

The Moderating Role of Self-Efficacy Beliefs in the Relationship Between Anticipated Feelings of Regret and Condom Use¹

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This prospective study examined how the feelings of regret and self-blame one anticipates after engaging in unsafe sex affect condom use in new sexual relationships. The central theoretical question is whether self-efficacy perceptions can moderate the relationship between anticipated feelings and actual condom use. Consistent with theories of anticipated regret and social cognitive learning, participants were most likely to use condoms between the first and second waves of data collection when they anticipated negative feelings as a result of not using condoms (and positive feelings after having used condoms), particularly when they also believed that they had the power to exercise control over the sexual situation (high self-efficacy). The implications for interventions aimed at promoting safer sex are discussed.

A difference between the risk of contracting HIV and other health risks such as heart disease and lung cancer is that a single act of carelessness may result in a deadly disease. If individuals realize this, they may anticipate a large amount of regret and self-blame if they were to engage in an easily preventable behavior that put them at such risk. In line with other theoretical and empirical work on counterfactual thinking (Boninger, Gleicher, & Strathman, 1994; Kahneman & Miller, 1986), *anticipated regret theory* (Janis & Mann, 1977; Loomes & Sugden, 1982) states that individuals who anticipate negative

¹This research was conducted while the first author was employed at the University of Groningen, and was financially supported by Grant #93026 from the Dutch AIDS Prevention Foundation. We are grateful to Geert Fritsma for his help with data collection.

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2001

Journal of Applied Social Psychology, 1997, 27, 22, pp. 2001-2014.
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consequences (in this case, unpleasant feelings) before undertaking action will be motivated to avoid risky behavior and to initiate preventive action. The underlying assumption is that people are motivated to avoid feeling regretful, and there is empirical support for the contention that people will attempt to avoid regret even if it means losing a measure of financial return (Bell, 1982).

If a person has already had sexual intercourse with a casual partner without using a condom, he or she might worry about the possibility of being infected with HIV, and therefore regret having taken the wrong course of action. Although this unpleasant affective state will perhaps motivate the person to use condoms in the future, it cannot undo the possibly already-existing HIV infection. However, to the extent that people are able to *anticipate* such negative feelings before undertaking action, they should be more cautious (Richard, van der Pligt, & De Vries, 1995).

In a series of studies, Richard and his colleagues (Richard, 1994; Richard & van der Pligt, 1991; Richard et al., 1995) have shown that the anticipated affective reaction to unsafe sex can indeed encourage preventive sexual behavior. For instance, in one cross-sectional study among adolescents, Richard et al. (1995) found that the feelings one anticipates experiencing after unprotected sex predicted behavioral expectations over and above components of the theory of planned behavior (Ajzen, 1991; see also Buunk, Bakker, Siero, & VandenEijnden, in press, for comparable findings; and Parker, Manstead, & Stradling, 1995, for comparable findings in the domain of driving violations). In a prospective study among undergraduate students who engaged in casual sex, Richard (1994) found that anticipated feelings such as worry and regret were important predictors of actual condom use over a 4-week period. Comparable results were found for three other health behaviors, namely eating junk food, using soft drugs (e.g., hashish, marijuana), and using alcohol (Richard, van der Pligt, & De Vries, 1996).

Moreover, Richard, van der Pligt, and De Vries (in press) showed in one experiment that individuals who focused on the feelings they would anticipate after unsafe sex were more consistent users of condoms in the 5 months following the intervention than were individuals in a control condition, who simply focused on their current feelings. In this latter study, participants were randomly assigned to the control or the experimental condition, and reported condom use with new or casual partners in the 5 months following the intervention was corrected for previous condom use. Thus, the positive relationship between anticipated regret and prospective condom use cannot simply be explained by Time 1 (T1)-Time 2 (T2) consistency in safer sex.

One plausible explanation for the relatively robust effect of anticipated regret on behavior is offered by a study by Norris and Devine (1992). These researchers studied the impact of construct accessibility on the relationship

between pregnancy concerns and pregnancy risk avoidant action, and found that undergraduate students were less likely to risk pregnancy when pregnancy concerns were highly accessible. When applied to the topic of the present study (i.e., safer sex), this finding suggests that although two persons may hold similar beliefs about AIDS and unsafe sex, their HIV-preventive behavior may vary as a function of the personal accessibility of those beliefs (or anticipated negative feelings). Although additional research is required to illuminate the precise mechanisms underlying the effects of anticipated regret, Richard et al.'s (1995, 1996, in press) studies demonstrate that the awareness that an action can have negative affective postbehavioral consequences can play an important role in producing behavioral change.

In the present study, we were interested in testing the hypothesis that people's sense of self-efficacy regarding HIV-preventive sexual behavior moderates the relationship between anticipated affective feelings after unsafe sex and condom use. It seems evident that people can only behave consistently with their anticipated feelings to the extent that they have the skills, abilities, opportunities, and social cooperation, and that a lack of control would interfere with the anticipated feelings-behavior relationship. Accordingly, the predictive power of anticipated regret should be enhanced if beliefs about control over behavior are taken into account.

Engaging in or initiating HIV-preventive behavior with a new sexual partner generally requires a complex series of behaviors. It requires negotiating with the partner, and oftentimes requires overcoming strongly ingrained habits or drives associated with sexual behavior (Gerrard, Gibbons, Warner, & Smith, 1993). For many people, the process of communicating with one's sexual partner and negotiating cooperation in practicing safer sex may be exceedingly difficult. It has been shown that people sometimes do not engage in safer sex because they feel too embarrassed to discuss the matter, because they find it difficult to buy or present a condom, and because they fear offending their partner by implying that the partner has a disreputable past (Bakker, Buunk, Van den Eijnden, & Siero, in press; Miller, Bettencourt, DeBro, & Hoffman, 1993). For people who experience these difficulties, it is questionable whether anticipated feelings of regret and worry are powerful enough to overcome the barriers of embarrassment and uncooperative partners; these problems can be so overwhelming that they sabotage the individual's best intentions to practice preventive behavior (cf. Gerrard et al., 1993). When such problems are felt to be insurmountable, they may preclude the translation of anticipated feelings into precautionary behaviors.

Clearly, when health behaviors are difficult (as seems to be the case for HIV-preventive behavior), achieving self-directed change requires not only having social skills, but also a sense of personal power to exercise control over the sexual

situation, that is, a sense of self-efficacy (Bandura, 1989) or behavioral control (Ajzen, 1991). According to social cognitive theory (Bandura, 1986), people's beliefs about their capabilities affect what they choose to do, how much effort they mobilize, and how long they will persevere in the face of difficulties. When people lack a sense of self-efficacy, they do not manage situations effectively even though they know what to do and possess the requisite skills. Self-inefficacious thinking creates discrepancies between knowledge and action (Bandura, 1989).

Recent prospective studies have shown that self-efficacy or perceived behavioral control is an important predictor of safer sex (e.g., Kok, De Vries, Mudde, & Strecher, 1991; Nucifora, Gallois, & Kashima, 1993; Wulfert & Wan, 1993), suggesting that people are more likely to engage in HIV-preventive behavior when they think they can exercise control over the situation. Our first objective in conducting the present study was to replicate this finding. A second objective, based on anticipated regret theory, was to examine the prediction that the feelings one anticipates experiencing after unsafe sex will have a positive impact on condom use. More specifically, the principal purpose of this study was to test the hypothesis that the impact on condom use of anticipated feelings after unsafe sex is moderated by self-efficacy. Thus, anticipated negative feelings will only encourage condom use if they are accompanied by a strong sense of self-efficacy regarding this behavior.

Method

Participants

Participants were 49 female and 51 male undergraduate students at the University of Groningen, The Netherlands. Their mean age was 21 years ($SD = 2.0$). All participants indicated that they had a heterosexual orientation. Although a considerable percentage of the sample reported being in a steady relationship at the time of the study—1% married, 17% cohabiting, 47% with partner but not cohabiting, 35% single—half of the sample indicated that they had engaged in more than one new sexual relationship during the preceding year (53%), and 72% of this subgroup indicated that they had not always used a condom in these encounters.

Procedure

Undergraduate students were approached at campus and were asked to participate in a study on "opinions about safe sex." Probably because of the face-to-face interaction, nearly all of the students who were approached agreed to participate (the refusal rate was not recorded). The sample was recruited by one research assistant within 2 days, and consisted of 221 students. Everyone who

was contacted received a paper-and-pencil questionnaire and a cover letter explaining the goal of the study and explaining that all responses would remain strictly confidential. Participants were asked to complete the questionnaire in private and not to discuss it with others before completing it. Among other things, the questionnaire included questions about condom use in the past 5 years, about anticipated feelings after unsafe sex, and about self-efficacy related to condom use.

Three months later, all participants received a second, short questionnaire by mail, which included questions about sexual activity and condom use during the preceding 3 months. Participants were encouraged to fill out and return this second questionnaire by mail by offering them a chance to win a weekend trip to Paris for two persons. Two prizes were drawn from among those who completed both questionnaires, and the students knew that their chance to win a prize was about 1:100. A total of 112 participants (51%) completed the second questionnaire. Of this subgroup, 100 persons (89%) reported having had sexual intercourse during the 3 months preceding the second round of data collection. The present study reports the data from this group. Thirty-five percent of the final sample reported sex with someone other than their T1 regular partner between T1 and T2. Note that there were no differences between the group that only filled out the first questionnaire and the group that filled out both questionnaires on relevant background variables such as gender, age, number of partners, and condom use in the year preceding T1, and sexual orientation. However, the probability that a person participated twice was somewhat higher if he or she did not have a steady relationship at T1.

Measures

Condom use between T1 and T2. At T2, five questions were used to measure participants' condom use during the 3 months between T1 and T2. Examples are: "How often in the past 3 months did you use a condom when you had sexual intercourse with a new partner?," "In the past 3 months, how often did you engage in unsafe sex with a new partner?" (reverse coded), and "How often in the past 3 months did you have sexual intercourse with a new partner *without* using condoms?" (reverse coded). For each item, the scale anchors ranged from 1 (*never*) to 7 (*always*). These items were combined in one reliable index for condom use (Cronbach's $\alpha = .78$).

Anticipated feelings at T1. To measure anticipated feelings at T1, participants were first instructed to imagine having *unprotected* sexual intercourse with a new partner during the next 3 months. They were then asked to indicate how they would feel if they heard afterward that this partner had had unprotected vaginal or anal intercourse with many other persons. Anticipated feelings were expressed on six 7-point semantic differentials: very bad–very good,

very unsatisfied–very satisfied, very concerned–very unconcerned, have a lot of regret–have no regret, very worried–not worried, very tense–very relieved. Second, participants were asked to imagine always using a condom during sexual intercourse with a new partner in the next 3 months. They were again asked to indicate on the same six semantic differentials how they would feel if they heard afterward that this partner had had unprotected vaginal or anal intercourse with many other persons. An index of anticipated feelings was constructed by computing difference scores between these two scenarios. These six difference scores represented the anticipated feelings index (Cronbach's $\alpha = .92$).

Self-efficacy at T1. Self-efficacy was measured at T1 with four items: “For me to use a condom every time I engage in sexual intercourse with a new partner in the next 3 months would be . . .” (1 [*very easy*] to 7 [*very difficult*]); “How much control do you have over using a condom every time you engage in sexual intercourse with a new partner in the next 3 months?” (1 [*absolutely no control*] to 7 [*complete control*]), “If I want to engage in sexual intercourse with a new partner in the next 3 months, the number of events outside my control which could prevent me from always using a condom are . . .” (1 [*very few*] to 7 [*numerous*]), and “If I wanted to, I could easily use a condom every time I engage in sexual intercourse with a new partner in the next 3 months” (1 [*strongly disagree*] to 7 [*strongly agree*]). The answers were coded in such a way that higher scores reflected a higher sense of self-efficacy. Cronbach's alpha for this scale was .66.³

Past behavior was measured at T1 with two items, namely “How often in the past 5 years have you had sexual intercourse with a new partner *without* using condoms?” (1 [*always*] to 5 [*never*]), and “In what percentage of the sexual relationships you were engaged in during the past 5 years did you always use a condom? (fill out a number between 0% and 100%).” The two items were substantially correlated ($r = .58, p < .001$), and combined in one index for past behavior, ranging from 0 to 100.

Results

The descriptive statistics of the various constructs utilized in the regression analysis that was used to test our hypotheses are presented in Table 1. Among other things, this table shows that the correlation between anticipated feelings and self-efficacy was low ($r = .14$) and nonsignificant. As predicted,

³Recently, some researchers have argued that people may view behaviors such as condom use as difficult to perform but, *at the same time*, under their volitional control (e.g., Chan & Fishbein, 1993; Terry & O'Leary, 1995). Thus, a closer examination of the items in the present study suggests two possible groupings: difficulty of behavior (Items 1 and 4) and control over behavior (Items 2 and 3). However, a factor analysis resulted in a clear one-factor solution, with an eigenvalue of 1.91 ($R^2 = 47.8\%$).

Table 1

Descriptive Statistics of and Correlations Between the Constructs Used in the Present Study

	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Condom use between T1 and T2	3.58	2.62	—				
2. Past behavior	45.96	20.75	.34**	—			
3. Anticipated feelings at T1	2.63	1.52	.27**	.18*	—		
4. Self-efficacy at T1	5.39	1.08	.24**	.24**	.14	—	
5. Anticipated Feelings × Self-Efficacy	0.23	1.74	.25**	.01	.01	-.15	—

* $p < .05$. ** $p < .01$.

anticipated feelings after unsafe sex correlated positively with actual condom use ($r = .27, p < .01$). In addition, self-efficacy had a significant positive relationship with condom use ($r = .24, p < .01$). Thus, consistent with previous research and our hypotheses, participants were more likely to use condoms when they anticipated negative feelings after unsafe sex (and positive feelings after safer sex), and they were more likely to use condoms when they experienced a relatively strong sense of self-efficacy regarding this behavior.

Our main hypothesis was that anticipated feelings after unsafe sex may not be sufficient to encourage condom use, but that these feelings would only have a positive impact on condom use if people experience a strong sense of self-efficacy regarding this behavior. To test this interaction hypothesis, scores on the predictor variables were first standardized by computing z scores. Then a hierarchical regression analysis was performed, in which condom use in the past was first entered in the regression equation, the anticipated feelings variable on Step 2, then self-efficacy, and finally the interaction term representing the cross-product of anticipated feelings and self-efficacy. We considered it important to enter past behavior on the first step in the regression analysis because one may argue that even if condom use is only moderately stable over time, the relationship between T1 regret and T2 condom use could be explained by the correlation between T1 regret and T1 condom use.

As can be seen in Table 2, past behavior explained 11% of the variance in condom use between T1 and T2. Anticipated feelings, entered on the second step,

Table 2

Hierarchical Regression of Condom Use on Past Behavior, Anticipated Feelings, Self-Efficacy, and the Interaction Term

Predictors	<i>R</i>	<i>R</i> ²	<i>F</i>	β
1. Past behavior	.34	.11	12.35**	.26**
2. Anticipated feelings	.40	.05	5.11*	.20*
3. Self-efficacy	.43	.02	2.14	.19*
4. Anticipated Feelings \times Self-Efficacy	.51	.08	9.05**	.28**

* $p < .05$. ** $p < .01$.

added 5% of the variation in condom use, and such an increase is statistically significant, $F(2, 97) = 5.11, p < .05$. Thus, it seems that participants' anticipated feelings of regret and self-blame at T1 made a unique contribution to the prediction of whether they used condoms between T1 and T2. Self-efficacy, entered on the third step, played a somewhat less important role than did anticipated feelings, $F(3, 96) = 2.14, ns$.

More importantly, the interaction term that was entered on the last step had a significant effect, $F(4, 95) = 9.05, p < .005$, and explained an additional 8% of the variance in condom use. Figure 1 depicts two regression lines of the regression of condom use on anticipated feelings as a function of two values of self-efficacy (low and high; cf. Aiken & West, 1991). This figure reveals that, as predicted, the positive impact of anticipated feelings after unsafe sex on condom use was limited to participants with a high sense of self-efficacy. The four variables together explained a total of 26% of the variance in condom use, and the standardized regression coefficients were .26 for past behavior, .20 for anticipated feelings, .19 for self-efficacy, and .28 for the interaction term.⁴

⁴Because the calculation of anticipated feelings using a difference score measure is potentially problematic statistically (Cronbach & Furby, 1970), we repeated the analysis using the "no condoms used" scores and the "condoms used" scores as a covariate. More specifically, in two separate regression analyses, each of these measures was entered on the first step, before the other predictor variables were entered in the regression equation (including the anticipated feelings difference score). Neither of these two analyses modified the results of the original analyses. More specifically, the amount of variance explained in condom use between T1 and T2 did not increase significantly, and the regression coefficients in the analyses in which we controlled for the "no condoms used" scores and for the "condoms used" scores were not significantly different from the ones in the original analysis.

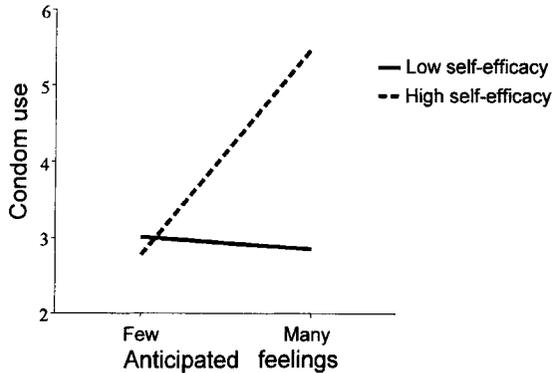


Figure 1. Regression of condom use between T1 and T2 on anticipated feelings after unsafe sex as a function of self-efficacy.

In a final, alternative test of our interaction hypothesis, we computed correlations between anticipated feelings and condom use both for individuals with a relatively low self-efficacy, and for those with a high self-efficacy (based on a median split procedure). The results of this analysis were consistent with the regression results. The correlation between anticipated feelings and condom use was weak and nonsignificant for individuals with a low self-efficacy ($N = 51$, $r = .19$, $p = .09$). In contrast, there was a significant, positive relationship between these variables for individuals with a high self-efficacy ($N = 49$, $r = .34$, $p < .01$).

Discussion

This prospective study expands previous research on anticipated regret by showing that self-efficacy perceptions can moderate the relationship between anticipated feelings after unsafe sex and actual condom use. Consistent with theories of anticipated regret (Janis & Mann, 1977; Loomes & Sugden, 1982; Richard et al., 1995) and social cognitive theory (Bandura, 1986, 1989), young male and female adults were most likely to use condoms during the 3 months between the first and second round of data collection when they anticipated negative feelings as a result of not using condoms (and positive feelings after using condoms) and believed that they had the power to exercise control over the sexual situation (high sense of self-efficacy).

These findings suggest some general guidelines for the design of educational programs to promote safer sex among sexually active young adults. Such programs should not be limited to providing information about AIDS and HIV

transmission routes, but should also attempt to increase awareness that unsafe sex can have negative consequences. A simple method encouraging people to imagine their negative feelings such as worry, regret, and concern after engaging in unprotected sex could help to persuade them to take protective action in order to reduce their risk of contracting HIV.

It is worth comparing this approach to the fear-arousal approach, which is still rather popular in health education practice. For example, in The Netherlands, fear arousal is frequently used in stop-smoking and fireworks campaigns, and it was the key element in earlier AIDS campaigns in the UK and in Australia. One of the drawbacks of the fear-arousal approach is that intense feelings of anxiety can elicit defensive reactions such as a failure to pay attention to a persuasive message, rejection of the communication, or defensive avoidance of anxiety-arousing thoughts (Hovland, Janis, & Kelly, 1953; Liberman & Chaiken, 1993; Rippetoe & Rogers, 1987). A key advantage of the anticipated feelings approach, as compared to the fear-arousing approach, is that while it does arouse some anxiety, it does not evoke defensive reactions (van der Pligt & Richard, 1994). Moreover, Richard et al. (in press) have found convincing experimental evidence for the idea that asking people to focus on their anticipated feelings after unsafe sex encourages HIV-preventive behavior (i.e., condom use with new partners). Although additional research is required to illuminate the precise mechanisms underlying this effect, the present study, like the studies by Richard et al. (1995, 1996, in press), shows that the awareness that an action can have negative affective postbehavioral consequences can be an important factor in producing behavioral change.

The most important finding of the present study is that anticipated negative feelings after unsafe sex only have a positive impact on condom use if people experience a strong sense of self-efficacy regarding this behavior. This means that people need also be informed about ways in which they can take effective preventive action. It is evident that people can only behave consistently with their anticipated feelings to the extent that they have the skills, abilities, opportunities, and social cooperation, and that any lack of perceived control must obstruct the anticipated feelings-behavior relationship. This implies that interventions aimed at promoting safer sex should combine the anticipated feelings approach with attempts to improve people's sense of self-efficacy concerning the practice of safer sex. This can be achieved, for example, by asking people to role-play a sexual encounter with a new partner (Kelly et al., 1990). Another possible intervention that is better suited for mass dissemination would be to target self-efficacy beliefs in persuasive communications. Portraying the practice of safer sex as a normal, routine behavior that is expected of any caring and responsible partner represents one way of achieving this goal.

There is also recent research showing that videos can be effective in influencing perceptions of self-efficacy. Fisher, Fisher, Misovich, Kimble, and Malloy (1996) asked undergraduate students to view a 24-min color video in which a soap-opera format was used to humorously depict four types of couples who practice safer sex by successfully overcoming commonly encountered impediments. Skills involved in buying and carrying condoms, in negotiating safer sex in advance of and during sexual encounters, and while under the influence of alcohol were modeled during the video. The intervention not only had a significant impact on participants' perceptions of the ease with which they could use condoms during intercourse and discuss HIV-preventive behavior with a sexual partner, but also increased the frequency with which they engaged in these critical HIV-preventive behaviors.

Although the present study provided strong support for the predicted interaction between anticipated feelings and self-efficacy, some caveats are warranted. The most obvious limitation is that the sample of participants was limited to those who in the first place agreed to complete a questionnaire about safer sex, and who then completed a further questionnaire about their own sexual behavior during the preceding 3 months. The way in which self-selection processes might influence the observed relationships is unclear, but there remains the possibility that those who agreed to participate in the study by completing both questionnaires were people whose knowledge of or concern about HIV and AIDS was greater than average. It is possible, then, that the relationship between their anticipated feelings and their subsequent behavior was stronger than would be the case in a randomly sampled group. Even if this were the case, however, it seems difficult to account for the observed interaction between anticipated feelings and self-efficacy in terms of participant self-selection effects.

A further limitation of the study also relates to the generalizability of its findings. The impact of anticipated feelings under conditions of low or high self-efficacy may be different for other groups at risk for HIV infection, including gay men, IV drug users, and minorities from economically disadvantaged backgrounds. For example, it is conceivable that IV drug users have much more difficulty overcoming strongly ingrained habits associated with their AIDS-risk behavior than do nonusers. For IV drug users, rejecting dirty needles may be so difficult that it is questionable whether anticipated negative feelings would be powerful enough to overcome the compulsion to use drugs, which might undermine even the best intentions to use a clean needle. Thus, an anticipated feelings intervention may not have an important impact for risk groups other than heterosexuals. Future research is needed to clarify the generalizability of the moderating role played by self-efficacy in HIV-preventive communications using the anticipated regret approach.

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