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## **Anticipated Regret and Time Perspective: Changing Sexual Risk-taking Behavior**

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### ABSTRACT

In two studies we test the effects of anticipated affective reactions such as regret on behavioral expectations and behavior. These effects were examined in the context of sexual risk-taking behavior. More specifically, we tested the impact of the anticipated feelings associated with unsafe sex on sexual risk-taking behavior. We assumed a difference between the feelings *about* unsafe sex and the feelings people anticipate to have *after* this behavior. Two studies tested the hypothesis that respondents who are induced to focus on their anticipated, post-behavioral feelings are more likely to report negative feelings such as regret and to adopt safer sexual practices than respondents who are asked to focus on their feelings about the behavior itself. Study 1 shows that anticipated feelings after unsafe sex were more negative than feelings about the behavioral act itself, and that respondents who were asked to consider these anticipated feelings expressed stronger expectations to reduce their risk in future interactions. Thus, asking respondents to take a wider time perspective, and to consider the feelings they would have *after* having had unsafe sex, resulted in 'safer' behavioral expectations. Study 2 replicates the findings of Study 1, and also yielded a reliable effect of the time perspective manipulation on actual, self-reported behavior. Respondents who were asked to report on their anticipated feelings after unsafe sex showed less risky behavior in the five months following the experiment than the remaining respondents. Thus, the induced focus on post-behavioral emotions increased the likelihood of preventive behavior. Implications of these findings for behavioral intervention programs are discussed.

KEY WORDS affect; risk-taking; sex; regret; risk

Several investigators have suggested that post-behavioral feelings can influence people's behavior to the extent that these feelings are anticipated (Janis and Mann, 1977). Initially, research on the role of post-behavioral feelings focused on anticipated *regret*. Regret theory (Bell, 1982; Loomes and Sugden, 1982) assumes that the value of choosing a decision alternative is dependent on the alternatives simultaneously rejected, and that people attempt to avoid decisions that could result in regret. Regret theory has been applied to various behavior domains including risk taking in gambles (Di Cagno and Hey, 1988), and consumer behavior (Simonson, 1992). Others related regret to action versus inaction (Kahneman and Tversky, 1982; Landman, 1988; Gilovich and Medvec, 1994) and decision attitude (Beattie *et al.*, 1994). After the initial focus on regret, later research addressed the effects of other anticipated feelings on human judgment and decision making. These include guilt, sadness and anger (Baron, 1992), disappointment (Loomes and Sugden, 1986), embarrassment and pride (Simonson, 1989), and envy and gloating (Loewenstein, Thompson and Bazerman, 1989).

Janis and Mann (1977, p. 222) introduced the term *anticipatory regret* as a convenient generic term to refer to the main psychological effects of the various worries that beset a decision maker before any losses actually materialize. Philosophical research on the issue of regret focused on the development of an adequate definition of regret, and attempted to specify the circumstances in which regret would be experienced as well as to distinguish regret from related emotional states such as sadness, remorse, and disappointment. As argued by Gilovich and Medvec (1995) economic approaches such as those of Bell (1981, 1982, 1983, 1985) and Loomes and Sugden (1982, 1987) have defined regret rather narrowly resulting in limited applicability. For instance, by defining regret as being determined by the difference between the outcomes of a chosen and rejected alternative(s) it is impossible to account for the fact that some rejected alternatives generate more regret than others because of their salience (see Gilovich and Medvec, 1995, p. 380). Generally, economic approaches claim that regret does not arise if the outcomes of the rejected alternatives are never revealed. Thus, imagined outcomes are expected not to affect decisions, as opposed to feedback about the chosen and non-chosen alternatives.

Simonson (1992) provided empirical tests for the predicted effects of anticipated regret. His study focused on consumers' purchase decisions and showed that explicitly asking people to anticipate the regret and responsibility they would feel if they made the wrong decision made them more likely to purchase a currently available item on sale as opposed to waiting for a better sale. Respondents in the regret version indicated in which case they would be more upset with themselves and feel more regret: if they bought the item on sale in July and found out later that there were much better sale offers in August, or vice versa. In this research respondents expected feedback about their choice; i.e. they would find out which month had better sales. Results showed that the expectation to receive feedback and the explicit consideration of the feelings associated with making the wrong decision resulted in a preference for the option to buy the item in the July sale. The reason was that one would feel more regret after waiting for the August sale and finding out that one made the wrong decision, than after buying in July and finding out later that one had made the wrong decision. Similar findings were obtained in a condition where respondents were only provided with feedback, without asking them to anticipate their feelings if their decision turned out to be wrong.

Quite often people will not find out what the consequences of alternative courses of action would have been. For instance, people never find out what life would be like had they chosen a different life partner, another job or even another TV set. In the present research we will *not* provide feedback about decision alternatives but simply increase the salience of anticipated regret and related negative emotions. Our approach can be related to the research of Wilson and Hodges (1992) on attitudes. Wilson and Hodges argued that people often have contradictory beliefs about a topic, and that their attitude toward a topic, person or specific action depends on the subset of beliefs to which they attend at a specific moment in time. They argued that the beliefs people attend to are influenced by both contextual factors and thought processes, and presented evidence that attitudes and behavior are easily changed if people are led to attend to a particular subset of beliefs. When people think about their feelings about an action, different beliefs could be salient than when they think about the feelings they would experience *after* carrying out the action. The behavioral activity itself is relatively salient when people are asked to indicate their feelings about the behavior. In such cases the affective states associated with the behavior itself will largely determine the attitude. On the other hand, the (possible) consequences of the behavior are likely to be relatively salient when people think about the feelings they would experience *after* carrying out the behavior. In this case, the affects associated with the consequences of a behavioral choice will also determine the attitude. This distinction between people's feelings *about* and their anticipated feelings *after* an action seems most relevant for domains in which there is a clear affective discrepancy between the behavioral activity itself and the (possible) post-behavioral outcomes. For instance, in order to realize a positively valued outcome (e.g. having good teeth, passing an exam) we sometimes have to carry out an unpleasant behavior (going to the dentist)

or refrain from a pleasant behavior (staying home to prepare for the exam instead of going out). If we would focus on the feelings we would experience after such an action, a different (opposing) action tendency may emerge than if we would focus on our feelings about the action itself. Similarly, positively valued behavior can have negative post-decisional consequences. In this article we focus on the latter possibility.

The present research investigates whether unsafe sexual practices (i.e. not using condoms with new and/or 'casual' partners) can be reduced by stimulating respondents to extend their time perspective and explicitly consider their post-behavioral feelings. Condom use is often associated with reduced sexual pleasure, loss of spontaneity, having to interrupt love making, and the like. However, an important negative post-behavioral consequence of not using a condom (even if one uses another contraceptive) is a possible infection with a variety of sexually transmitted diseases (STDs). Thus if a person failed to use a condom with a new or unknown partner, he or she might worry about a possible STD or HIV infection, and experience regret and other negative feelings. Since regret, worry, guilt, shame and so forth are negative feelings that could be experienced *after* risky sexual behavior, these feelings are likely to become more salient when people are asked to consider how they would feel afterwards. Thus by stimulating people to focus on their feelings *after* unsafe sex, they are expected to become increasingly aware of the negative affective consequences of unsafe sexual behavior. We expect that this increased awareness will make people more risk averse and will reduce their willingness to engage in unsafe sex.

In Study 1 we will examine the effect of an extended time perspective on respondents' feelings concerning the use of condoms and other contraceptives with new and/or casual sexual partners. This study also tests whether time perspective has an impact on expectations to use condoms in the future. Study 2 focuses on the same behavior and includes, in addition to behavioral expectations, two follow-up measures to assess actual risk-taking behavior over a five-month period.

## STUDY 1

In this study respondents were presented *two* scenarios describing a situation in which they meet and have sex with a person they did not know previously. In one scenario they use a condom and in the other they do not use a condom but another contraceptive.<sup>1</sup> Half the respondents were asked to indicate the feelings they would have *after* having had sex ('feelings after') and the other half were asked to indicate their feelings *about* having sex ('feelings about') for each of the two scenarios. We expected respondents to indicate more negative feelings in the 'feelings after' condition than in the 'feelings about' condition, but only when *not* using a condom. Although all contraceptives protect against unwanted pregnancy, only the use of a condom prevents infection with HIV and other sexually transmitted diseases. Thus, feelings of regret, worry, etc. are less relevant for the scenario in which respondents use a condom than for the scenario in which they use another contraceptive. We expected this to result in an interaction between time perspective (feelings after versus feelings about) and type of contraceptive. Furthermore, we expected that if respondents would mention more negative feelings in the 'feelings after' condition with respect to not using a condom, this increased salience of negative affect would also lead to stronger expectations to use condoms in future sexual encounters.

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<sup>1</sup> In the Netherlands most young females use a contraceptive, and for this reason we did not include the option of not using any contraceptive. In this way we exclude the possible consequence 'unwanted pregnancy' and focus exclusively on STDs as a possible negative outcome.

## Method

### *Respondents and procedure*

Students who were having a break in the canteens of the Department of Economics and the central library of the University of Amsterdam were asked to fill out a brief questionnaire. In return for completing the questionnaire they received 5 guilders (approximately \$3.00). The study was carried out shortly before the start of the summer holidays. The sample consisted of 49 female and 54 male heterosexual students. Their age ranged from 18 to 30 with a median of 22 years. On the first page of the questionnaire respondents were instructed how to fill out the questionnaire. 'Condom use' was defined as 'using condoms irrespective of the use of other contraceptives'. On the next page, respondents were asked to imagine the following hypothetical situation: 'Suppose you are on a holiday and you meet a very attractive man (woman) and after spending some time with him (her) the two of you have sexual intercourse'. Respondents were randomly allocated to two groups. Respondents in the 'feelings about' condition ( $n = 51$ ) were asked 'to describe the feelings you have toward sexual intercourse (in the above situation) when not using a condom but another contraceptive'. On the next page they were asked to 'describe the feelings you have about having sex (in the above situation) when using a condom'. Respondents in the 'feelings after' condition ( $n = 52$ ) were asked to 'describe the feelings you would have *after* having had sex (in the above situation) and not having used a condom, but another contraceptive'. On the next page they were asked to 'describe the feelings you would have *after* having had sex (in the above situation) and having used a condom'. The order of the two behavioral alternatives (sexual intercourse with a condom and sexual intercourse without a condom, but with another contraceptive) was counterbalanced.

### *Measures*

*Feelings* Respondents received a list of 40 affect-terms, partly based on Watson and Tellegen (1985) with some added terms that seemed appropriate in the present context. Eighteen terms were positive and 22 were negative according to the taxonomy of Watson and Tellegen. Exhibit 1 provides an overview of all terms used. Respondents were asked to describe their feelings by selecting a total of ten affect terms. We simply counted the number of negative affect terms chosen by respondents. In this

Exhibit 1. Affect terms used in Study 1

<i>Positive terms</i>	Contented	Strong	
	Aroused	Excited	
	Happy	Satisfied	
	Active	Exultant	
	Fast	Calm	
	Enthusiastic	Joyful	
	Pleasant	Elated	
	Ecstatic	Proud	
	Agreeable	Energetic	
	<i>Negative terms</i>	Dissatisfied	Weak
		Nervous	Shameful
		Anxious	Regret
		Passive	Sombre
Uncertain		Sad	
Worried		Discontented	
Lonely		Tense	
Fearful		Guilty	
Unpleasant		Unhappy	
Miserable		Confused	
Disagreeable		Slow	

manner respondents received a score from 0 to 10 for each of the two behavioral alternatives. The number of positive affect terms equals 10 minus the number of negative affect terms.

*Behavioral expectations* On the next page respondents were asked: 'If you have sexual intercourse with someone on a holiday, is it more likely that you will use a condom or another contraceptive?' Responses were given on a 7-point scale ranging from *use of a condom much more likely* (7) to *use of another contraceptive much more likely* (1).

### Results and discussion

Results did not differ as a function of the order in which the behavioral alternatives (condoms versus other contraceptives) were presented. An analysis of variance (ANOVA) was conducted, with time perspective (feelings about versus feelings after) and gender as between-subjects variables and type of contraceptive as within-subjects variable. The dependent variable is the number of selected negative affect terms; the number of positive terms is directly dependent on this variable and will not be analysed. As expected, respondents in the 'feelings after' condition mentioned significantly more negative (and thus fewer positive) feelings than respondents in the 'feelings about' condition,  $F(1,99) = 2.77, p < 0.05$ , one-tailed. Furthermore, respondents' affective reactions to the use of other contraceptives were much more negative than their affective reactions to the use of condoms,  $F(1,99) = 84.77, p < 0.001$ . Increased preference for negative affect terms implied less preference for positive affect terms (respondents could select a total of ten adjectives). The interaction between time perspective and type of contraceptive was in the predicted direction, but only marginally significant,  $F(1,99) = 2.15, p < 0.08$ , one-tailed.

More importantly, separate ANOVAs revealed a significant main effect of time perspective on the number of negative feelings mentioned with respect to not using condoms,  $F(1,99) = 4.38, p < 0.04$ , but not with respect to the use of condoms ( $F < 1$ ). Overall, female respondents mentioned more negative feelings than male respondents,  $F(1,99) = 10.48, p < 0.003$ , but gender did not interact with time perspective ( $p > 0.28$ ). Furthermore, both the first-order interaction between gender and type of contraceptive and the second-order interaction between gender, type of contraceptive, and time perspective were non-significant ( $F_s < 1$ ). Exhibit 2 displays the mean number of negative feelings associated with the use of condoms and the use of other contraceptives in casual encounters, averaged over male and female respondents.

Closer inspection of these data revealed that the increased preference for negative terms in the 'feelings after' condition was largely due to a greater preference for the terms 'regret', 'guilt' and 'unpleasant'. In the 'feelings after' condition the term 'regret' was selected by 58% of the respondents as opposed to 33% in the 'feelings about' condition. Percentages for guilt and unpleasant were respectively 42 versus 26 and 35 versus 18. Surprisingly the term 'worried' was selected by the majority of the respondents in both conditions (63% and 67%). This greater preference for negative terms in the 'feelings after' condition was largely at the expense of positive affect terms associated with the act itself ('excited', 'pleasurable' and 'energetic').

With respect to the expectations to use condoms in future casual encounters we found no significant main or interaction effects of gender ( $F_s < 1$ ). In both conditions expectations to use condoms were high (averaged over gender,  $M = 6.08$  and  $M = 6.50$  on a 7-point scale, for 'feelings about' and 'feelings after', respectively). Nevertheless, expectations were significantly higher in the 'feelings after' condition,  $F(1,99) = 3.54, p < 0.05$ , one-tailed. We also conducted an analysis of covariance on behavioral expectations with the difference score 'feelings with a condom minus feelings with another contraceptive' as a covariate. In this case the effect of time perspective on behavioral expectations was no longer statistically significant, suggesting that this effect was mediated by the salience of negative feelings with respect to the use of contraceptives other than condoms.

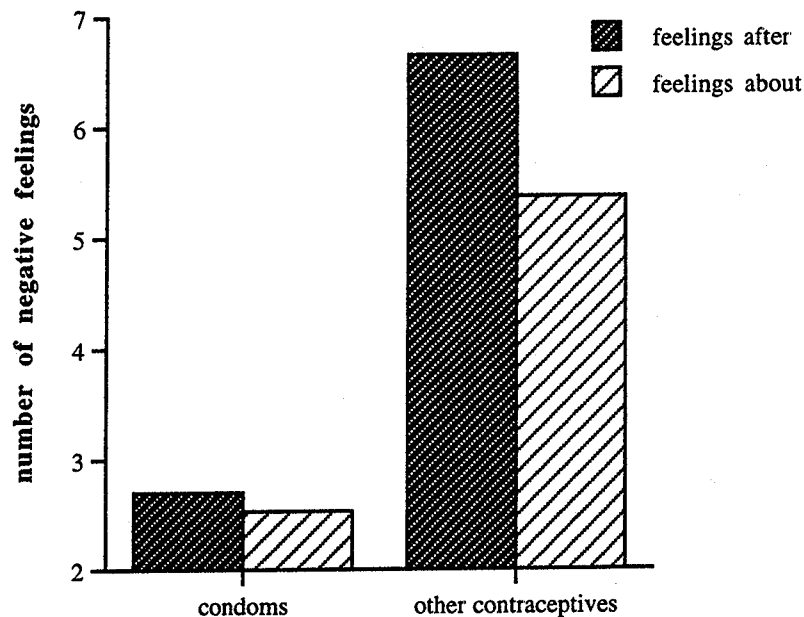


Exhibit 2. Number of negative feelings associated with the use of condoms and the use of other contraceptives in casual encounters (Study 1)

To conclude, respondents' affective reactions to the use of other contraceptives were more negative than their affective reactions to the use of condoms. Although the effects are relatively modest, respondents in the 'feelings after' condition mentioned more negative feelings than respondents in the 'feelings about' condition. As expected, the latter difference was obtained only for the risky scenario (not using condoms but another contraceptive). Moreover, the increased salience of negative feelings with respect to the use of other contraceptives seems to have made respondents somewhat more risk averse; in the 'feelings after' condition they indicated stronger expectations to use condoms in future casual sexual interactions than in the 'feelings about' condition. Thus, we found a modest effect of time perspective on behavioral expectations. It seems interesting to also test the effects of time perspective on actual behavior. For this reason we conducted a second study which included two follow-up measures of condom use in casual encounters over a period of five months. Thus, the purpose of Study 2 was to replicate and extend the findings of Study 1 by testing the effect of the time perspective manipulation on actual behavior. In this second study we will also look more closely at gender differences. We did not obtain gender differences in the first study but this could be due to the small sample size. In earlier research (Richard and van der Pligt, 1991) we found clear differences between male and female adolescents with anticipated regret being a more important predictor for male adolescents' sexual risk-taking behavior.

## STUDY 2

### Method

#### *Respondents*

A total of 343 first-year psychology students of the University of Amsterdam took part in the study as part of a course requirement. Three respondents who indicated that they did not want their data to be

used were excluded from the sample. Four homosexual respondents were also excluded, since the study focused on heterosexual intercourse. The final sample consisted of 235 female and 101 male respondents. Age ranged from 17 to 51 with a median of 20 years.

#### *Procedure*

Three questionnaires were administered over a period of five months. The first two were filled out at the Faculty of Psychology. The third questionnaire was sent to each respondent's private address. Anonymity was stressed (the questionnaires could be matched by a randomly allocated number only). As in Study 1, the introduction of the questionnaires explained relevant terms such as 'new and/or casual sexual relationship'<sup>2</sup> and 'condom use'. In the introduction of the first questionnaire respondents were instructed how to fill out the questionnaire. The introduction explained that they were expected to answer questions about hypothetical situations and requested them to try to imagine what they would do if these situations would occur.

Respondents were randomly assigned to two conditions. All respondents were asked to imagine that 'you meet someone in a club and the two of you would like to have sex'. Respondents in the 'feelings about' ( $n = 171$ ) condition were asked to compare the feelings they have about the use of a condom and the use of another contraceptive in the above situation. Respondents in the 'feelings after' ( $n = 165$ ) condition were asked to compare the feelings they would have *after* having used a condom, and *after* having used another contraceptive in the same situation.

Next, the questionnaires in both conditions presented ten 9-point scales with *condom* and *other contraceptive* as the endpoints of the scales. Each scale referred to an affect term. These terms were *enjoyable*, *contented*, *worried*, *tense*, *pleasant*, *regretful*, *anxious*, *satisfied*, *good*, and *ill at ease*. Respondents used the scales to indicate whether the affect terms were more strongly associated with the use of a condom or with the use of another contraceptive.

#### *Measures*

*Feelings* As noted above, respondents indicated their feelings on ten 9-point scales. The scores relating to the negative affect terms (worried, tense, regretful, anxious, and ill at ease) were reversed and an average score over the ten scales was computed (Cronbach's  $\alpha = 0.86$ ). Scores could range from 1 to 9, higher scores indicating that other contraceptives were more strongly associated with negative feelings and/or that the use of condoms was more strongly associated with positive feelings.

*Behavioral expectations* On the next page respondents were asked to give behavioral expectations with respect to four hypothetical situations concerning meeting and having sex with a person in the near future. These situations were:

- *Suppose* you meet someone in a club and the two of you would like to have sex.
- *Suppose* you meet someone you have known for some time. After a great day the two of you have sex.
- *Suppose* you are on holiday. You meet a very attractive man or woman, and after spending some time together the two of you have sex.
- *Suppose* you have been feeling attracted to someone for some time. This attraction turns out to be mutual. You get to know each other and after a while the two of you have sex.

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<sup>2</sup> The term 'casual' sex was used to denote all risky encounters including having intercourse with new partners (known or previously unknown). Both one-night stands and 'serious' partners in serial monogamy would be included in this category. In Dutch we described the category as referring to new and casual sexual encounters.



First we asked respondents to indicate whether they thought each of the above situations could happen to them personally. Responses were given on a 9-point scale ranging from *possible* to *impossible*. Next, for each situation respondents were asked how likely it would be that they would either use a condom or another contraceptive. Responses were given on 9-point scales ranging from *certainly a condom* (9) to *certainly another contraceptive* (1). The average score over the four hypothetical situations served as a measure of behavioral expectations (Cronbach's  $\alpha = 0.91$ ).

*Behavior* Sexual behavior was measured on three occasions. First, in the above-mentioned questionnaire respondents were questioned about their sexual behavior in the year preceding the experiment. They were asked whether they had had one or more new or casual sexual relationships in the preceding year, and if so, how often they had used a condom. Responses were given on a 9-point scale ranging from *never* (1) to *always* (9).

Four weeks later a second questionnaire was administered. This questionnaire asked whether in the four weeks since the experiment, respondents had had one or more new or casual sexual relationships, and how often they had used condoms. Again responses were given on a 9-point scale ranging from *never* (1) to *always* (9).

Four months later respondents were requested to fill out a questionnaire in return for additional course credit. This questionnaire, together with a prestamped return envelope, was sent to respondents' private addresses, and focused on their sexual behavior since the first questionnaire was administered. Most relevant to the present study was the question whether they had had 'casual' sexual intercourse in the past five months, and how often they had used condoms. This was assessed on the same 9-point scale as in the other questionnaires.

### Results and discussion

The average association between the affect terms and the use of condoms versus the use of other contraceptives was analysed in a 2 (feelings about versus feelings after)  $\times$  2 (males versus females) ANOVA. As expected, respondents in the 'feelings after' condition associated the use of other contraceptives more strongly with negative feelings and, consequently, the use of condoms more strongly with positive feelings than did respondents in the 'feelings about' condition ( $M = 6.33$  and  $4.73$ , respectively),  $F(1,326) = 91.82$ ,  $p < 0.001$ .<sup>3</sup> Furthermore, use of other contraceptives was more strongly associated with negative feelings and use of condoms was more strongly associated with positive feelings by female than male respondents ( $M = 5.60$  and  $M = 5.34$ , respectively),  $F(1,326) = 4.17$ ,  $p < 0.05$ . Gender did not interact with time perspective ( $F < 1$ ).

We also performed separate analyses for each of the ten affect terms (see Exhibit 3). In the 'feelings after' condition all positive feelings were more strongly associated with the use of condoms and all negative feelings were more strongly associated with the use of other contraceptives as compared to the 'feelings about' condition. The main effect of time perspective was significant ( $p < 0.05$ ) for all terms. Most importantly, negative affect terms such as regretful, anxious, worried and tense were more strongly associated with not using a condom in the 'feelings after' condition than in the 'feelings about' condition. The analyses further revealed that female respondents associated positive feelings more strongly with the use of condoms than male respondents (all main effects significant at  $p < 0.05$ ). In contrast, female respondents did not differ from male respondents with respect to negative feelings (all  $F_s < 1$ ). There were no significant interactions between gender and time perspective.

In order to measure behavioral expectations respondents were presented four hypothetical situations and asked to indicate the likelihood that they would use a condom or another contraceptive

<sup>3</sup> The total number of respondents with respect to this hypothesis was 330, due to missing data of six respondents on one or more affect terms.

Exhibit 3. Mean associations between the affect terms and use of contraceptives

	Feelings about			Condition		
	Male	Female	<i>M</i>	Male	Female	<i>M</i>
Enjoyable	3.64	4.80	4.48	7.13	7.72	7.53
Contented	3.62	4.69	4.39	5.22	5.45	5.38
Worried <sup>a</sup>	5.98	5.52	5.65	7.09	7.04	7.06
Tense <sup>a</sup>	4.47	4.60	4.57	6.57	6.48	6.51
Pleasant	2.66	3.71	3.42	5.22	5.52	5.42
Regretful <sup>a</sup>	6.94	6.36	6.52	7.11	7.42	7.32
Anxious <sup>a</sup>	6.21	5.96	6.04	7.24	7.13	7.17
Satisfied	3.94	4.79	4.56	5.35	6.06	5.83
Good	2.47	3.25	3.04	4.30	4.75	4.60
Ill at ease <sup>a</sup>	4.59	4.58	4.59	6.15	6.64	6.48
<i>M</i>	4.43	4.84	4.73	6.13	6.43	6.33
<i>n</i>	47	124		54	111	

*Note:*

The number of respondents is slightly less for some of the affect terms; 330 respondents filled in all ten scales. Means are based on 9-point scales. The scales relating to the negative affect terms (marked<sup>a</sup>) were reversed (1↔9). With respect to the positive affect terms higher scores reflect stronger associations with condom use than with the use of other contraceptives, and vice versa with respect to the negative affect terms.

in each situation. First we checked whether respondents found the presented situations realistic. This appeared to be so; on average a majority (65%) of the respondents rated the situations as realistic for them personally (7% was neutral).<sup>4</sup> Next, we tested the hypothesis that respondents would have stronger expectations to use condoms in the 'feelings after' condition than in the 'feelings about' condition. Findings supported this hypothesis,  $F(1,332) = 6.17$ ,  $p < 0.02$ , and also revealed a significant main effect for gender,  $F(1,332) = 14.71$ ,  $p < 0.001$ , and a significant interaction between gender and time perspective,  $F(1,332) = 6.78$ ,  $p < 0.02$ . Time perspective appears to have had an impact on male but not on female respondents' expectations to use condoms in future casual sexual encounters. It should be noted, however, that this gender difference could be due to a ceiling effect; female respondents indicated very high behavioral expectations in both conditions (see Exhibit 4). Analysis of covariance revealed that the effect of time perspective was not significant when (anticipated) feelings were used as a covariate. In line with Study 1 this suggests that relative to respondents in the 'feelings about' condition, those in the 'feelings after' condition have stronger expectations to use condoms because they associate the use of other contraceptives more with negative affect and the use of condoms more with positive affect.

In Study 2 respondents were also asked to report their actual condom use in new or casual sexual encounters after one month, and in the five months following the experiment. Before examining whether the experimental manipulation resulted in a change of behavior, we first checked whether at the start of the experiment respondents' condom use did not differ over the two conditions. Of the 336 respondents participating in the experiment, 148 (41%) indicated having had 'casual' sexual intercourse with one or more partners in the year preceding the experiment. The average frequency of condom use in these sexual encounters did not differ over the two conditions ( $F < 1$ ). Overall, nearly 45% of the respondents indicated that they always used a condom with 'new' sexual partners, the mean

<sup>4</sup> If we exclude from the analyses the 28% of respondents who, on average, indicated the situations to be not realistic, all results remain essentially the same.

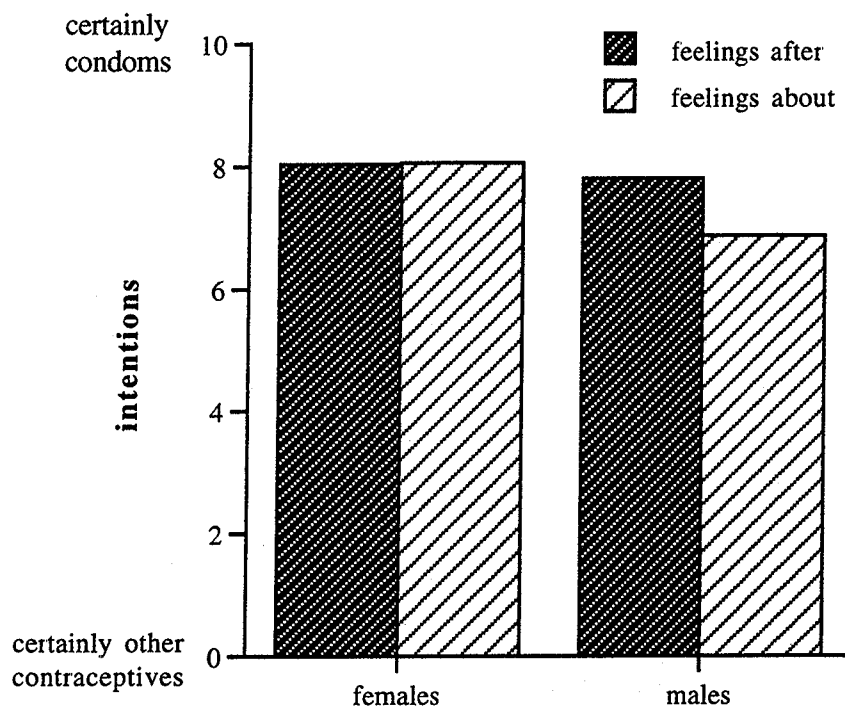


Exhibit 4. Expectations to use condoms in future casual encounters (Study 2)

score was 3.6 on a 9-point scale ranging from 1 (always) to 9 (never), with a total of nearly 15% of the respondents indicating that they never used a condom.

A total of 325 respondents (97%) filled out the second questionnaire which was administered one month later. Eighteen respondents indicated having had 'casual' sexual intercourse in the four weeks since the start of the experiment. Unfortunately this subsample included only five male respondents from the 'feelings after' condition and no male respondents from the 'feelings about' condition. As mentioned earlier, the experimental manipulation affected behavioral expectations to use condoms for male respondents only. Consequently, the experimental manipulation is likely to have more impact on condom use of male than female respondents. Richard and van der Pligt (1991) also presented evidence that anticipated affective reactions are more important determinants of self-reported condom use of male than female adolescents. As a consequence, the lack of male respondents in the 'feelings about' condition made a meaningful analysis impossible.

The second follow-up study took place five months after the first questionnaire. Of the 336 questionnaires sent out, 277 (82%) were returned. This time 34 respondents (eight males and 26 females) reported having had casual sexual intercourse with one or more partners in the five months since the start of the experiment. Six respondents (three males and three females) who indicated having had casual intercourse in the second questionnaire did not return the third questionnaire. Since the number of respondents who indicated having had casual intercourse on the third questionnaire was rather small, we added these six respondents to the sample.<sup>5</sup> Thus the total number of respondents who

<sup>5</sup> Results do not change if we leave out these six respondents.

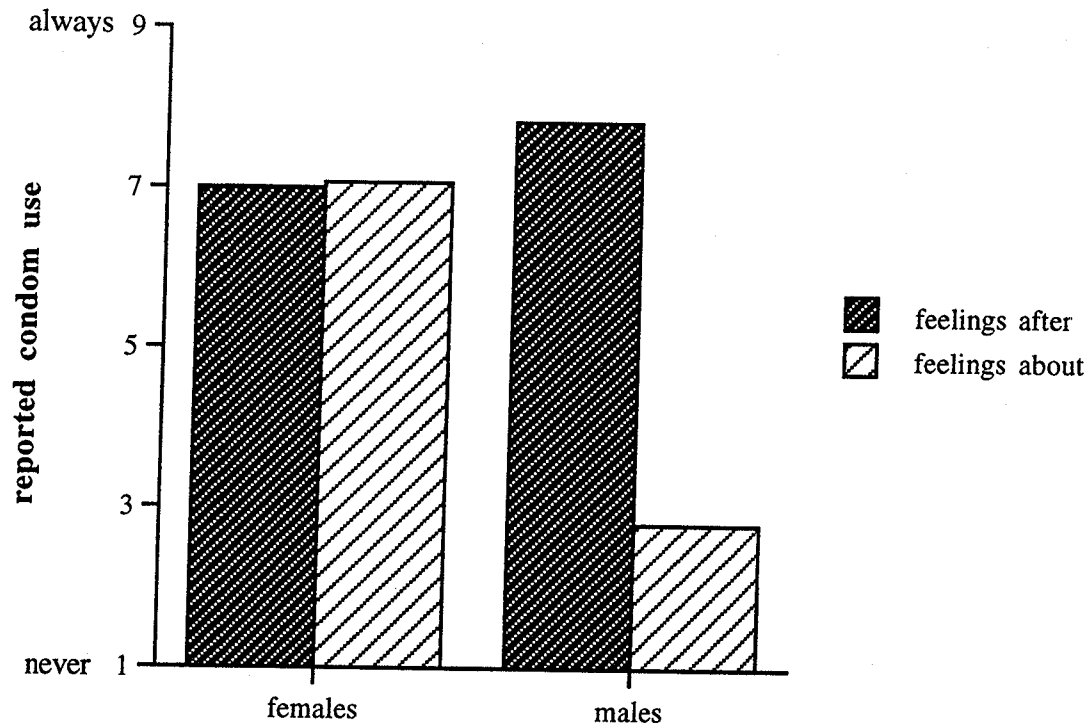


Exhibit 5. Reported condom use in the five months following the experimental manipulation (Study 2)

were used to test for behavioral effect of time perspective was 40 (five males and 17 females in the 'feelings about' condition; six males and 12 females in the 'feelings after' condition).

The experimental manipulation had an impact on condom use of males but not on that of females (see Exhibit 5). Analysis of variance yielded a significant main effect of time perspective,  $F(1,36) = 4.88$ ,  $p < 0.04$ , and a significant interaction between time perspective and gender,  $F(1,36) = 5.12$ ,  $p < 0.04$ . Thus, male respondents who thought about their post-behavioral feelings were more consistent condom users in the five months following this time perspective manipulation as compared to male respondents who thought about their feelings about the behavior itself. We also conducted an analysis of covariance with condom use in casual sexual relationships in the year preceding the experiment as a covariate. This analysis corrects for possible differences between conditions at the start of the experiment. Unfortunately, eleven respondents who had had casual sex after the experimental manipulation, did not have casual sex in the preceding year, and thus could not be used in the analysis of covariance. Results are presented in Exhibit 6. Again a main effect of time perspective emerged,  $F(1,24) = 6.30$ ,  $p < 0.02$ . However, the interaction between time perspective and gender is not significant ( $F < 1$ ).

To conclude, Study 2 provides further support for the distinction between feelings *about*, and anticipated feelings *after* sexual behavior. Relative to respondents in the 'feelings about' condition, respondents in the 'feelings after' condition associated not using a condom more strongly with negative affect and the use of condoms more strongly with positive affect. Moreover, respondents who were asked to describe their anticipated feelings *after* having had sex expressed stronger expectations to use condoms in future 'casual' encounters as compared to those who focused on the feelings they have about the behavioral act itself. Moreover, these respondents *also* reported a more

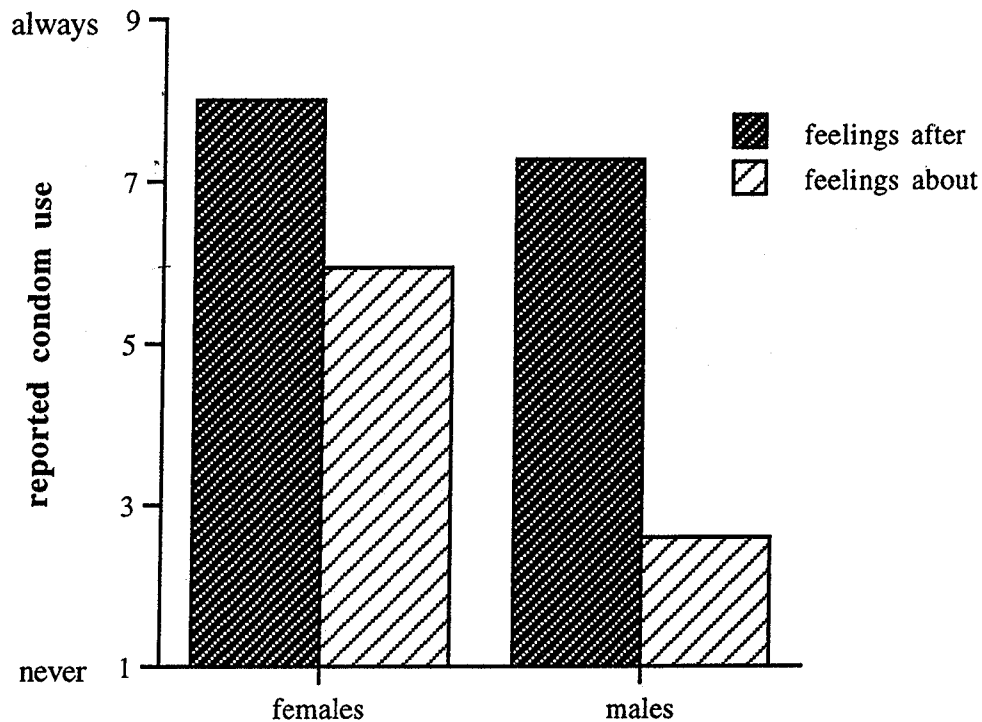


Exhibit 6. Reported condom use in the five months following the experimental manipulation, corrected for initial differences between respondents (Study 2)

frequent use of condoms in sexual encounters in the five months following the experimental manipulation.

### GENERAL DISCUSSION

The general idea behind the present research was that people who are requested to focus on the feelings that they would experience *after* unsafe sexual practices (such as not using a condom when having sex with a casual or new partner) become more risk averse than those who focus on their feelings *about* the behavioral activity itself. Results of two studies showed that anticipated feelings after unsafe sex were more negative than the feelings about the behavioral act itself, that those who focused on their anticipated, post-behavioral feelings expressed stronger expectations to use condoms in future sexual interactions, and that these respondents were more consistent condom users in the five months following the experimental manipulation.

Analysis of covariance revealed that the effect of time perspective on behavioral expectations disappeared when (anticipated) feelings were used as a covariate, suggesting that positive and negative affect associated with respectively safe and unsafe sex (partially) mediated sexual risk taking. These feelings were affected by the time perspective respondents were induced to take. With an extended time perspective, people associate unsafe sex more strongly with negative feelings, and become more risk averse. We argued that the request to focus on post-behavioral feelings increases the *awareness* that unsafe sexual behavior can have negative affective consequences, and that this increased awareness causes people to become more risk averse. The awareness that unsafe sexual practices can result in

unpleasant affective states such as worry and regret is likely to make people more determined to do what is necessary to avoid these risks.

The effects of time perspective in our first study were relatively modest, but provided support for the view that focusing on anticipated affect results in more negative feelings and increased willingness to take preventive action. These effects were replicated in the second study, providing further support for our ideas about the importance of anticipated, post-behavioral affect. This is indicated by the fact that simply asking respondents to focus on these feelings resulted in differences in reported behavior in a five-month period after the experiment. It needs to be added that only some 10% of the respondents in this study actually engaged in casual sex in the five months after the experiment. This is a limited subsample, and it would be interesting to replicate the findings for groups targeted specifically for their high rate of casual sex.

In sum, our studies indicate that anticipated feelings *after* having had unsafe sex are more negative than feelings *about* this behavior, that the increased association of unsafe sex with negative feelings caused respondents to express stronger expectations to use condoms in future casual interactions. Moreover, respondents who focused on anticipated post-behavioral feelings were more consistent condom users in the five months following the experimental manipulation.

Although additional research seems required to illuminate the precise mechanisms underlying our findings, there is evidence that the *awareness* that an action can have negative post-behavioral affective consequences is an important factor in producing behavioral change. As mentioned earlier, Simonson (1992) used an experimental manipulation, similar to the one we used, to influence consumer behavior. In his study respondents were asked to anticipate how they would feel if, after choosing between alternatives, the wrong decision was made. Control respondents were not asked how they would feel. Results showed that respondents in the experimental condition were more risk averse (i.e. made more conventional choices) than respondents in the control condition. Simonson also asked respondents to think aloud as they made their decisions. Protocol analysis revealed that the main difference between the conditions was that in the experimental condition respondents tended to base their decisions more on anticipated feelings. Thus, his research also shows that asking respondents to indicate post-behavioral feelings makes them aware of the affective consequences of their behavior, which subsequently influences their behavior. In his research, however, it was difficult to disentangle the relative contribution of anticipated affect and feedback. In our study we did not provide feedback and it seems likely that imagined outcomes resulted in the anticipation of negative affect. It does not seem likely that social desirability caused the effects, the norm is clearly to engage in safe sex and this norm should have the same effect in both conditions.

Our findings can also be related to the literature on counterfactual thinking. Recently Boninger, Fleicher, and Strathman (1994) argued that people who use counterfactuals to understand and plan their behavior could be more likely to adapt their subsequent behavior in accordance with these counterfactuals. More specifically, they suggest that individuals may engage in the anticipatory simulation of events and the feelings that these would engender. Our manipulation of simply asking respondents to anticipate their post-behavioral feelings makes these feelings salient and it seems that this influenced the decision to take preventive action. The applied value of the present research concerns the potential usefulness of focusing on affective consequences following risky behavior such as worry and regret, while other negative consequences such as contracting HIV and eventually AIDS can be seen as a long way off and are more likely to be discounted.

The present approach could help to increase the effectiveness of condom promotion programs, especially since the promotion of safe sex is difficult. Holmes and Aral (1991) argue that strengthened clinical and behavioral interventions for the prevention of sexually transmitted infections (STIs) over the past 25 years have been associated with an impressive reduction in STI morbidity in the industrialized countries. They also conclude that it is difficult to assess the relative contribution of

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behavioral and non-behavioral interventions versus underlying sociodemographic trends. Condom promotion has become a cornerstone of many HIV prevention programs, and although most studies report some increase in condom use during active interventions as compared to control groups, there are many methodological deficiencies (see Judd and Paalman, 1991, for an overview) and, generally, the promotion of safe sex is difficult with a high relapse rate of risk-taking behavior for some groups.

At a more general level, increasing the awareness and salience of post-behavioral feelings could also be used in other behavioral domains. For instance, Richard, van der Pligt, and de Vries (1995) found anticipated regret to be related to other health-related behaviors such as eating junk-food. Similarly, research on driving behavior (Parker, Manstead, and Stradling, 1995) also suggests that anticipated regret is an important determinant of the willingness to commit driving violations.

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