

Anticipated Regret and Precautionary Sexual Behavior¹

RENÉ RICHARD, NANNE K. DE VRIES, AND JOOP VAN DER PLIJGT²

*Department of Social Psychology
University of Amsterdam
Amsterdam, The Netherlands*

This study investigated the impact of anticipated regret on precautionary sexual behavior. Results show that anticipated regret predicts a significant and independent proportion of variance in expectations about future contraceptive behavior. A simple model combining attitudes, subjective norms, perceived behavioral control, and anticipated regret explained 65% of the variance in behavioral expectations. Behavioral expectations explained 34% of the variance in contraceptive behavior of respondents who had casual sex in the 4 weeks following the first session of the study. Implications for our understanding of precautionary sexual behavior and for campaigns aiming to increase safer sexual practices are discussed.

Over the past decade, considerable research attention has been directed toward the prediction and explanation of precautionary sexual behavior. The aim of this research was to help minimize the spread of the AIDS and its etiologic agent HIV. This research relied on a limited number of theories of (health) behavior and applied these to precautionary sexual behavior.

The health belief model (HBM) is probably the most frequently applied model to describe and explain health behavior. This model focuses on two aspects: threat perception (perceived vulnerability and severity of the illness or health breakdown) and behavioral evaluation (benefits of preventive action and costs of enacting that behavior). This model has also been applied to contraceptive use (Eisen, Selman, & McAlister, 1985; Hester & Macrina, 1985; Lowe & RADIUS, 1987). A number of studies have used the HBM to study HIV preventive sexual behavior among young heterosexuals. For instance, Hingson, Strunin, Berlin, and Heeren (1990) found that adolescents who believed that condoms were effective in preventing HIV transmission and who

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²Correspondence concerning this article should be addressed to Joop van der Pliigt, Faculty of Psychology, Department of Social Psychology, University of Amsterdam, Roeterstraat 15, NL-1018 WB Amsterdam, The Netherlands. e-mail: sp_pliigt@macmail.psy.uva.nl.

felt susceptible to HIV infection were more likely to report condom use. However, the predictive power of the HBM seems limited (Abraham, Sheeran, Abrams, & Spears, 1996; Rosenthal, Hall, & Moore, 1992; Sheeran & Abraham, 1996). This is undermined by the outcomes of a meta-analysis by Gerard, Gibbons and Bushman (1996), who found only modest relationships between perceived vulnerability to HIV (a key factor in the HBM) and precautionary sexual behavior.

Other research points to the importance of factors not included in the HBM. For instance, Fisher, Misovich, and Fisher (1992) argue that social norms constitute an important determinant of safer sexual practices, and that a normative component should be incorporated into the study of contraceptive behavior. Others have also argued that models that take social norms into account may offer a better explanation of HIV precautionary behavior than the HBM (e.g., Brown, DiClemente, & Reynolds, 1991; Montgomery et al., 1989). Recent research also confirms the importance of self-efficacy, perceived behavioral control, or both in safer sexual practices (O'Leary, Goodhart, Jemmott, & Boccher-Lattimore, 1992; Richard & van der Pligt, 1991; Rosenthal, Moore, & Flynn, 1991; Schaalma, Kok, & Peters, 1993; van der Pligt & Richard, 1994). This brings us to Ajzen's theory of planned behavior (Ajzen, 1985, 1991) which includes (a) subjective norms (i.e., perceived social pressure to perform a behavior), (b) perceived behavioral control (i.e., the individual's perception of control over performing the precautionary behavior), and (c) attitude toward the behavior (i.e., one's evaluation of the behavior). A number of studies have applied the theory of planned behavior to condom use (Boldero, Moore, & Rosenthal, 1992; Conner & Graham, 1994; Nucifora, Gallois, & Kashima, 1993; Richard & van der Pligt, 1991; Richard, van der Pligt, & de Vries, 1995; Terry, Galligan, & Conway, 1993; Wilson, Zenda, McMaster, & Lavelle, 1992). Results of these studies provide considerable support for Ajzen's model. In the present study, we test the role of anticipated regret in the context of Ajzen's theory of planned behavior.

The theory of planned behavior is based on the assumption that people make rational decisions based on a systematic use of information available to them. A possible shortcoming of the theory of planned behavior is its relative exclusion of affective processes (cf. Ajzen, 1989, 1991). Manstead and Parker (1995) and Richard et al. (1995) note that the theory of planned behavior tends to focus on utilitarian outcomes of behavioral actions, at the expense of affective or emotional outcomes. As argued by Manstead and Parker (1995), this could well actions, which requires respondents to list possible advantages and disadvantages.

Van der Pligt, Zeelenberg, van Dijk, de Vries, and Richard (1998) argue that the literature on affect- versus cognition-based attitudes tends to rely on

rather holistic measures of affect, focusing on valence as a universal and ambiguous characteristic of affect. They propose that more attention should be paid to specific affective reactions, as opposed to the prevailing tendency to focus on the crude dichotomy between positive and negative affect as assessed by general, holistic measures of affect. Moreover, they point to the necessity of focusing on more specific postbehavioral affective outcomes and their role as antecedents of behavioral expectations and behavior. Several theorists have argued that people tend to anticipate possible postbehavioral feelings (e.g., Bell, 1982; Janis & Mann, 1977; Loomes & Sugden, 1982) and that these anticipations influence behavior. Thus, *before* having unprotected sex, people may anticipate the negative affective consequences of this behavior, which in turn may influence their decision making.

AIDS is a disease with irreversible fatal consequences, and a single occasion of unprotected sex can be sufficient to contract the disease. Uncertainty about a possible HIV infection is likely to result in worry, regret, and other emotions related to this uncertainty, and we expect that these emotions will subsequently motivate the person to take protective action. Richard et al. (1995) added anticipated regret to the theory of planned behavior and tested the role of this factor in predicting precautionary sexual behavior. Following Janis and Mann (1977), they refer to *anticipated regret* as a generic term referring to the various worries and regrets that people take into account before making a decision. Anticipatory regret thus includes "the various worries that beset a decision maker before any losses materialize" (Janis & Mann, 1977, p. 222). Landman (1993) termed regret a felt-reason or reasoned emotion.

Anticipated regret can be a powerful predictor of behavior, and several studies have shown that the anticipation of regret may reduce the tendency to make risky decisions (e.g., Josephs, Larrick, Steele, & Nisbett, 1992; Simonson, 1992). Richard et al. (1995) assumed that unsafe sex would be accompanied by negative postbehavioral feelings, such as regret and worry. Moreover, they expected anticipated postbehavioral regret to be independent of other beliefs about the behavior itself. Results confirmed their expectations and showed that anticipated regret added to the predictive power of the theory of planned behavior. The present study builds upon this work and also examines (self-reported) behavior over a period of a month after the assessment of the variables included in Ajzen's (1991) model.

Summarizing, in the present study we investigate whether anticipated regret is an independent determinant of contraceptive use. We examine the role of this factor in the context of Ajzen's theory of planned behavior, and assess whether anticipated regret is best included in the attitudinal component of the theory of planned behavior or whether it should be treated as an independent factor. This is done by testing the comparative fit of two alternative models, one in which

anticipated regret is included in the attitudinal component, and one in which it is not. Finally, we also assess the impact of the main factors of the theory of planned behavior, as well as that of anticipated regret on precautionary behavior.

Method

Respondents

Respondents were 451 (317 female, 134 male) first-year psychology students at the University of Amsterdam, who participated in the study as part of a course requirement. The questionnaire focused on heterosexual behavior, and homosexual respondents were therefore excluded from the study. Ages ranged from 18 to 48, with a median of 20.

Procedure

Two questionnaires were administered over a period of 4 weeks. Respondents answered anonymously. The introduction to the questionnaires explained that all questions referred to new or casual sexual relationships. Effort was taken to make sure that the terms employed were interpreted in the same way by all respondents. Relevant terms were defined in the introduction. The introduction explained that respondents would be presented with scenarios about having sex with casual or new partners and would be asked to imagine what they would do if these situations were to occur.

Our study was designed to focus on HIV precautionary behavior without confounding it with birth control. Contraceptives are widely used among adolescents in the Netherlands, but only condoms protect against HIV and other sexually transmitted diseases. A high proportion of female adolescents use some form of contraception (mostly the contraceptive pill). Therefore, in measuring both the dependent and independent variables, we distinguished between the use of a condom (irrespective of the use of another contraceptive) and the use of contraceptives. This was done by computing difference scores between these alternatives. For instance, respondents were asked to assess both the likelihood that they would use a condom and the likelihood that they would use another contraceptive (i.e., other than a condom) when having sex with a casual or new partner. Difference scores between these behavioral expectations served as the dependent variable.

We assessed behavioral expectations, as opposed to behavioral intentions, because there is some evidence that behavioral expectations are better predictors of behavior than are behavioral intentions (Sheppard, Hartwick, & Warsaw, 1988; Warsaw & Davis, 1985a, 1985b). This is most likely to be

the case when behaviors are under limited volitional control (Ajzen, 1985; Morojele & Stephenson, 1992).

Four weeks after the first questionnaire, a second questionnaire was administered. This second questionnaire dealt with precautionary sexual behavior of respondents during the period since the first questionnaire was completed.

Measures

The first questionnaire started with a measure of behavioral expectations. Respondents were asked to indicate their expectations with respect to three scenarios describing situations in which they met a person and had sex with him or her. These situations were:

Suppose that in the next 4 weeks you were to meet someone in a club and the two of you would like to have sex;

Suppose that in the next 4 weeks you were to meet someone you have known for quite a while. You decide to go out together, and after a great evening, the two of you have sex; and

Suppose that you have been attracted to someone for a while. This attraction turns out to be mutual. You make a date and after some time, the two of you have sex.

First, we asked respondents to rate the possibility that each of the above situations would happen to them personally. Responses were given on a 7-point scale ranging from *possible* to *impossible*. Next, for each situation, respondents were asked to indicate the likelihood that they would use a condom, another contraceptive, or both.

Expectations were given as probability estimates in percentages, and difference scores between the alternatives were computed. We used LISREL to analyze the data and to estimate relations between latent constructs. A precondition for the use of LISREL is that the various constructs are represented by multiple indicators. One indicator of behavioral expectations was the difference score between condom use and other contraceptive use across the three situations. Cronbach's alpha for this indicator was high (.94). A second indicator of behavioral expectations was assessed on the last page of the questionnaire. Respondents were asked to assess the likelihood of the two behavioral alternatives (use a condom or another contraceptive) if they "were to have sex in a new or casual sexual relationship." Scores ranged from 1 (*very likely*) to 7 (*very unlikely*). The difference score between the behavioral alternatives was used as a second indicator of behavioral expectations.

Anticipated regret. Respondents were asked to imagine having had sex with a new or casual partner, and to indicate how they expected to feel afterward if they had and if they had not used a condom. Anticipated regret for each behavioral alternative was assessed on three 7-point scales: *worried-not worried*, *regret-no regret*, *tense-relaxed*. Difference scores between the two alternatives were computed for each scale and were used as multiple indicators of anticipated regret. The first two scales are based on Janis and Mann's (1977) definition of regret, and the third was added because worry is often accompanied by tension (e.g., Borkovec, Robinson, Pruzinsky, & De Pree, 1983).

Subjective norms. The first indicator of subjective norms was based on the difference score between the item "Most people who are important to me find that if I have sex in a new or casual sexual relationship I should (*definitely-definitely not*) use a condom" and the item "If I were to have sex with a new/casual partner, and I did not use a condom but another contraceptive, most people who are important to me would (*approve-disapprove*)." Responses to both items were made on 7-point scales.

The second measure of subjective norms was included elsewhere in the questionnaire and consisted of one item assessing subjective norms concerning condom use versus the use of contraceptives. Responses to this item ("Most people who are important to me think that I should use . . . when having sex with a new or casual partner") were made on a 7-point scale, with *condoms* and *other contraceptives* as endpoints of the scale.

Perceived behavioral control. Following Schwarzer (1992), who noted the close similarity between perceived behavioral control and self-efficacy (Bandura, 1992), we assessed this factor with a series of items about different obstacles to the use of condoms and asked respondents how likely it would be that they would use a condom in each of these situations. All eight items were related to the following scenario:

Try to imagine yourself in the following situation: You recently met a person and the two of you would like to have sex, and you prefer to use a condom. How likely is it that you will have sex *without* using a condom in the following situations:

Examples of these situations are: "You tell the person you prefer to use a condom and (s)he gets angry" and "You do not carry a condom and first have to buy one." Scores ranged from 1 (*very likely*) to 7 (*very unlikely*). The eight situations were matched with respect to content and combined into two indicators, each comprising four situations. Cronbach's alphas for these indicators were .74 and .73, respectively.

Attitudes. Three semantic differential scales were used to provide a direct measure of attitudes: *pleasant-unpleasant*, *satisfactory-unsatisfactory*, and *like-dislike*. Respondents used these three 7-point scales to evaluate: (a) having sex with a new or casual partner using a condom, and (b) having sex with a new or casual partner without a condom but using another contraceptive. Difference scores between the two alternatives were again computed, and the three difference scores were used as multiple indicators of attitudes.

Self-reported behavior. In the second questionnaire, respondents were asked whether they had had sex in the past 4 weeks. Next, they were asked whether this concerned a monogamous sexual relationship, a new sexual relationship, or a casual sexual relationship. Respondents who indicated that they had had sex with a new or casual partner or that they had had sex with more than one person in the past 4 weeks were included in the analysis. For each partner, respondents indicated whether they had used a condom *never* (0), *occasionally* (1), or *always* (2). The final score was computed as the sum of condom use scores over partners divided by the number of partners.

Analyses

The LISREL VII program (Jöreskog & Sörbom, 1988) was used to test the goodness of fit of the model and to estimate its parameters. The maximum likelihood (ML) method is most commonly used for the estimation for model parameters and overall fit (Breckler, 1990). This method is based on the assumption that the observed variables have a multinormal distribution. An alternative is the weighted least squares (WLS) method, which is asymptotically distribution free (Browne, 1984). When large samples are available, this method can be used to compute asymptotically correct chi squares and standard errors when continuous variables depart from normality. As this is the case in the present study, the WLS method was applied, using the PRELIS computer program (Version 1.7; Jöreskog & Sörbom, 1988).

A chi-square test can be used to assess the overall fit of the proposed model to the data. The chi-square statistic indicates the adequacy of the proposed model in terms of its ability to recreate the observed covariance matrix. The larger the difference between the recreated and the observed covariance matrix, the larger the chi square. If the chi square is large relative to its associated degrees of freedom, the model should be rejected. Thus, a significant chi square indicates inadequate fit of the model to the data. However, the power of the chi-square test increases with sample size, and therefore any model will be rejected if the sample gets sufficiently large. Therefore, in addition to the asymptotically correct chi-square statistic, the adjusted goodness-of-fit index (AGFI; Jöreskog & Sörbom, 1988), the normed fit index (NFI; Bentler &

Bonett, 1980), and the incremental fit index (IFI; Bollen, 1989) will be reported. These indexes are less sensitive to sample size (Bollen, 1990). AGFI and NFI have a maximum value of 1, which indicates perfect fit of the model to the data. Although the IFI may exceed 1, it will be approximately 1 for a valid model (Bollen, 1990).

LISREL provides estimates of a model's parameters. To determine whether a particular parameter is necessary for the proposed model to fit the data adequately, two inference procedures can be used. First, LISREL provides standard errors for all parameters. The ratio between the parameter estimate and its standard error is a *t* value. If $|t| \geq 2$, the parameter can be assumed to differ from 0. Second, the difference-of-chi-square test can be used to compare the fit between the proposed model and the model in which the critical parameter is forced to equal 0 (Long, 1983). If this test yields a significant chi square, this means that the proposed model's ability to recreate the observed covariance matrix decreases significantly if the critical parameter is forced to equal 0. In the present research, *t* values will be used to test the significance of the parameters. Under certain conditions, a *t* test is less accurate than the difference-of-chi-square test (Neale, Heath, Hewitt, Eaves, & Fulker, 1989). For this reason, *both* tests will be used to examine whether anticipated affective reactions add to the prediction of sexual behavior over and above the components of the theory of planned behavior.

Results

First, we assessed whether respondents rated the presented behavioral scenarios as plausible. Averaged over the three hypothetical situations, a majority (71%) of respondents indicated that the situations described in the scenarios could possibly happen to them. Figure 1 summarizes the model of expected contraceptive use in casual sexual relationships. Since all parameters are presented in standardized metric, the regression parameters should be interpreted as beta weights, and the remaining parameters as correlation coefficients. Beta weights are accompanied by zero-order correlation coefficients in parentheses.

The proposed model adequately fits the data, $\chi^2(44) = 63.14, p < .03$, AGFI = .955, NFI = .994, IFI = .998. We can see from Figure 1 that attitude is not significantly related to behavioral expectations; all other parameters are significant at $p < .01$.³ Most important, however, is the significant beta weight of

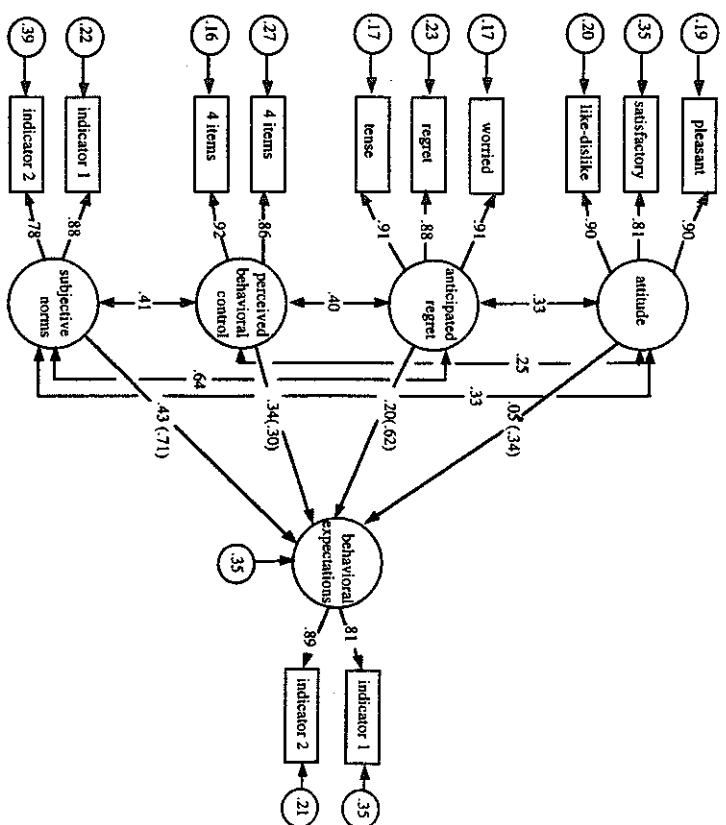


Figure 1. The model of expected contraceptive use in casual encounters. Large circles refer to latent factors, small circles refer to residual variance that is not accounted for by the common factor, and rectangles refer to measured variables. Two-way arrows refer to a correlation between constructs (as opposed to a causal relationship). One-way arrows from large circles to rectangles refer to factor loadings, and one-way arrows between large circles refer to regression coefficients. Parameter estimates are standardized; zero-order correlations are given in parentheses. **ns*, all other parameters are significant at $p < .01$.

³As noted, we used the WLS method to estimate parameters and overall fit. We also performed a LISREL analysis using the more commonly employed ML method. This analysis yielded slightly different results. The overall fit of the model was better: $\chi^2(44) = 52.74, p < .17$, GFI = .981, AGFI = .967, and the regression coefficient of behavioral expectations on attitudes was significant at $p < .05$. The rest of the reported results did not vary with the method of estimation.

anticipated regret. The difference-of-chi-square test yielded a $\chi^2(1)$ of 9.01, $p < .003$. Thus, anticipated regret predicts an independent and significant proportion of variance in behavioral expectations. The total amount of variance explained in behavioral expectations by the four latent constructs is substantial ($R^2 = .65$). The model in Figure 1 is based on the data of all respondents ($N = 451$). As mentioned earlier, a substantial minority of respondents ($N = 133$) did not find the three behavioral scenarios very realistic. An even larger number of respondents ($N = 178$) could be considered to be sexually inactive, since they reported not having had sex during the 4 weeks preceding the second interview.

To ensure that the model was not overly based on the data of these two groups of respondents, the earlier analysis was repeated for two smaller subsamples. For those respondents who could easily imagine themselves in the three stimulus situations ($N = 318$), the LISREL analysis based on the WLS method resulted in a somewhat lower, but still adequate fit, $\chi^2(44) = 72.10$, $p = .005$, AGFI = .94, NFI = .99, IFI = 1.00. Moreover, all parameters in the model closely resembled the estimated values depicted in Figure 1. Interestingly, the role of anticipated regret increased somewhat in importance, and the predictive power of subjective norms was slightly less pronounced (but still significant). Similarly, an analysis based on sexually active respondents resulted in a pattern of structural relations closely resembling those shown in Figure 1, but with slightly lower total fit, $\chi^2(44) = 73.91$, $p = .003$, AGFI = .93, NFI = .99, IFI = 1.00. For these respondents, subjective norms and attitudes were a stronger predictor of behavioral expectations than was the case for the total sample. The relation between anticipated regret and behavioral expectations was somewhat weaker, but was still significant. These results suggest that the model shown in Figure 1 is generalizable to sexually active respondents.

In order to focus on HIV preventive behavior without confounding it with prevention of unwanted pregnancy, we computed difference scores between the use of a condom (irrespective of the use of another contraceptive) and the use of another contraceptive. A possible problem with this is that difference scores tend to be less reliable than the scores used to compute the difference (e.g., Allen & Yen, 1979). Further analyses showed that these variables are quite reliable: The squared correlation between a measured variable and its underlying construct provides an indication of the reliability of the measured variable. Squaring the correlations in Figure 1 shows that the reliabilities of the measured variables are quite acceptable and range from .61 to .84.

In the follow-up study, 178 respondents (39%) reported not having had sex in the preceding 4 weeks, 230 respondents (51%) indicated having had sex in a monogamous relationship only, and 43 respondents (10%) indicated having had sex with new or casual partners in the preceding 4 weeks. The latter group is especially relevant, since the focus of our study is on precautionary behavior with new or casual sexual partners. Unfortunately, the number of respondents who had casual sex was too small to conduct a LISREL analysis, which made it impossible to test the whole model including behavior as a dependent variable. We therefore computed the Pearson's correlation between this group's self-reported condom use and the average of the two indicators of behavioral expectations. The proportion of variance in self-reported condom use explained by this measure was .34.

As a further test of the validity of the model, a stepwise regression analysis was performed on the data of the respondents who reported having had one

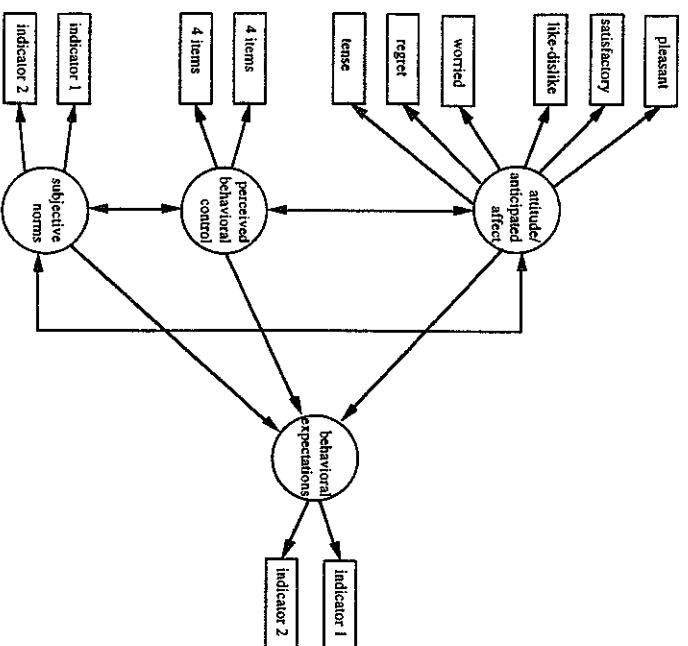


Figure 2. Alternative model of contraceptive use in which anticipated affective reactions and attitudes are reflected by a single latent construct. (Parameter estimates are not provided, since the overall fit indexes indicate that the model is not correct.)

new or casual contact or more than one sexual contact in the 4 weeks preceding the second interview ($N = 43$). For this analysis, a combination of the two variables operationalizing behavioral expectations was used as the criterion variable. The different variables (10 in total) measuring attitude, anticipated affective reactions, subjective norms, and self-efficacy were used as predictors. Three predictor variables entered into the regression equation: anticipated regret ($\beta = .45$), one indicator of perceived behavioral control ($\beta = .32$), and one of the attitude items ($\beta = .28$). A large amount of the variance in behavioral expectations can be explained by these three variables ($R^2 = .58$). The importance of anticipated regret is evident.

Next, we carried out a stepwise regression analysis with the average of the indicators of behavioral expectations, attitudes, subjective norms, perceived self-efficacy, and anticipated regret as the independent variables, and self-reported behavior as the dependent variable. Only behavioral expectations

entered the regression equation, suggesting that the effect of attitudes, subjective norms, perceived self-efficacy, and anticipated regret on behavior was completely mediated by behavioral expectations.

Both anticipated regret and attitudes may be based on affective judgments of the use of contraceptives in casual interactions. It might be argued, therefore, that anticipated regret and attitudes are essentially equivalent and that a more parsimonious model would treat anticipated affective reactions and attitudes as a single latent construct (with six indicators). Figure 2 presents this model. This alternative model is nested within the model shown in Figure 1, which enabled us to statistically compare them by means of the difference-of-chi-square test. If anticipated regret and attitudes are essentially equivalent, the overall fit of the proposed alternative model should not differ significantly from the overall fit of the model of Figure 1. This is not so, however. The difference-of-chi-square test yielded $\chi^2(4) = 192.15, p < .001$, indicating that anticipated regret and attitudes are different constructs. Moreover, anticipated regret was more strongly related to subjective norms than to attitudes. Testing the model while constraining the correlation between anticipated regret and subjective norms to be equal to the correlation between anticipated regret and attitudes resulted in a significant decrease in overall fit, $\chi^2(1) = 29.19, p < .001$. Thus, anticipated regret seems to have a stronger normative than attitudinal component. Anticipated regret does not coincide with subjective norms, however. The difference-of-chi-square test with respect to the model in which anticipated regret and subjective norms are reflected by a single factor yielded $\chi^2(4) = 90.34, p < .001$. The possibility that anticipated regret is therefore equivalent to subjective norms is also statistically rejected.

Discussion

The role of anticipated regret was investigated in the domain of precautionary sexual behavior. Results showed that anticipated regret constituted a single underlying construct that was distinguishable from the components of Ajzen's (1985, 1991) theory of planned behavior. More importantly, anticipated affective reactions predicted a significant and independent proportion of variance in expectations about future contraceptive behavior in casual sexual interactions. Together, attitudes, social norms, perceived behavioral control, and anticipated regret explained 65% of the variance in behavioral expectations. Behavioral expectations explained 34% of the variance in contraceptive behavior of respondents who had casual sex in the 4 weeks following the first session of the study.

Our findings indicate that attitudes only marginally predict contraceptive behavior in casual sexual interactions. This is corroborated by recent research

on heterosexual condom use (Richard & van der Pligt, 1991; Rise, 1992; Ross & McLaws, 1992). Adolescents appear to use condoms rather than other contraceptives in casual interactions to the extent that they perceive social pressure to do so, believe that they have control over condom use in difficult situations, and expect negative emotions such as worry and regret after not having used a condom. The present findings are supported by the findings of another study that demonstrated the independent role of anticipated affective reactions in a national sample of adolescents (Richard et al., 1995). At least in the domain of sexual behavior it seems that the predictive power of Ajzen's theory of planned behavior can be increased if anticipated regret is added as a predictor.

Parker, Manstead, and Stradling (1995) showed that anticipated affective reactions can also increase the predictive power of the theory of planned behavior in the domain of driving behavior. Their study assessed the ability of the theory of planned behavior to account for drivers' intentions to commit driving violations, and also investigated the role of anticipated affective reactions. In line with our findings, results showed that anticipated affective reactions accounted for a substantial proportion of the variance in intentions over and above the components of the theory of planned behavior. The present study also dealt with the issue of whether anticipated affective reactions such as regret and worry should be seen as a separate factor or be incorporated in the attitudinal factor. Present results suggest that anticipated regret should be treated as a separate factor, given the better fit of the two-factor model. However, in this study, we relied on a direct assessment of attitudes using semantic differential scales. It would be more appropriate to include more specific anticipated affective reactions, such as regret and worry in the set of outcome beliefs that constitutes an indirect measure of attitude. In this way, both the likelihood and the evaluation of these affective outcomes could be assessed, as well as their independence of more utilitarian beliefs.

We now turn to some practical implications of our findings. Initially, AIDS prevention programs were primarily directed at providing information about transmission routes and preventive behaviors (Fisher & Fisher, 1992; Gostin, 1989). However, being informed is in itself no assurance that precautions will be taken. This is also apparent from the fact that knowledge about AIDS and HIV has repeatedly been found to be unrelated to sexual risk-taking behavior (e.g., Baldwin & Baldwin, 1988; Goodman & Cohall, 1989; Richard & van der Pligt, 1991). Not surprisingly, research has focused on interventions aiming to change more immediate behavioral determinants, such as social norms and perceived behavioral control or self-efficacy. Strategies to do this can be found in Fisher et al. (1992) and Bandura (1992), respectively.

More central to the present paper is a strategy for increasing the awareness that unsafe sex can lead to negative feelings and emotions, whereas safer sexual

behavior is likely to result in positive feelings and emotions. Interestingly, this was one of the aims of a British campaign named "The choice is up to you." Part of this campaign was an advertisement that included a photograph of a young man and woman in bed. The woman (who was looking at the camera) showed some signs of distress. To the left of the photograph, two scenarios were described. In the first scenario, the reader allegedly had had sex the night before but had not used a condom. This was followed by a question about how the reader would feel this morning. Perhaps a little worried? Next, some general facts about AIDS transmission were described. This was followed by the second scenario, in which the reader allegedly had had sex the night before, and had used a condom. Again it was asked how the reader would feel this morning, and positive feelings were suggested. This campaign clearly aimed to increase the salience of negative feelings that could be experienced after unsafe sex, and positive feelings that could be experienced after safer sex.

Recently, we carried out two experiments that made use of a similar strategy (Richard, van der Pijl, & de Vries, 1996). Results showed that the strategy was effective in changing expectations of condom use in future casual sexual encounters. Moreover, in a follow-up study 5 months later, we found a reliable effect of the experimental manipulation on reported condom use in casual sexual relationships. These outcomes thus point to the potential usefulness of focusing on the affective outcomes (regret and worry) of risky practices. Emphasizing these short-term consequences of risky practices could be an alternative to fear appeals. The latter tend to stress the seriousness of long-term outcomes. Quite often, fear appeals have a limited impact on taking preventive action, partly because of the tendency to discount long-term outcomes, and partly because excessive levels of fear can trigger maladaptive coping styles that reduce the effectiveness of interventions aiming to foster preventive behavior (e.g., Joseph, Montgomery, Emmons, Kirscht, & Kessler, 1987; Liberman & Chaiken, 1992). Stressing immediate, postbehavioral affective consequences of people's risky practices also raises anxiety (but to a lesser degree than fear appeals), but may be more effective in increasing the likelihood of precautionary behavior.

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