

# Explaining the condom use of heterosexual men in a high-income country: adding somatic culture to the theory of planned behaviour

Daniel Gredig · Sibylle Nideröst · Anne Parpan-Blaser

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**Abstract** Against the background of an upward trend in newly diagnosed HIV infections and the increasing importance of heterosexual HIV transmission in Europe and Switzerland, the theory of planned behaviour has been tested and extended in a prospective study on condom use in a community sample of heterosexual men. Nine hundred eighty-two Swiss men between the ages of 25 and 65 were surveyed using standardised questionnaires in two computer-assisted telephone interviews. The theory of planned behaviour proved to be able to predict condom use in sexual encounters with new and casual partners. Condom use was predicted by intention. Perceived behavioural control and attitude were significant predictors of intention, whereas the subjective norm was not. Thus, in line with other studies, the present study highlighted the somewhat limited explanatory power of the theory. By adding the socio-cultural variable “somatic culture” to the model, the proportion of explained variance of intention was increased from 36 to 45 per cent. In light of these findings, prevention efforts should be more differentiated and specific in order to meet the specificities of the different types of somatic culture of the men they are targeting.

**Keywords** Condom use · HIV/AIDS · Theory of planned behaviour · Somatic culture · Heterosexual men

D. Gredig (✉) · S. Nideröst · A. Parpan-Blaser  
University of Applied Sciences Northwestern Switzerland,  
School of Social Work,  
Riggenbachstrasse 16,  
4600 Olten, Switzerland  
e-mail: daniel.gredig@fhnw.ch

S. Nideröst  
e-mail: sibylle.nideroest@fhnw.ch

A. Parpan-Blaser  
e-mail: anne.parpan@fhnw.ch

## Background

The worldwide situation with regard to HIV/AIDS is such that we are still far from putting a halt to the pandemic. In 2005, approximately 4.1 million people worldwide became newly infected with the virus. In the same period, an estimated 3.1 million people died of AIDS (UNAIDS 2006). The countries of sub-Saharan Africa and Southeast Asia are particularly hard hit and face enormous challenges. Accordingly, the eyes of the world are on these countries, on the health policies they adopt and on their action taken to prevent the further spread of HIV. In high-income countries, the situation with regard to health policy and HIV/AIDS prevention is quite a different one. In Western Europe, where 23,246 new infections were reported in the year 2005, there has been a significant upward trend in the number of newly diagnosed infections since 1997 (EuroHIV 2006). In Switzerland, for instance, the number of newly diagnosed HIV infections started to rise again in 2001, after a continuous decline since 1996 (Bundesamt für Gesundheit 2006). In 2004, 108.7 newly diagnosed HIV infections and 41.8 AIDS cases per million population were registered in this country. These figures are well above the average of the Western European countries (EuroHIV 2006). Heterosexual intercourse has been the most common mode of HIV transmission in Switzerland since 1992, representing 51.8% of all newly diagnosed HIV infections in 2005 and in Western Europe since 1999 (Bundesamt für Gesundheit 2006; EuroHIV 2006).

These epidemiological trends are challenging current prevention efforts. The question arises how nowadays prevention can be up to the mark and on what exactly an effective prevention should focus. Social research therefore continues to be called upon to identify causes and conditions of HIV risk and protection behaviour. By

developing explanation models, the social sciences generate knowledge about predictors of such behaviour. This information can serve the public health professionals as an evidence base for developing new courses of action.

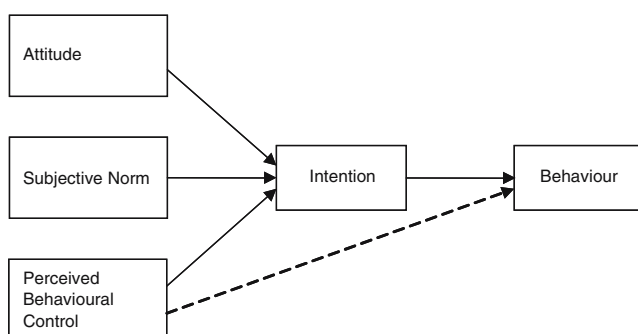
Until now, two theoretical strands have dominated social research on HIV risk and protection behaviour. One strand consists of relationship-oriented concepts. These mainly focus on the situational aspects of a sexual encounter as well as on couples interaction (Bruhin et al. 2002; Helfferich 2002; Van Campenhoudt et al. 1997). The other, larger strand consists of applying socio-cognitive explanation models, such as the protection motivation theory (Rogers 1975), the health-belief model (Rosenstock 1974), the theory of reasoned action (Ajzen and Fishbein 1980) or the theory of planned behaviour (Ajzen 1985; Ajzen and Fishbein 1980; Ajzen and Madden 1986) on HIV risk and protection behaviour. The latter is dominated by studies based on the theory of reasoned action and its extension, the theory of planned behaviour.

### The theory of planned behaviour

The theory of planned behaviour (TPB) posits that intention to carry out a certain behaviour is the most important predictor of engaging in the respective behaviour. Intention, in turn, may be determined by an individual's attitudes toward the behaviour, subjective norm and perceptions of behavioural control (PBC) with respect to the act in question (Ajzen 1991, 2002; Ajzen and Madden 1986). The theory of planned behaviour further posits that there may be a direct effect of PBC on behaviour (Ajzen 1985). This is the case when volitional control over the behaviour in question is weak and when perceived behavioural control matches actual control (Ajzen 1991).

Figure 1.

The theory of planned behaviour has been tested in numerous studies on (various forms of) HIV-protection behaviour and, given the results of recent meta-analyses, it is considered to have sufficient predictive validity (Albarracín et



**Fig. 1** Theory of planned behaviour

al. 2001; Bennett and Bozionelos 2000). In the empirical tests of the theory of planned behaviour to date, researchers either used samples of individuals with explicit high promiscuity (i.e., with a higher probability for a first and casual sexual encounter) or random samples of different persons showing particularly risky behaviour (Albarracín et al. 2001). Researchers also have tested the theory of planned behaviour in samples of men having sex with men (e.g., Fisher et al. 1995) or in samples of injecting drug users (Corby et al. 1996). Researchers have used relatively homogenous samples that were easy to contact, such as university students (e.g., Bucher 1995; Fisher et al. 1995) or adolescents and young adults (Plies et al. 1993; Reinecke et al. 1996; Sutton et al. 1999). In Switzerland, the theory of planned behaviour has only been tested on a sample of university students (Bucher 1995). However, a test of the theory in a community sample of heterosexual men has hitherto been missing.

Furthermore, like any of these social cognitive theories, the theory of planned behaviour meets with the criticism that it is an individualistic approach built on purely cognitive variables and based on the assumption that condom use is a rational choice by an individual faced with the danger of HIV infection. Emotional and social factors are left unconsidered (Bengel 1993: 58). The reported effect sizes and correlations support the claim that adding further variables might enhance the model's strength (Albarracín et al. 2001; Bennett and Bozionelos 2000; Sheeran and Orbell 1998). Ajzen appears to be aware of this, noting that: "The theory of planned behaviour is, in principle, open to the inclusion of additional predictors if it can be shown that they capture a significant proportion of the variance in intention or behaviour after the theory's current variables have been taken into account" (Ajzen 1991: 199). In part, Fishbein accepted this criticism by proposing an extension of the theory. He suggests adding "demographic variables" and "other individual difference variables" (Fishbein 2000). These variables are, however, not precise enough. Furthermore, it remains to be seen if they actually contribute to an improvement of the theory of planned behaviour.

From a theoretical, i.e., logical-structural point of view, it is questionable if a combination of socio-cognitive variables and macro-sociological variables is appropriate (Bengel 1993: 59). Each of the socio-cognitive concepts forming an integral part of the theory of planned behaviour denotes subjective perceptions of social reality. Objective factors are not included. Thus, perceived behavioural control is recorded and, by including the concept of the subjective norm, it is not the factual expectations vis-à-vis the respondents, but instead the normative beliefs of the respondents that are taken into consideration. By analogy, the model should therefore not include, e.g., the objective

social position, but rather a variable capturing the individual internalisation of social structure and culture.

At this point, it should be pointed out that neither the research focusing on relational or situational determinants (first strand mentioned above) nor the socio-cognitive explanation models (second strand mentioned above) have managed to integrate socio-economic or socio-cultural factors, at least not in a sufficiently satisfactory manner. In an earlier qualitative study on the condom use of heterosexual men, we have showed, however, that socio-cultural factors play a particularly important role in explaining HIV-protection behaviour. We identified somatic culture as a decisive factor for HIV-protection behaviour.

### Somatic culture

According to Boltanski, ‘somatic culture’ is a system of deeply internalised rules and implicit schemata that control an individual’s relationship to his or her body (Boltanski 1976). Somatic culture therefore describes permanent dispositions of perception, thinking and acting with regard to one’s own body. In his descriptive approach, Boltanski summarises somatic culture as rules guiding the physical behaviour of individuals. He describes them as the rules of appropriate behaviour that define the conforming manner in which the most mundane of physical activities, such as walking, getting dressed, eating, washing, putting on make-up and, for some, working, are carried out, the correct way in which physical interactions with others have to proceed. One might say that they constitute a “codex of good behaviour” in dealing with the body, which has been deeply internalised and which is shared by all the members of a particular social group (Boltanski 1976).

From an analytical point of view, somatic culture is that part of a person’s habitus that structures how he or she deals with his or her own body. It is generated in an individual’s socialisation process. As a result, individuals who share the same social conditions of existence develop a system of dispositions that generates similar modes of practice (Bourdieu 1999).

In a previous qualitative study (Gredig et al. 2002), we identified four types of somatic culture in heterosexual men in the German-speaking part of Switzerland:

*The visionary type of somatic culture* For the men who can be attributed to this type of somatic culture, the body is the subject of continuous conscious reflection. Characteristically, they are guided by a vision describing a self-defined ideal relationship between body and spirit (e.g., harmony of body and spirit). Another attribute of this type of somatic culture is the fact that the men in question have very clear, well-reflected ideas with regard to their own body and are able to express these eloquently. All men belonging to this

type have a strong personal autonomy while, at the same time, they are sensitive to their body and aware of their physical sensations. Men who live according to this vision see themselves as self-confident and self-determined individuals who take responsibility for their body and their health.

*The ambivalent type of somatic culture* There is a certain amount of conflict in the way in which men of this type deal with their body: there is tension between their compliance with socially transmitted internalised norms and their casual, happy-go-lucky approach. Men of this type of somatic culture are of a controlling nature; they observe their body precisely and do not limit these assessments to their subjective perception. So they subject their body to repeated critical tests (measuring of body weight, blood pressure, etc.) on a regular basis to check whether it is fulfilling the norms. As soon as the body does not fulfil such norms, which are perceived as compulsory, measures are taken to bring the body back to conformity (e.g., the withdrawal of nutrition). In this struggle for conformity, the body appears as an enemy, since it is treated with means of sanctioning character. As soon as the body is back to conformity, however, the men of this type lose interest again, and control is replaced by body-related behaviour determined by careless enjoyment, comfort and the avoidance of efforts. The main characteristic of this type of somatic culture is therefore that no balance between opposite orientations can be found and that no moderate middle course is possible. As a result of this oscillating movement between control and happy-go-lucky, the body is held in low esteem.

*The functionalistic type of somatic culture* Typical for men adhering to this type of somatic culture is their regard for the preservation of physical capacity. The body is experienced in the context of the working situation, and body-related behaviour is determined by work. The body is getting no more attention than necessary for the maintenance of fitness and for the fulfilment of one’s duty in everyday life. The only health behaviour practiced by these men is to take care not to exhaust their body unnecessarily, to minimise “wear and tear” and to avoid risks perceived as imminent. The kind of attention given to the body according to the visionary type would be considered exaggerated and unnatural. The first signs of a physical ailment are often ignored, i.e., the body only deserves attention when it can no longer perform as required. In their present-day orientation, the future, and thus any future consequences of their present physical neglect-of which these men are certainly aware-are ignored. What is characteristic for men of this type is the shared idea that a state of good or poor health is largely a question of

coincidence and does not fall within the responsibility or the power of the individual.

*The easy-going type of somatic culture* Carelessness and negligence characterise the body-related pattern of this type of somatic culture. These men show a calm indifference and tend to forget their body quite easily. They only become aware of it if there is an urgent reason, i.e., an impairment or interference. Men who belong to this type of somatic culture only make a minimal effort to take care of themselves in order to comply with social norms of cleanliness and appearance. Although they have certain conceptions of a healthy/healthier life, these are of almost no importance for the practical everyday issues. Often, motivated by lust or laziness, they redefine these conceptions to justify a slackening of the reigns on their part. This slack approach finds its equivalent in a body relationship which, due to low standards, is perceived to be good. Guided by the motto “be satisfied with what you have”, there are also allusions to the fact that one’s physical condition is basically unchangeable and that to accept it is the most natural attitude to adopt. As a result, the men of this type do not have thought-out attitudes towards their body, which makes it hard for them to talk about physical matters and thus makes them over-generalise issues (Gredig et al. 2002).

## Objectives

The first aim of the present study is to test whether the theory of planned behaviour provides a suitable explanatory model for the HIV-protection behaviour of heterosexual men between the ages of 25 and 65 living in the German-speaking part of Switzerland.

The second aim of this study is to determine whether the explanatory power of the theory of planned behaviour can be increased by adding the variable of somatic culture.

The protection behaviour under investigation was condom use in the context of a first or casual sexual encounter, i.e., the first sexual encounter with a person with whom the man has not been intimate before. This can turn out to be the first intercourse of a longer relationship or to be a casual sexual encounter.

We hypothesised that, according to the theory of planned behaviour, (1) attitude, subjective norm and perceived behavioural control would be related to intention to use condoms in the next first or casual sexual encounter; (2) intention would be predictive of condom use. Furthermore, we hypothesised that the integration of the variable “somatic culture” as an additional predictor of intention into the theory of planned behaviour will increase the

proportion of explained variance of intention to use a condom.

## Method

### Procedures

We designed this project as a prospective study. The first wave of interviews took place between October and December 2002. The second wave of interviews followed after an interval of 6 months. We used a standardised questionnaire and collected the data using computer-assisted telephone interviews (CATI). In measuring the variables from the theory of planned behaviour, we used scales that had proved effective in other studies and had been documented in the relevant literature. We had to adapt some of them to the specific behaviour and context of interest. The operationalisation of the four types of somatic culture is new and was based on the results and the qualitative material of an earlier project on condom use of heterosexual men mentioned above (Gredig et al. 2002). In a pretest, we tested if the questionnaire was comprehensible and clear, if there were any programming errors in the CATI, how long the interview would take and which coverage rate could be reached. Furthermore, we tested the reliability of the scales.

We targeted German-speaking men between the ages of 25 and 65. Given the fact that in Switzerland approximately 98% of all of the private households have a telephone line (LINK 2000), we selected them by choosing telephone numbers of private households from the electronic telephone directory issued 2002 by means of the random generator of the statistical software for professionals (STATA). In households with more than one man between the ages of 25 and 65, we chose the respondent by using the last-birthday method.

Since warm contacting usually yields higher coverage rates, we informed all the households beforehand in writing about the imminent telephone call using the addresses indicated in the electronic telephone directory. Of the addressed households, 96.1% could be reached by phone actually.

The telephone interviewers had been specially trained for this survey. For the first wave, the interview staff consisted of 25 interviewers between the ages of 25 and 62. Of these, 18 were women and 7 men. On average, the interviews lasted 30 min each and included questions to measure attitude, subjective norm, perceived behavioural control and intention. We surveyed a total of 1,071 men. Only 18 decided to break off the telephone interview.

The interview staff for the second wave comprised a total of 28 employees, 19 women and 9 men aged between

21 and 68. Forty per cent of them had previously been interviewed in the first wave. The second interview lasted an average of 17 min. The main purpose of the second interview was to investigate the actual protection behaviour (action). In the second wave, it was possible to interview 92% (n=982) of the men who had been questioned before. This time, only one man broke off the interview.

## Measures

### *Operationalisation of the model variables of the theory of planned behaviour*

Our operationalisation of the theory of planned behaviour followed the recommendations of Ajzen (Ajzen 1991). We measured the predictor variables attitude and subjective norm indirectly: Attitude towards condom use is determined by the person's evaluation of the outcomes associated with the condom use and by the strength of these associations. By multiplying belief strength and outcome evaluation, and summing the resulting products, we obtained an estimate of the attitude toward condom use, an estimate based on the person's salient beliefs about condom use (Ajzen 1988).

The scale for measuring belief strength consisted of 15 items, all with different statements concerning the possible outcomes of condom use: "How strongly do you believe that-as a result of using a condom-you will be protected against sexually transmitted diseases?", "... sex will be less romantic...", "... you will feel less manly?", etc. The response scale ranged from 0 to 10, whereby 0 signified "I don't believe this at all" and 10 "I am completely sure of this".

The scale to measure the outcome evaluation consisted of another 15 items. "How much do you care about protecting yourself against sexually transmitted diseases?", "... sex being romantic?", "... feeling manly?", etc. Again, the response scale ranged from 0 to 10, whereby 0 meant "not at all" and 10 "extremely".

The measure of the subjective norm was obtained by summing up the product of salient normative beliefs regarding condom use in a first or casual sexual encounter and the motivation to comply with those expectations. In order to measure these two dimensions, the respondents had to imagine three persons with whom they felt able to discuss personal matters. In order to measure the men's normative beliefs, the following question was used: "How strongly do you believe that person 1–3 expects you to use a condom when you have sex with a woman for the first time?" In response, the respondents were again asked to give a number between 0 and 10, whereby 0 meant "does not expect me to use a condom" and 10 "absolutely expects me to use a condom". To measure their motivation to

comply, the respondents were always asked the same question: "And to what degree are you usually ready to fulfil the expectations of person 1–3?" This response scale also ranged from 0 to 10 ("not at all ready"/"generally ready"/"absolutely ready"). Finally, a fourth item asked the following questions: "How do you generally assess society's expectation that you have to use a condom when having sex with a woman for the first time?" and "To what degree are you usually ready to fulfil society's expectations?".

Two items were used to measure perceived behavioural control: "How likely is it that you will be able to use a condom correctly when you are having sex with a woman with whom you have never been intimate before?" At the same time, it was explained to the respondents how to interpret "correctly", i.e., to be able to open the condom packet, roll it down and use it at the correct moment. Item 2 was "How difficult is it for you to use a condom when you are having sex with a woman for the first time?" For both questions, the respondents again had to give a number between 0 and 10.

We introduced the section to measure intention with the following question: "On a scale of 0 to 10, how likely do you think it is that in the next 6 months you will have sex with a woman with whom you have never been intimate before?" This was followed by "And how likely do you think it is that you will use a condom?" Six months later in the second set of interviews, we established whether a condom had actually been used. The men were asked if they had had any first or casual sexual encounter in the last 6 months and whether they had used a condom during this first or casual sexual encounter: "What happened the last time you had sex with a woman with whom you had never been intimate before: Did you use a condom?".

### Operationalisation of somatic culture

An important part of the operationalisation consisted in the development of indicators for assigning the respondents to the type of their somatic culture. The verbal data collected in our previous qualitative study on somatic culture (Gredig et al. 2002) served as the basis for the operationalisation. We examined the verbal data for statements that could be identified as characteristic for a specific type of somatic culture. In an iterative process, we transformed these typical statements into battery questions. Thus, we phrased them in such ways that only the adherers of one particular type of somatic culture would be able to completely agree. We tested the indicators by means of two validity tests using the men who had taken part in the earlier qualitative study and who had been used for the qualitative development of the typology. Subsequently, we adapted the measuring instrument and submitted it for criticism to the specialists

in methods at the Centre for Survey Research and Methodology (ZUMA) in Mannheim. Furthermore, we subjected it to a pretest on a random sample of heterosexual men living in the German-speaking part of Switzerland. In its definitive form, the somatic culture index consists of altogether 25 items. These 25 items have been divided into four sub-scales.

The sub-scale for the visionary type has a total of eight items and contains statements such as, e.g., “I consider my body to be my partner with whom I can communicate”; “I have found an ideal for my body which I would like to attain/achieve...”. The sub-scale for the ambivalent type consists of four items, such as “You cannot neglect your body, you have to watch out, otherwise it will get out of hand”, “If the body no longer meets the required norms, drastic measures must be taken immediately”. The sub-scale of the functionalistic type of somatic culture has six items (e.g., “My work keeps me physically fit, which is why there is no need for me to engage in any sport in my free time”, “As long as I am healthy, I don’t have to care about my body”). The sub-scale of the easy-going type of somatic culture consists of seven items (e.g., “Most sports do more harm than good”; “I am not very body-conscious. Most of the time, I’m not even aware that my body is there”). The rating scale ranges from 0 to 10, whereby 0 means “does not apply to me at all” and 10 “applies to me very much”. The type of somatic culture a respondent adopted is identified by the data from the four sub-scales. We standardised each of the four sub-scales and assigned the respondent to the type of somatic culture for which he had the highest sub-scale value.

As the rating technique, we used an 11-point scale ranging from 0 to 10, since this type of scale is to be preferred to verbally labelled response categories (Andrews 1984).

### Analytic strategy

As has been done by other researchers (Bennett and Bozionelos 2000), we tested the theory of planned behaviour in a two-step procedure. In step one, we conducted a bivariate correlation analysis to establish the relationship between the two variables “intention” and “condom use”. In step two, we used a standard multiple regression analysis to determine which variables were predictive of intention and the proportion of variance in intention they accounted for. In step three, we conducted a hierarchical logistic regression analysis in order to check that the predictor variables of intention had no effect on action when the effect of intention was controlled for.

In the test of the theory of planned behaviour that has been enhanced by the variable “somatic culture”, we started

by already knowing the relationship between the variable “intention” and the dependent variable “condom use”, since using the same sample this relation stays the same. In order to test whether the variable “somatic culture” was a predictive variable of “intention” and in order to determine the proportion of variance in intention it accounted for and by how much the explanatory power of the model can be increased, we conducted an analysis of covariance (ANCOVA). We conducted a hierarchical logistic regression analysis in order to check that attitude, subjective norm, perceived behavioural control and somatic culture had no direct effect on condom use when the effect of intention was controlled for.

The proportion of the four types of somatic culture in the sample were established by using frequency analysis.

## Results

### Sample description

Among the 982 men surveyed in total, the four types of somatic culture are represented in almost equal proportions: 28.3% show an orientation and give a self-characterisation that identifies them as adhering to the visionary type of somatic culture; 22.7% were shown to belong to the ambivalent type, 22.1% to the functionalistic type and 23.9% to the easy-going type of somatic culture (see Table 1).

Eighty-one (8.2%) respondents said that they had had a first or casual sexual encounter during the last 6 month. Of those 81 respondents, 33.3% were married at the time of their sexual encounter and 9.9% were in a steady relationship. Therefore, of these men, 43.2% had had sex with a secondary partner. The remaining 56.8% were single at the time of the encounter. The average age of the men was 43 years; the group of 25- to 34-year-olds made up 18.5% and the group of 55- to 65-year-olds 11.1% and were thus slightly underrepresented compared to the other age groups. Of the 81 men, 44.4% had completed vocational training; 17.3% were graduates. A mere 4.9% had only finished obligatory education (8–9 years of school); 92.6%

**Table 1** Proportions of the four types of somatic culture

	n	%
Somatic culture		
Visionary type	278	28.3
Ambivalent type	223	22.7
Functionalistic type	217	22.1
Easy-going type	235	23.9
Cannot be identified	29	3.0
Total	982	100.0

were working full-time or part-time, of which the majority was employees (82.7%). With 22.7%, the largest proportions of the men were working as technicians and associate professionals, i.e., as teachers, social workers, physiotherapists, etc., whereas 20% had a manual job; 18.7% were legislators, senior officials and managers, and 16% were professionals, i.e., lawyers, medical doctors, higher education teaching professionals, engineers, analysts and programmers. The average personal net income of the 81 men was between CHF 6,500 and CHF 7,500 a month (approximately EUR 4,100–4,700); 25% only had a monthly net income of less than the Swiss average income of CHF 5,500 (approximately EUR 3,500).

In total, 79% ( $n=64$ ) of the respondents had used a condom in the last sexual encounter with a new or casual partner; 21% ( $n=17$ ) had not.

Looking at the predictors of condom use, we first examined all scales, which were incorporated into the model, for interviewer effects. However, we found no significant results.

#### Description of the variables

The internal reliabilities of all of the scales we used to measure the variables of the TPB were found to be satisfactory. The scale for measuring the belief strength reached a reliability coefficient of  $\alpha=0.78$ . The scale for measuring the outcome evaluation also showed good internal consistency, having a reliability coefficient of  $\alpha=0.73$ . The two scales of normative beliefs and motivation to comply also had acceptable levels of internal reliability ( $\alpha=0.68$ , and  $\alpha=0.72$ , respectively). The two items measuring PBC correlated,  $r=0.40$  ( $p<0.01$ ), and were combined to provide a measure of PBC.

The internal reliabilities of all of the individual sub-scales measuring somatic culture were found to be satisfactory too: The sub-scale of the visionary type (eight items) reaches a Cronbach's alpha value of 0.71; the sub-scale of the ambivalent type (four items) reaches a value of  $\alpha=0.58$ , the sub-scale of the functionalistic type (six items) a reliability coefficient of  $\alpha=0.63$  and the sub-scale of the easy-going type (seven items) a reliability coefficient of  $\alpha=0.62$ .

In our sample, attitudes towards condom use were generally positive: 72.7% had a positive or a very positive attitude towards condom use (values 51–100). The mean of the subjective norm was 52.80. Of the respondents, 46.2% were not willing to comply with the normative beliefs of relevant others (values 0–50). However, the respondents had a high degree of perceived behavioural control ( $M=8.75$ ,  $SD=1.51$ ). Of the respondents, 93.8% were sure that they could use a condom without any difficulties in the situation of a first or casual sexual encounter with a new

partner (values 6–10). The respondents also held strong intentions to use a condom ( $M=8.84$ ,  $SD=2.30$ ); 88.9% expected that they would use a condom in the next sexual encounter with a new partner (values 6–10). Due to a skewed distribution of errors, we took the logarithm of intention for testing the model.

#### Testing the theory of planned behaviour

In the first step, we identified a significant relationship between intention and condom use ( $r_s=0.23$ ,  $p<0.05$ ). In the second step, we identified significant relationships between the predictor variables and intention. Perceived behavioural control was found to be the best predictor of intention to use a condom, with a standardised multiple regression coefficient of  $\beta=0.41$  ( $p<0.001$ ). Perceived behavioural control explained 16% of the variance in intention. Another significant predictor variable, with a standardised multiple regression coefficient of  $\beta=0.25$  ( $p<0.05$ ), was "attitude". However, it only explained 6% of the variance in intention and was therefore a weaker predictor. The effect of the subjective norm on intention was non-significant (see Fig. 2). The three predictors together explain 33% of the variance in intention to use a condom.

In the third step of the analysis, the hierarchical logistic regression found no direct effects on behaviour for any of the three predictor variables attitude, subjective norm and perceived behavioural control, when controlling for intention (see Table 2). So the mediational hypothesis of the theory of planned behaviour was found to be valid. The explanatory power of the model was 36% (see Fig. 2).

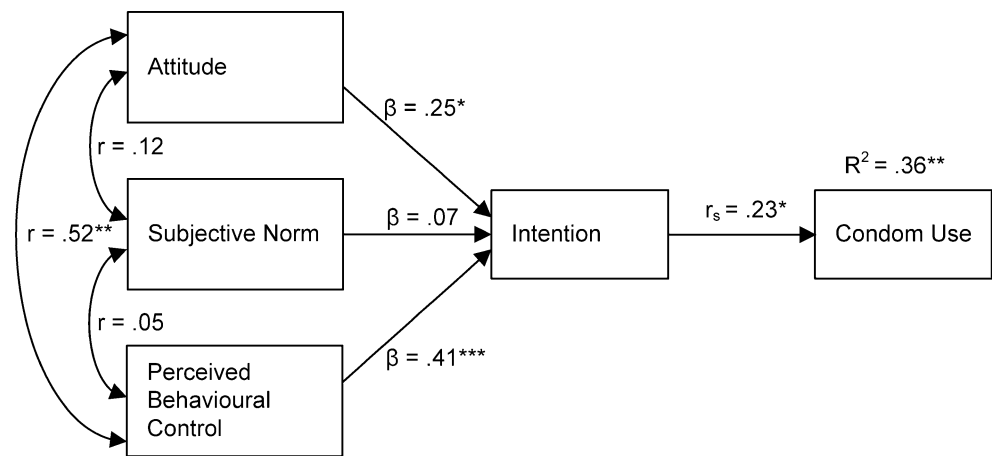
#### Extending the theory of planned behaviour

The correlation between intention and condom use stays the same as in the first analysis ( $r_s=0.23$ ,  $p<0.05$ ).

Because somatic culture is a nominal scaled variable, we used an analysis of covariance for testing the extended model. If somatic culture becomes a part of the model of the theory of planned behaviour, the statistical analysis shows that in addition to the significant variables "intention" and "perceived behavioural control", this new, socio-cultural variable has a significant effect on intention (see Table 3). Extending the theory of planned behaviour thus increases the proportion of explained variance in intention from 33 to 41%.

After adjusting for the covariates attitude, subjective norm and perceived behavioural control, intention to use a condom varied significantly with somatic culture, as summarised in Table 3, with  $F(3,224.43)=2.76$ . As in the traditional model, perceived behavioural control had the strongest main effect on intention, i.e.,  $F(1,458.43)=16.9$ . Perceived behavioural control already accounted for 20% of

**Fig. 2** The influence of attitude, subjective norm and perceived behavioural control on intention and condom use in the last sexual encounter with a new partner (n=75)



**Note.** \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

$r_s$  = Spearman' rank correlation coefficient

$R^2$  = Multiple correlation coefficient

$r$  = correlation coefficient

$\beta$  = beta weight

the variance in intention. Somatic culture alone accounted for 11% of the variance in intention. Using a hierarchical logistic regression, we found no direct effects on condom use for any of the four predictor variables attitude, subjective norm, perceived behavioural control and somatic culture, when controlling for intention (see Fig. 3). As hypothesised, there is no direct relationship between somatic culture and condom use. The explanatory power of the extended theory of planned behaviour is 45%.

Therefore, our hypothesis that including somatic culture can increase the explanatory power of theory of planned behaviour remains valid.

**Table 2** Hierarchical logistic regression model predicting condom use following the theory of planned behaviour

Variable	B	SE	Odds ratio	Wald statistic
<b>Step 1</b>				
Attitude	0.000	0.023	1.000	0.000
Subjective norm	0.010	0.012	1.010	0.696
Perceived behavioural control	0.169	0.209	1.184	0.653
<b>Step 2</b>				
Attitude	-0.009	0.024	0.992	0.534
Subjective norm	0.009	0.012	1.009	0.128
Perceived behavioural control	0.041	0.233	1.042	0.032
Intention	0.067	0.051	1.069*	1.735

*Note.* Step 1:  $n=75$ , pseudo- $R^2=0.03$ ,  $p>0.05$

Step 2:  $n=75$ , pseudo- $R^2=0.07$ ,  $p<0.05$

Condom use coded as 1=yes, 0=no

B= regression coefficient

SE= standard errors

\* $p<0.05$

## Discussion

We tested the suitability of the theory of planned behaviour to explain the condom use of Swiss men between the ages of 25 and 65 in first and casual encounters.

The reason for focusing on one particular protection behaviour in a specific situation is due to methodological requirements: Ajzen postulates in his earlier works that intention and perceived behavioural control “must be assessed in relation to the particular behavior of interest, and the specified context must be the same as that in which the behavior is to occur” (Ajzen 1991: 185). In later publications he states that the “principle of compatibility” requires “that all other constructs (attitude, subjective norm, perceived behavioral control and intention)” conform with the behaviour that is to occur (Ajzen 2002). Thus, it is essential that the theory of planned behaviour variables are

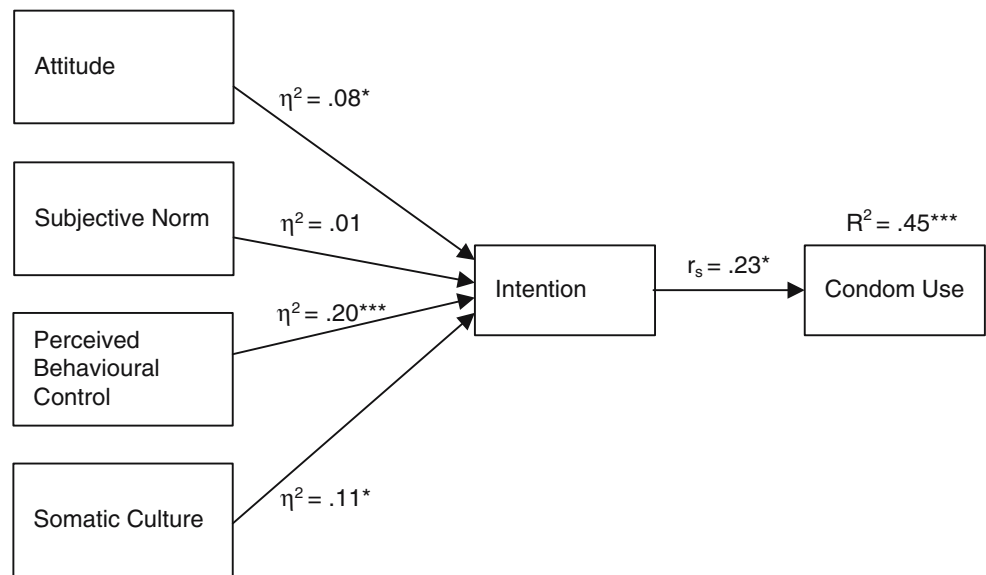
**Table 3** Analysis of covariance of intention as a function of somatic culture with attitude, subjective norm and perceived behavioural control as covariates

Source	df	SS	MS	F	$\eta_p^2$
Somatic culture	3	224.43	74.81	2.76	0.11*
Attitude	1	150.21	150.21	5.53	0.08*
Subjective norm	1	10.31	10.31	0.380	0.01
Perceived behavioural control	1	458.43	458.43	16.90	0.20***
Error	68	1,845.69	27.14		
Corrected total	74	3,112.608	42.06		

*Note.*  $R^2=0.41$  ( $n=75$ ,  $p<0.001$ ) \* $p<0.05$ ; \*\*\* $p<0.001$



**Fig. 3** Extended theory of planned behaviour (n=75)



Note. \* $p < 0.05$ ; \*\*\* $p < 0.001$

$r_s$  = Spearman' rank correlation coefficient

$R^2$  = Multiple correlation coefficient

$\eta^2$  = Correlation ratio

specified with regard to one protection strategy in one precise situation. Under this condition, observing different protection behaviours in one study would require a highly differentiated assessment of various specific measures in the same inquiry. This would make data collection exceedingly complex, lengthy and demanding. Therefore, we decided to focus on one protection behaviour in a specific context, i.e., condom use in first or casual sexual encounters. In terms of HIV infection, such an encounter is a crucial moment, insofar as two people are engaged in an action that holds the risk of HIV infection, while condom use is an adequate protection behaviour.

The results show a significant relationship between intention and condom use. Men who intend to use a condom during their next first or casual sexual encounter with a new partner will in fact actually do so.

Relationships also were found between predictor variables and intention. Intention is primarily determined by perceived behavioural control, while attitude is secondary. Men with a high degree of perceived behavioural control and a positive attitude towards condom use are more likely to develop the intention to use a condom during their next first or casual sexual encounter than those with low perceived behavioural control and a negative attitude. These predictor variables account for 33% of the variance in intention. The subjective norm has no effect on intention. The explanatory power of the model is 36%.

#### Drawing comparisons

Unfortunately, a direct comparison to the results of other studies is not possible since these use different samples to examine the theory of planned behaviour or were set up retrospectively (Albarracin et al. 2001). However, a look at the reviews of those studies that used the theory of planned behaviour for explaining condom use in other populations (Albarracin et al. 2000, 2001; Bennett and Bozionelos 2000) reveals that our bivariate correlation between intention and condom use can be compared to the intention-behaviour relationship determined by other studies with regard to condom use. A meta-analysis on the intention-behaviour relationship by Sheeran and Orbell (Sheeran and Orbell 1998) that used 28 prospective tests of the theory of planned behaviour with regard to condom use showed that the sample-weighted average correlation between intention and condom use was  $r=0.44$ . A similar result was determined by Albarracin et al. (2001), i.e.,  $r=0.45$ .

A considerably stronger relationship between intention and behaviour, i.e.,  $r=0.59$ , was found by Fisher et al. (1995) using students as respondents. It must however be taken into consideration that the interval between the first and the second interviews was only 2 months. It has been shown that the strength of the connection between intention and behaviour decreases as the period between measuring intention and behaviour increases (Bennett and Bozionelos

2000; Sheeran and Orbell 1998). Because of the 6-month interval between the two measuring events, our study is situated at the upper end of the scale for two reasons: On the one hand, 6 months is the maximum period after which it is still possible to assume that the recall has not been biased (Weinhardt et al. 1998). On the other hand, it has been shown that with the exception of one study that was conducted with adolescents between the ages of 14 and 24 and allowed 12 months to pass between the first and second interviews (Reinecke et al. 1996), all prospective tests set a much shorter observation period of between 1 and 3 months. For studies which allowed more than 3 months to elapse between intention and behaviour interviews, Sheeran and Orbell (1998) found an average intention-behaviour correlation of only  $r=0.33$ . In the afore-mentioned study by Reinecke et al. (1996) over a period of 12 months, the correlation between intention and condom use was  $r=0.22$ .

Furthermore, it must be taken into consideration that our model examined first or casual sexual encounters with a new partner. As Galligan and Terry (1993) and Morrison et al. (1995) have shown, the intention-condom use relationship for steady partners is much stronger than for casual sexual partners. Sheeran and Orbell (1998) identified an average correlation between intention and condom use with a steady partner of  $r=0.45$ , while the average correlation between intention and condom use with casual partner was  $r=0.21$ .

In addition, it must be noted that a significant proportion of the respondents in our study did not expect a first or casual sexual encounter to occur in the following 6 months. On a scale from 0 to 10, 26% estimated the probability at the time of the prospective intention interview to be 0. A further 41% estimated the probability to be a value between 1 and 5. Thus, 67% of the respondents expressed their intention at a moment when they considered it unlikely or extremely unlikely that the situation in question would actually become reality. This is why we must be aware that intention may be realised and modified either during or shortly before the encounter in question. Indeed, it is a condition for accurate behavioural prediction that intention (as much as perceived behavioural control) must remain stable in the interval between the assessment and the observation of the respective behaviour. In this design, we know nothing about the intention shortly before the action in question.

In view of the 6 months observation period, the restriction of condom use to sexual encounters with a new partner and the large number of respondents who thought a first or casual sexual encounter improbable, the intention-behaviour relationship of  $r_s=0.23$  determined by our study is in line with the range of correlations reported in previous studies.

The second step of analysis shows that the subjective norm-in deviation from the theory of planned behaviour had no effect on intention. The later result does not mean

that the theory must generally be modified in this direction. On the one hand, the lack of relationship between the subjective norm and intention may be due to measurement issues. The reliability coefficient for the subjective norm was, with  $\alpha=0.68$ , low. On the other hand, however, the result is in line with empirical findings of other applications of the theory of planned behaviour. In earlier applications of the theory of planned behaviour to other behaviours, it may be found that “attitudes and perceived behavioral control are sufficient to account for intentions” (Ajzen 1991). Similar results have been reported in other European studies on condom use. Some studies show that the subjective norm has an effect on intention among women, but not among men (Bucher 1995; Plies et al. 1993). A possible reason could be that the subjective norm in men is lower than the subjective norm in women. This is very similar to our own findings. Only 19.2% of the respondents had high subjective norm values (75–100), and 46.2% had a low or a very low subjective norm value (0–50). Among the men in question, therefore, the strength of the subjective norm was relatively weak. Against the background of the above-mentioned studies (Bucher 1995; Plies et al. 1993), this result suggests that a gender-specific formulation of the model may be needed. On the other hand, men involved in a steady partnership while having the last sexual encounter with a new partner displayed higher values in the subjective norm. This may indicate that further research on the relationship between the subjective norm and intention should include measures of partnership status in order to determine whether partnership status moderates this relationship rather than gender or personality traits that have been identified in previous studies (Latimer and Martin Ginis 2005).

#### Methodological considerations

Considering methodological factors, an operationalisation of the theory of planned behaviour consistent with Ajzen's recommendations has proved to be valid. However, former tests of the TPB often used measures with 5-point Likert scales, i.e., ordinal scales. In order to treat such an ordinal scale as a numerical scale, it is the best to offer response scales with a greater number of categories. In addition, various studies have shown that a greater number of response categories has a positive effect on the quality of the data. The more categories, the higher the validity and the reliability of the scales and the fewer the random errors (Andrews 1984). Therefore, in our study we used unipolar 11-point scales (number production scales) as rating techniques. Further, such number production scales have the advantage of saving time during the interview and prevent response-order effects, such as primacy or recency effects from occurring (Scherpenzeel 2002).

Preparing this study, we also had to address the question whether it was appropriate to do the survey by telephone, given the sensitive nature of the data to be collected. Extensive experience in the US and the UK has shown, however, that this method yields especially good results with the collection of data on sexual behaviour (Uitenbroek and Robertson 1996a,b). The ZUMA Institute in Germany has used this method for sensitive issues such as “adultery” and has found telephone surveys to be suitable in this context (Porst 1998). In Switzerland, Bruhin et al. have provided proof of the suitability of telephone interviews in a survey on first and casual sexual encounters, HIV/AIDS and the risk of protection behaviour, which is being practiced (Bruhin et al. 2002). Based on our study we can further corroborate the appropriateness of telephone interviews in surveying sexual protection and risk behaviours.

There are also some limitations due to measurement issues. In our study “condom use” is a dichotomous variable that reduces the analytic strategy on nonparametric methods or categorical data analysis procedures. However, we focused on the last casual or first sexual encounter with a new partner in the last 6 months and not on every sexual encounter in that period. Looking at a behaviour on only a single occasion might be too restrictive (Ajzen 2002). Future research might consider every first and casual sexual encounter in the last 6 months and ask respondents how often they used a condom. However, we have to keep in mind that first and casual sexual encounters do not occur as frequently as other observable behaviours. In our sample 36 out of 81 men (44.4%) reported only one such encounter in the observed period. Furthermore, using ordinal answering categories and saying that the respondents used a condom in the sexual encounters of the last 6 months “often” or in “most cases” are also not very satisfactory.

The measurement of perceived behavioural control also had some limitations. This predictor variable was measured with just two items that were fairly general. Future research could take into consideration more specific behavioural control barriers, such as being aroused or in love, when measuring perceived behavioural control (Ajzen 2002).

Nevertheless, the finding that behaviour is not predicted by perceived behavioural control, but by intention alone is within the scope of the theory of planned behaviour that posits that in any given application, only one of the two predictors of behaviour may be needed to explain the behaviour to occur (Ajzen 1991). Our data may give reason to the assumption that condom use is a behaviour over which the men in our sample think to have complete volitional control. Indeed, we have to take into account that this perception of control could be biased by a social desirability effect, caused by the Swiss Stop-AIDS Campaign, which has been promoting condom use and condom skills since 1987. Furthermore, we must consider that

perceived behavioural control does not necessarily match actual control.

## Conclusion

The extension of the theory of planned behaviour by the factor of somatic culture has proved to be worthwhile, since it raises the model’s explanatory force by 9% to 45%. The critics of the theory of planned behaviour (claiming that it is individualistic and considers only cognitive variables) can thus be countered with an extension by somatic culture as described above, without however transforming the theory into an overly complex multi-factorial model.

Based on this study, the next step would be to analyze which relationships exist between the individual types of somatic culture and intention. Furthermore, it will have to be investigated how the theory of planned behaviour is affected by being controlled for type of somatic culture. To this end, further research will be required.

In addition, the extended theory of planned behaviour will have to be tested in other community samples. Against the background of the concept of somatic culture, it must however be taken into consideration that it still remains to be established whether the identified types of somatic culture can be transferred into cultural contexts besides Switzerland. Apart from that, the somatic culture of women must also be identified. In this regard, Helfferich has made a start by identifying four types of body relationships and awareness in connection with women’s contraceptive behaviour (Helfferich 1992). Of course, this cannot replace a comprehensive reconstruction study of somatic cultures in women.

The influence of somatic culture on the development of intention and thus also on the HIV-protection behaviour of heterosexual men as demonstrated by our study has consequences for HIV prevention. In our opinion, these findings indicate that increasingly prevention campaigns should take into consideration the somatic culture of the men they are targeting. Against the background of the types of somatic culture that we identified, the preventative action has to be more differentiated and specific in order to meet with the specificities of the different types of somatic culture. This also means that it will be necessary to consider carefully which messages to use in order to address the respective groups and which might be appropriate settings for this more sophisticated type of prevention work.

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## References

- Ajzen I (1985) From intentions to actions: A theory of planned behaviour. In: Kuhl J, Beckmann J (eds) *Action-control: From cognition to behaviour*. Springer, Berlin Heidelberg New York, pp 11–39
- Ajzen I (1988) Attitudes, personality and behavior. Dorsey, Chicago
- Ajzen I (1991) The theory of planned behavior: some unresolved issues. *Organ Behav Hum Decis Process* 50:179–211
- Ajzen I (2002) Constructing a TpB questionnaire: conceptual and methodological considerations. Online on Internet. Retrieved 11.02.2004, from [http://www.people.umass.edu/ajzen/pdf/tpb\\_measurement.pdf](http://www.people.umass.edu/ajzen/pdf/tpb_measurement.pdf)
- Ajzen I, Fishbein M (1980) *Understanding attitudes and predicting social behavior*. Prentice-Hall, Englewood Cliffs
- Ajzen I, Madden TJ (1986) Prediction of goal directed behavior: attitudes, intentions, and perceived behavioral control. *J Exp Soc Psychol* 22:453–474
- Albarracín D, McNatt PS, Williams WR, Hoxworth T, Zenilman J, Ho RM, Rhodes F, Malotte CK, Gail AB, Iatesta M (2000) Structure of outcome beliefs in condom use. *Health Psychol* 19:458–468
- Albarracín D, Blair TJ, Fishbein M, Muellerleile PA (2001) Theories of reasoned action and planned behavior as models of condom use: a meta-analysis. *Psychol Bull* 127:142–161
- Andrews FM (1984) Construct validity and error components of survey measures. A structural modeling approach. *Public Opin Q* 48:409–442
- Bengel J (1993) *Gesundheit, Risikowahrnehmung und Vorsorgeverhalten*. Hogrefe, Göttingen
- Bennett P, Bozonelos G (2000) The theory of planned behaviour as predictor of condom use: a narrative review. *Psychol Health Med* 5:307–322
- Boltanski L (1976) Die soziale Verwendung des Körpers. In: Kamper D, Rittner V (eds) *Zur Geschichte des Körpers*. Carl Hanser, München, pp 138–177
- Bourdieu P (1999) *Die feinen Unterschiede. Kritik der gesellschaftlichen Urteilskraft*, 11th edn. Suhrkamp, Frankfurt a.M
- Bruhlin E, Werner M, Abel T, Müller F (2002) *Management von HIV-relevanten sexuellen Risiken. Resultate der Studie LHP1 "Lebensstil und HIV-Prävention"*. Universität Bern, Abteilung für Gesundheitsforschung
- Bucher T (1995) *Das Kondom. Sozialpsychologische und andere Betrachtungen*. Unveröffentl. Lizentiatsarbeit Universität Zürich, Zürich
- Bundesamt für Gesundheit (2006) HIV-Zahlen: Der Trend bestätigt sich! *Bulletin* 06:624–627
- Corby N, Jamner M, Wolitski R (1996) Using the theory of planned behaviour to predict intention to use condoms among male and female injecting drug users. *J Appl Soc Psychol* 26:52–75
- EuroHIV (2006) HIV/AIDS Surveillance in Europe. Mid-year report 2005. No. 72. Online on Internet. Retrieved 7.7.2006, 2006, from [http://www.eurohiv.org/reports/report\\_72/pdf/report\\_eurohiv\\_72\\_draft.pdf](http://www.eurohiv.org/reports/report_72/pdf/report_eurohiv_72_draft.pdf)
- Fishbein M (2000) The role of theory in HIV prevention. *AIDS Care* 12:273–278
- Fisher WA, Fisher JD, Rye BJ (1995) Understanding and promoting AIDS-preventive behavior: insights from the theory of reasoned action. *Health Psychol* 14:255–264
- Galligan RF, Terry DJ (1993) Romantic ideals, fear of negative implications and the practice of safe sex. *J Appl Soc Psychol* 23:1685–1711
- Gredig D, Parpan A, Nideröst S (2002) Somatische Kultur und HIV-Schutzstrategien heterosexueller Männer. *Soz Praventivmed* 47:366–377
- Helffferich C (1992) Zwang von Natur und Gesellschaft: Alltagsbilder vom Körper aus der Sicht von Frauen. In: Vogt I, Bormann M (eds) *Frauen-Körper. Lust und Last*. dgut, Tübingen, p 9–37
- Helffferich C (2002) HIV-Prävention. Die "Karriere" eines Forschungsthemas. *Soz Praventivmed* 47:353–358
- Latimer AE, Martin Ginis KA (2005) The importance of subjective norms for people who care what others think of them. *Psychol Health* 20:53–62
- LINK (2000) Sind die SchweizerInnen überhaupt noch zu erreichen? Telefonanschlüsse der privaten Haushalte in der Schweiz im Jahr 2000. Luzern
- Morrison DM, Rogers Gillmore M, Baker SA (1995) Determinants of condom use among high-risk adults: a test of the theory of reasoned action. *J Appl Soc Psychol* 25:651–676
- Plies K, Schmidt P, Nickel B, Berger M (1993) Determinanten der Kondombenutzung bei neuen Sexualkontakten. Test eines Kausalmodells. In: Lange C (ed) *Aids-Eine Forschungsbilanz*. Sigma, Berlin, pp 265–271
- Porst R (1998) Persönliche Mitteilung zum Thema "Heikle Themen in Telefonbefragungen. ZUMA, Mannheim
- Reinecke J, Schmidt P, Ajzen I (1996) Application of the theory of planned behavior to adolescents' condom use: a panel study. *J Appl Soc Psychol* 26:749–772
- Rogers RW (1975) A protection motivation theory of fear appeals and attitude change. *J Psychol* 91:93–114
- Rosenstock IM (1974) The health belief model and preventive health behavior. *Health Educ Monogr* 2:354–386
- Scherpenzeel AC (2002) Why use 11-point scales? Online on Internet. Retrieved July 15, 2000, from <http://www.swisspanel.ch/file/about/faq/11pointsscales.pdf>
- Sheeran P, Orbell S (1998) Do intentions predict condom use? Meta-analysis and examination of six moderator variables. *Br J Soc Psychol* 37:231–250
- Sutton S, McVey D, Glanz A (1999) A comparative test of the theory of reasoned action and the theory of planned behavior in the prediction of condom use intentions in a national sample of english young people. *Health Psychol* 18:72–81
- Uitenbroek D, Robertson BJ (1996a) Introduction to the RUHBC-CATI lifestyle and health survey. In: Robertson BJ (ed) *Research related to HIV/AIDSs and sexual behaviour*. University of Edinburgh Research Unit in Health and Behavioural Change, Edinburgh, pp 52–61
- Uitenbroek D, Robertson BJ (1996b) The RUHBC-CATI lifestyle and health survey. University of Edinburgh Research Unit in Health and Behavioural Change, Edinburgh
- UNAIDS (2006) *Report on the global AIDS epidemic*. WHO, Geneva
- Van Campenhoudt L, Cohen M, Guizzardi G, Hausser D (1997) *Sexual interactions and HIV risk. New conceptual perspectives in european reserach*. Taylor & Francis, London
- Weinhardt LS, Forsyth AD, Carey MP, Jaworski BC, Durant LE (1998) Reliability and validity of self-report measures of HIV-related sexual behavior: progress since 1990 and recommendations for research and practice. *Arch Sex Behav* 27:155–180