and 6% report having had sex by age 13[1]. An early age of initiation of sexual activity, or sexual debut, increases the risk of multiple partners, adolescent pregnancy and STIs [2–4]. Although the US teen birth rate has declined to 34 births per 1000 15- to 19-year-old adolescent females, it remains one of the highest among industrialized countries [5, 6]. Furthermore, 50% of new STIs in the United States occur in individuals aged 15–25 years [7]. Given these data, an important step towards preventing pregnancy and STIs, including HIV, among adolescents is to effectively communicate the risks of early sexual initiation.

According to Prospect Theory, decision-making is influenced by the way in which information is delivered or framed [8, 9]. To inform a decision, individuals categorize information in terms of potential gains (i.e. benefits) associated with behavior adoption or potential losses (i.e. costs) associated with non-adoption [9]. Health messages can be framed to emphasize potential gains (gain-framed) or losses (loss-framed) [10]. Gain-framed messages are found to be more persuasive when people perceive a behavior as being safe or relatively risk-free, whereas loss frames are advantageous when people perceive a behavior to be risky or to have an uncertain outcome. In adults, gain-framed messages are more effective for promoting prevention behaviors (i.e. behaviors that prevent disease or illness such as applying sunscreen) [11, 12], whereas loss-framed messages are more effective for promoting detection

behaviors (i.e. behaviors that could lead to the discovery of a disease or illness such as undergoing HIV screening) [5].

Among adults, gain-framed messages have received considerable empirical support for prevention-related behaviors such as vaccination and nutrition [12–14]; however, there are limited data to support a message-framing approach in sexual health. Previous studies in adults have shown that gain-framed messages induce higher rates of carrying condoms [15] and condom use [16]. However, among adolescents, research examining framing effects is limited. The few studies that have been conducted in this area to date indicate that loss-framed messages seem to be more influential in promoting prevention behaviors, such as avoiding drug use and smoking cessation [17, 18]. The findings from these studies contradict the traditional approach to message framing in adults, in that loss-framed messages are preferred among adolescents for prevention behaviors, and suggest that further research is needed to examine the effect of message framing on other common prevention-related behaviors in adolescents, such as delaying sexual initiation.

To begin examining the application of Prospect Theory to message framing among adolescents, we sought to identify adolescents' preferences for gain- and loss-framed messages for promoting delayed sexual initiation (a prevention behavior). In the context of designing a videogame-based HIV-prevention intervention, we conducted focus groups wherein we asked adolescents to create persuasive health messages for their peers and then analyzed their selection of gain- and loss-framed messages as well as their reasons for choosing their messages. The findings from this study provide insight into adolescents' preferences for framing of health prevention messages.

Methods

Overview

As described previously [19], in partnership with a community-based afterschool program, we conducted six gender-stratified focus groups with

young adolescents to explore the factors that impact their decisions about whether to participate in sexual risk behaviors. A portion of these focus groups examined adolescents' preferences for message framing, and these data are presented here.

Participants

We recruited English-speaking youth, aged 10–14 years, who attended a non-profit, afterschool/summer enrichment program in New Haven, Connecticut. This program is open to adolescents from the surrounding urban community and focuses on enhancing competence and self-esteem. By partnering with a program who serves our target audience and having the program staff identify eligible youth, we used a purposeful sampling approach to target 'information-rich' individuals with first-hand experience of our research interest [19, 20]. We recruited participants through flyers and posters placed in the afterschool/summer program. We reviewed transcripts from each focus group after each group and recruited new participants until thematic saturation was achieved [20]. The Yale University School of Medicine Human Investigation Committee approved the research protocol. All participants provided written informed assent and participants' parents or legal guardians provided written informed consent.

Procedures

Prior to conducting the focus groups, the research team identified a selection of images and messages from popular and social media that we felt would be relevant to the target audience and could be incorporated into the development of the videogame intervention. Each gain-framed message (e.g. 'Waiting to have sex until you are older is the safest and most effective way to avoid getting a sexually transmitted infection (like Chlamydia or gonorrhea) and to prevent pregnancy.') was accompanied by a loss-framed message with the same content (e.g. 'Sex at a young age can lead to a sexually transmitted infection, HIV, or pregnancy, which can prevent you from reaching your goals.').

Each focus group lasted about 1 hour and was conducted at the afterschool/summer program. Focus groups included three female-only and three male-only, groups, each including four or five participants. One research team member (K.H.) conducted the focus groups, in partnership with the staff from the afterschool/summer program, using semi-structured, qualitative guides. During the focus groups, we asked participants to individually design posters that advised their peers to ‘wait to have sex until they are much older so they can achieve their future goals and dreams’ and instructed them to choose from the selection of images and messages we provided or to generate their own content. Immediately after the participants created their posters, we reconvened the focus group discussion and asked each adolescent to explain to the group why they thought their poster would be effective. Focus groups were audio-taped, professionally transcribed and reviewed by a research team member (K.H.) to ensure accuracy. At the conclusion of the focus group discussion, demographic data were collected from each participant through an anonymous survey and they received \$40 gift cards.

Data analysis

Focus group data were entered into ATLAS.ti (version 5.0; Scientific Software Development, Berlin, Germany) to facilitate data organization and retrieval. A five-person, multidisciplinary team, composed of individuals with expertise in message framing, HIV, qualitative methods, adolescent medicine, and health behavior conducted data analysis of the posters and focus groups relevant to sexual health. After the posters were created, we met as a group to code the posters’ images and messages as either gain- or loss-framed and develop descriptive codes for each image or message. In accordance with the traditional approach to message framing [10], we defined a gain-framed image/message as one which emphasized a potential benefit of delaying sexual activity and a loss-framed image/message as one which emphasized a loss associated with the behavior. For the analysis of the accompanying focus group discussion, we used the

principles of grounded theory, including the constant comparative method [21]. Using these methods, we used systematic inductive procedures to generate codes from the discussion provided by the participants. All focus group transcripts were independently reviewed and then as a team, we compared the content with previously coded data, refined codes and negotiated consensus. We classified the text as focusing on either gain- or loss-framed topics. One research team member (D.C.) reviewed the focus group codes and updated them with any emergent themes that were identified through the poster coding process.

Results

Demographic data

A total of 26 adolescents participated with 13 males ($n=6$ Hispanic, $n=5$ African American, $n=2$ multi-racial) and 13 females ($n=6$ Hispanic, $n=4$ African American, $n=1$ white, $n=2$ multi-racial) aged 10–14 years (mean age 11.7 years).

Gain- and loss-framed themes

The participants created 26 posters with 75 images and 95 messages. Sixty-nine percent (18/26) of the posters contained both gain- and loss-framed content, 19% (5/26) contained only loss-framed content and 12% (3/26) only gain-framed content. The adolescents created 15% (11/75) of the images and 80% (76/95) of the messages. Of the 93/170 (56%) images and messages with framing, similar proportions were gain- (45/93, 48%) or loss-framed (48/93, 52%) (Table I). Most gain-framed content focused on academic achievement (Table II). One participant described how academic achievement should precede childbearing:

By not having sex at a young age you are more likely to get an education and [reach] your goals. [Female]

The most common loss-framed themes were pregnancy (20/45, 44%) and HIV/AIDS (14/45, 31%) (Table II). These loss-framed themes were often presented alongside gain-framed content.

Table I. Themes presented in posters as images and messages

	Total, <i>n</i> (%) (<i>n</i> = 170)	Images, <i>n</i> (%) (<i>n</i> = 75)	Messages, <i>n</i> (%) (<i>n</i> = 95)
Gain-framed			
Academic achievement	23 (47.9)	14 (42.4)	9 (60.0)
Happy, healthy women	6 (12.5)	6 (18.2)	0 (0.0)
Healthy romantic relationships	4 (8.3)	4 (12.1)	0 (0.0)
Positive role models	3 (6.3)	3 (9.1)	0 (0.0)
Family	3 (6.3)	3 (9.1)	0 (0.0)
Future dreams and goals	3 (6.3)	0 (0.0)	3 (20.0)
Avoiding STIs, pregnancy	3 (6.3)	0 (0.0)	3 (20.0)
Career	2 (4.2)	2 (6.1)	0 (0.0)
Sports	1 (2.1)	1 (3.0)	0 (0.0)
Total	48	33	15
Loss-framed			
Pregnancy	20 (44.4)	20 (58.8)	0 (0.0)
HIV/AIDS	14 (31.1)	12 (35.3)	2 (18.2)
Loss of future dreams and goals	4 (8.9)	0 (0.0)	4 (36.4)
STIs and pregnancy	2 (4.4)	0 (0.0)	2 (18.2)
Life and death	2 (4.4)	0 (0.0)	2 (18.2)
STIs	1 (2.2)	1 (2.9)	0 (0.0)
Unhealthy romantic relationships	1 (2.2)	1 (2.9)	0 (0.0)
Lack of academic achievement	1 (2.2)	0 (0.0)	1 (9.1)
Total	45	34	11
Non-framed^a			
Total	77	8	69

STI = sexually transmitted infection.

^aNon-framed images included pictures of condoms and messages included descriptions of the images (i.e. ‘She is a healthy woman’) or directives (i.e. ‘Wait to have sex’).

The loss-framed theme of pregnancy was only expressed through the images. The discussion supported the loss-frame of pregnancy by describing how it limited future goals:

Don’t worry about having kids or stuff like that until you get older because if you go having kids, then underage, and you can’t do nothing anymore. [Male]

In addition, many loss-framed images focused on the deleterious effects of HIV/AIDS. For example, this participant focused on the prospect of dying from AIDS as a reason to wait to begin having sex:

Because . . . the picture of superman, his ribs are all like showing and stuff like that. And, people will be really scared because like they’re going to end up like him and they

won’t have anything to do in life and the sexually transmitted infections, they won’t want to get it so they’ll have to wait. [Male]

Most of the messages (*n* = 69) did not include a frame, and instead included descriptions of the images (e.g. ‘She is a healthy woman’) or directives (e.g. ‘Wait to have sex’) (Table II). Gain-framed messages most commonly focused on education, whereas loss-framed messages commonly focused on the loss of goals or dreams.

When asked to discuss why the poster content would influence adolescents to delay sexual initiation, many participants focused on describing the loss-framed content. Several adolescents expressed that presenting both gain- and loss-framed content was important. For example, one participant described how the presentation of both gain- and

Table II. *Examples of gain- and loss-framed messages*

Theme	Example
Gain-framed	
Academic achievement	'By not having sex at a young age you are more likely to get an education and reach your future goals.' ^a
Gain of future dreams and goals	'Not having sex when you are too young will protect your future and make it possible to reach your goals.' ^b
Avoiding STIs and pregnancy	'Waiting to have sex until you are older is the safest and most effective way to avoid getting a sexually transmitted infection (like Chlamydia or gonorrhea) and to prevent pregnancy.' ^a
Loss-framed	
HIV/AIDS	'Wait till you are [with] the right one to marry [or] you can get AIDS like Superman.' ^b
Loss of future dreams	'Having sex at a young age can really get in the way of your hopes and dreams.' ^a
STIs and pregnancy	'Sex at a young age can lead to a sexually transmitted infection, HIV, or pregnancy, which can prevent you from reaching your goals.' ^a
Life and death	'Wait to have sex or you'll die.' ^b
Lack of academic achievement	'Having sex can interfere with your future goals and dreams for an education and a career.' ^a

^aMessage was created by research team.

^bMessage was created by adolescent participant.

loss-framed content could help adolescents visualize both their positive and negative options for the future:

The poster will work because it shows you how you will look if you have sex and how you would look if you didn't. [Male]

Discussion

In this exploratory, qualitative study, we found that a majority of adolescents (69%) selected a combination of gain- and loss-framed images and messages to incorporate into their poster. Most gain-framed content (23/48, 48%) focused on academic achievement whereas loss-framed commonly focused on pregnancy (20/45, 44%) and HIV/AIDS (14/45, 31%). Although adolescents did not seem to predominantly prefer loss-framed themes, this frame seemed to prompt the most discussion, as the adolescents often discussed the loss-framed content when describing the potential effect of their posters. Some adolescents felt that presenting a mixture of

gain- and loss-framed images and messages was important to help adolescents visualize the options for their future.

The selection of both gain- and loss-framed content in this study differs from previously published adolescent literature, which suggests that loss-framed content might be more persuasive. For example, high-school students perceive loss-framed cigarette package warning labels to be more effective than gain-framed labels [22]. Cho *et al.* found that loss-framed messages were more persuasive among adolescents whose friends use drugs (and are arguably at higher risk of initiating drug use), whereas there was no advantage among adolescents whose friends do not use drugs [17]. Similarly, Latimer *et al.* found that loss-framed messages resulted in more positive attitudes towards smoking cessation among adolescent smokers (who are at highest risk for suffering smoking-related consequences) [18]. Furthermore, mass media, anti-smoking campaigns that focus on loss-framed images have been found to increase thoughts about quitting among experimental and established adolescent smokers [23].

The selection of gain- and loss-framed content, rather than predominantly gain-framed content, to delay sexual initiation contradicts message framing studies conducted in adults, which demonstrate an advantage for gain-framed messages. Studies of adults have found that gain-framed messages are associated with higher rates of prevention behaviors (carrying condoms), but loss-framed messages were more convincing when related to a more difficult, interpersonal and emotionally risky behavior (i.e. talking about condom use with sex partners) [15]. Therefore, one hypothesis arising from this study is that loss-framed content was selected by adolescents because they perceived delayed sexual initiation as a relatively difficult behavior. Another hypothesis, as suggested by the focus group discussion, is that adolescents may prefer to visualize both options and may be motivated by the contrast between the gain- and loss-framed content. Future studies are needed to explore these possibilities.

Some researchers argue that the advantage of loss- versus gain-framed messages for prevention behaviors may be due to differences in the application of cognitive dissonance theory in adults and adolescents [18]. Cognitive dissonance theory states that individuals feel psychological discomfort when there is divergence between their beliefs and their behaviors [24]. Adolescents may be more influenced by loss-framed messages because these messages enhance their cognitive dissonance. On the other hand, cognitive dissonance naturally increases with age [25], and therefore adults may not need loss-framed messages to provoke dissonance.

This study has several limitations. First, we may have primed the adolescents to select gain-framed topics by instructing them to create posters with a gain frame ('to achieve their future goals and dreams'). Furthermore, the results of this study may have been influenced by the ability of the participants to choose from our predefined images and messages, in that the adolescents may have been primed to select a narrow range of topics. We did, however, encourage the participants to create their own images and messages to help elicit emergent themes, and 14% of the images and 79% of the messages were created by the youth. Second, we focused

on English-speaking adolescents attending one after-school program and may have under-sampled higher-risk adolescents who are not connected to community programs, which may limit the transferability of our findings to other populations. Third, we did not formally collect data on whether the participants had initiated sexual activity, as this was beyond the scope of the study, but recognize differences in sexual experiences may have influenced the results. Finally, this study is hypothesis-generating and does not allow us to make conclusions about the effect of message framing on sexual risk reduction behaviors.

Despite these limitations this study extends the current literature by highlighting the content areas that may be most salient to adolescents in the promotion of delayed sexual initiation. Salient gain-framed themes include academic achievement, whereas loss-framed themes include pregnancy and HIV/AIDS. Future studies should focus on the effect of both gain- and loss-framed messages on prevention itself—that is delaying the initiation of risk behaviors. Furthermore, future research should determine how adolescents' perceived risk of initiating a particular behavior affects their responsiveness to different message frames. Understanding how to motivate sexual risk reduction behaviors is a key step towards improving health outcomes among adolescents.

Funding

This study was supported by grant NICHD R01 HD062080-01 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development and the Robert Wood Johnson Foundation Clinical Scholars Program.

Conflict of interest statement

None declared.

References

1. Trends in HIV-related risk behaviors among high school students—United States, 1991-2011. *MMWR* 2012; **61**: 556–60.

2. Sandfort T, Orr M, Hirsch JS *et al.* Long-term health correlates of timing of sexual debut: results from a national US study. *Am J Pub Health* 2008; **98**: 155–61.
3. Kaestle CE, Halpern CT, Miller WC *et al.* Young age at first sexual intercourse and sexually transmitted infections in adolescents and young adults. *Am J Epidemiol* 2005; **161**: 774–80.
4. Haydon AA, Herring AH, Halpern CT. Associations between patterns of emerging sexual behavior and young adult reproductive health. *Persp Sexual Reprod Health* 2012; **44**: 218–27.
5. Hamilton, B. E. and S. J. Ventura (2012). Birth rates for U.S. teenagers reach historic lows for all age and ethnic groups. *NCHS Data Brief*, National Center for Health Statistics. Hyattsville, MD.
6. UNSD. *Demographic Yearbook 2009-2010*. New York: United Nations, 2011.
7. Prevention CfDca. *Sexually Transmitted Disease Surveillance 2011*. Atlanta: U.S. Department of Health and Human Services, 2012.
8. Tversky A, Kahneman D. The framing of decisions and the psychology of choice. *Science* 1981; **211**: 453–8.
9. Kahneman D, Tversky A. Prospect theory: an analysis of decision under risk. *Econometrica* 1979; **47**: 263–91.
10. Rothman AJ, Salovey P. Shaping perceptions to motivate healthy behavior: the role of message framing. *Psychol Bull* 1997; **121**: 3–19.
11. Detweiler JB, Bedell BT, Salovey P *et al.* Message framing and sunscreen use: gain-framed messages motivate beachgoers. *Health Psychol* 1999; **18**: 189–96.
12. Gallagher KM, Updegraff JA. Health message framing effects on attitudes, intentions, and behavior: a meta-analytic review. *Ann Behav Med* 2012; **43**: 101–16.
13. Abhyankar P, O'Connor DB, Lawton R. The role of message framing in promoting MMR vaccination: evidence of a loss-frame advantage. *Psychol, Health & Med* 2008; **13**: 1–16.
14. Nan X. Communicating to young adults about hpv vaccination: consideration of message framing, motivation, and gender. *Health Commun* 2012; **27**: 10–18.
15. Kiene SM, Barta WD, Zelenski JM *et al.* Why are you bringing up condoms now? The effect of message content on framing effects of condom use messages. *Health Psychol* 2005; **24**: 321–6.
16. Garcia-Retamero R, Cokely ET. Effective communication of risks to young adults: using message framing and visual aids to increase condom use and STD screening. *J Exp Psychol: Applied* 2011; **17**: 270–87.
17. Cho H, Boster FJ. Effects of gain versus loss frame antidrug ads on adolescents. *J Commun* 2008; **58**: 428–46.
18. Latimer AE, Krishnan-Sarin S, Cavallo DA *et al.* Targeted smoking cessation messages for adolescents. *J Adolesc Health* 2012; **50**: 47–53.
19. Hieftje K, Rosenthal MS, Camenga DR *et al.* A qualitative study to inform the development of a videogame for adolescent human immunodeficiency virus prevention. *Games Health J* 2012; **1**: 294–8.
20. Patton MQ. *Qualitative Research and Evaluation Methods*. 3rd edn, Thousand Oaks, CA: Sage Publications, 2002.
21. Glaser BG, Strauss AL. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine, 1967.
22. Goodall C, Appiah O. Adolescents' perceptions of Canadian cigarette package warning labels: investigating the effects of message framing. *Health Commun* 2008; **23**: 117–27.
23. White V, Webster B, Wakefield M. Do graphic health warning labels have an impact on adolescents' smoking-related beliefs and behaviours? *Addiction* 2008; **103**: 1562–71.
24. Festinger L. *A Theory of Cognitive Dissonance*. Stanford, CA: Stanford University Press, 1957.
25. Van Der Rijt GAJ, Westerik H. Social and cognitive factors contributing to the intention to undergo a smoking cessation treatment. *Addictive Behav* 2004; **29**: 191–8.