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**SOCIAL-COGNITIVE DETERMINANTS OF CONDOM USE IN A COHORT OF YOUNG GAY AND BISEXUAL MEN**

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RUNNING HEAD: SOCIAL-COGNITIVE DETERMINANTS OF CONDOM USE

SOCIAL-COGNITIVE DETERMINANTS OF CONDOM USE IN A COHORT OF  
YOUNG GAY AND BISEXUAL MEN

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## ABSTRACT

The aim of this prospective study was to identify relevant determinants of young gay and bisexual men's (YGBM) condom use when having anal sex with casual partners. Respondents (185 YGBM in the midst of their coming-out; mean age 18.9) completed an online questionnaire on social-cognitive determinants of condoms use derived from the Theory of Planned Behavior (Ajzen, 1991) at wave 1. At six months follow-up (wave 2) sexual behavior with casual partners was assessed. A total of 63 YGBM reported sex with a casual partner in the six months between wave 1 and wave 2, of whom 49% (N=31) had anal sex. Of the YGBM who had anal sex, 42% (N=13) had unprotected anal sex. Condom use with casual partners was best predicted by the intention to always use condoms. Furthermore, attitude, descriptive and personal norms and perceived control significantly predicted intention to always use condoms. Interventions, targeting YGBM, aiming to promote condom use with casual partners should focus on increasing attitudes and strengthening skills to negotiate and use condoms.

Key words: adolescents; condom use; HIV/AIDS; young gay and bisexual men; theory of planned behavior

## INTRODUCTION

According to UNAIDS approximately 33.2 million people were living with HIV/AIDS in the world by the end of 2007 (UNAIDS, 2007). The majority of HIV-infections occur through sexual contact, and men who have sex with men (MSM) represent the largest proportion of HIV-diagnoses in most Western countries (UNAIDS, 2007). Recently it has been suggested that young gay and bisexual men (YGBM) are at elevated risk of contracting HIV and other STIs through unprotected anal intercourse (UAI; Dudley et al., 2004; Hogg et al., 2001; Koblin et al., 2000; Rangel et al., 2006; Weber et al., 2001). A thorough understanding of the reasons why YGBM are not using condoms when having anal sex can facilitate the design of effective interventions to increase condom use among YGBM (Bartholomew, et al., 2006; Kok et al., 2004). The aim of this study is to examine social-cognitive determinants of condom use with casual same-sex partners in a sample of YGBM.

In order to design effective HIV-prevention interventions for this target group, social-cognitive determinants of condom use have to be known (Bartholomew et al., 2006). The theory of planned behavior (TPB; Ajzen, 1991) is a useful model for predicting and understanding determinants of intention and behavior (Abraham, Sheeran

& Johnston, 1998; Armitage & Conner, 1999; Godin & Kok, 1996). Moreover, interventions based on determinants from social-cognitive theories such as the TPB have been shown to be effective in changing various health behaviors (Albarracín et al., 2001; Kirby, Laris, & Rolleri, 2007). In short, the theory states that behavior is best predicted by behavioral intentions and that people form these behavioral intentions based on their attitudes, subjective norms, and perceived behavioral control. The TPB also assumes that other more distant variables, such as demographics, influence intention and behavior through these three determinants. Research has shown that the predictive value of the TPB can be further increased by adding constructs to the model, such as descriptive norms (Rivis & Sheeran, 2003), personal norms (Conner & Armitage, 1998; Godin, Connor, & Sheeran, 2005; Manstead & Parker, 1995), and behavioral willingness (Gibbons et al., 1998; Van Empelen & Kok, 2006).

The TPB has been shown to predict intentions to use condoms and prospective condom use behavior reasonably well in a variety of samples (for reviews see Albarracín et al., 2001; Sheeran, Orbell, & Abraham, 1999), including MSM (De Wit et al., 2000; Fisher, Rey, & Fisher, 1995; Kok et al., 2007; Rye, Fisher, & Fisher, 2001). For example, two recent Dutch MSM studies showed

that the three main TPB constructs were all significantly related to behavioral intention and adding descriptive and personal norms increased the explanatory power of the model (Hospers, Dörfler, & Zuilhof, 2003; Kok et al., 2007). Moreover, a substantial correlation ( $r=0.58$ ;  $P < .001$ ) between intention and actual behavior was found (Hospers et al., 2003).

The Outcomes project is an online cohort study on coming-out and sexual behavior. Between early 2007 and late 2009 participants complete six biannual questionnaires. One aim of this project is to investigate the social-cognitive determinants of condom use with casual partners in a sample of YGBM who are in the midst of their coming-out. TPB variables regarding condom use with a casual partner were assessed during the first wave of the study, while sexual behavior with casual partners was assessed at the second wave six months later.

## METHOD

The study was approved by the ethics committee of the Faculty of Psychology and Neuroscience, Maastricht University.

## RECRUITMENT

The eligibility criteria were being between 16 and 25 years of age<sup>1</sup>, being sexually attracted to men, and first disclosure of sexual attraction in the year prior to the survey. In the present study disclosure was defined as telling at least one significant other (e.g. parents, siblings, friends or teacher at school) about attraction to the same sex. It should be noted that by using this working definition, we excluded disclosing sexual identity anonymously (e.g. through online chatting in gay chat sites or through anonymous participation in gay-related Internet forums).

Cohort participants were recruited both offline (45.9%) and online (54.1%). Offline recruitment took place at various gay venues frequented by YGBM. Details of YGBM (i.e. age, recency of coming-out and telephone number)

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<sup>1</sup> Although some gay and bisexual youth in the Netherlands nowadays come out before the age of 16, it was deemed inappropriate to include them in this study since that would have required parental consent.



were obtained and eligible participants were contacted by telephone within three working days. Other offline recruitment consisted of placing advertisements promoting the web address of the survey in gay-related media aimed at YGBM. Online recruitment consisted of placing banners with a link to the survey website on various gay-related sites frequented by YGBM and by issuing a press release which was published on various gay news sites. On the website of our survey, interested participants could submit their contact details (e-mail and telephone number) and if they did they were contacted by the primary researcher within three working days. The telephone interview was primarily aimed at verifying inclusion criteria and to clarify the procedure of the study. Eligibility was confirmed by asking interested participants' age, their sexual attraction (1= only attracted to men and 5= only attracted to women) and when and to whom they first disclosed their sexual attraction. Next, to ensure that only the intended participants entered the cohort, eligible participants received an e-mail with a personal login name and password which they had to use to login to the website that contained the questionnaire. The telephone interview also provided us with the opportunity to verify whether intended participants were trying to misrepresent eligibility and

to strengthen the commitment of the participants for participation in the cohort study.

A total of 185 participants, who were in the midst of their coming-out (median number of months after coming-out: 7; interquartile range: 4-10) completed their first online questionnaire on coming-out milestones and sexual behavior.

### **QUESTIONNAIRE**

The first part of the first online questionnaire consisted of demographics (e.g. age, educational status, cultural background). The second part consisted of questions on sexual history (e.g. first same-sex partner) and questions on recent sexual behavior and condom use in the six months preceding the survey for steady, regular and casual partners. The third part contained the social-cognitive determinants of condom use with a new partner in the next six months. The various beliefs were derived from the literature and from previous research conducted in the Netherlands (Hogeweg & Hospers, 2000; Hospers et al., 2003).

Behavior was assessed by asking respondents whether they had receptive or insertive anal intercourse with a casual partner and whether they used condoms (1=never; 5=always;

separate for receptive and insertive anal intercourse). Behavior was coded as safe when a condom was used on all episodes of both receptive and insertive anal intercourse and unsafe when at least one episode of unprotected receptive or insertive anal intercourse was reported.

Attitude was measured by averaging 11 attitudinal belief statements about condom use with a new partner in the next six months. For example, "using condoms when having anal sex with a new partner reminds too much of HIV/AIDS". Responses were on a five point scale, ranging from completely disagree to completely agree. Six negative items were recoded so that a higher score indicates a more positive attitude towards using condoms. A reliability analysis showed that one belief (i.e. "condoms are expensive") did not scale and was therefore deleted from the scale. Because this belief was not significantly correlated with intention ( $r=.028, p>.05$ ) or with behavior ( $r= -.16, p>.05$ ), it was not incorporated in subsequent analyses. Cronbach's alpha of the final scale is .72.

Subjective norm was measured by three normative beliefs (social referents were homosexual friends, heterosexual friends, and parents). For example: "My homosexual friends believe that I should always use condoms when

having anal sex with a new partner". Responses were on a five point scale ranging from most certainly not to most certainly, plus "don't know" and "not applicable" (both coded as middle score). Alpha of the scale is .70.

Perceived behavioral control was measured by beliefs about confidence to use condoms in five situations (i.e. when in love, when physically attracted, when excited, when consumed large amount of alcohol, and when under the influence of drugs). Moreover, three beliefs about the respondents' confidence to tell a new partner that he wants to use condoms was measured (i.e. tell in general, when partner pressures you to have insertive anal intercourse without a condom or receptive anal intercourse without a condom). Finally, three beliefs about the respondents' confidence to use a condom with a new partner were measured (i.e. buy condoms, putting a condom on to yourself, and putting a condom on to a new partner). Example: "Are you confident that you are able to always use a condom when having anal sex with a new partner with whom you are in love?". Responses were on a five point scale ranging from most certainly not to most certainly. Alpha of the scale is .87.

Descriptive norm was measured by two beliefs on the respondents' perception of condom use of their homosexual

friends and of YMSM in general. For example: "Imagine your homosexual friends are having sex with a new partner, do you think they always use condoms for anal sex?". Responses were on a five point scale ranging from most certainly not to most certainly, plus "don't know" and "not applicable" (both coded as middle score). The two beliefs were significantly correlated ( $r = .56$ ,  $p < .01$ ). Therefore, they were summed to form a general descriptive norm measure.

Personal norm was measured by four beliefs about condoms: for me it is normal, it would be against my principles, I would feel guilty, and I feel morally obliged to. For example: "I for me do think it is normal to use condoms when having anal sex with a new partner in the next six months". Responses were on a five point scale ranging from completely disagree to completely agree. Alpha of the scale is .80.

Behavioral willingness was measured by five beliefs about willingness to have unprotected sex with a new partner in the next 6 months: when he says he is HIV-negative, when you think he is HIV-negative, when there are no condoms present, when you think he is going to be your steady partner of when you think he is going to be your regular partner. For example: "If you have sex with a new partner

in the next 6 months, are you willing to have unprotected sex when you think he is HIV-negative?". Response were on a seven point scale, ranging from most certainly not tot most certainly so. Alpha of the scale is .93.

Behavioral intention was measured by two questions, I intend to and I expect to. For example: "Imagine you have anal sex with a new partner in the next six months. Do you intend to use a condom?". Responses were on a seven point scale ranging from most certainly not to most certainly. The two items were highly correlated ( $r = .84$ ,  $p < .01$ ) and therefore summed to form a general intention measure.

The final part of the online questionnaire included questions about gay community attachment, mental health concerns and discrimination, which will be reported elsewhere. The follow-up questionnaire essentially consisted of the same topics and thus similar questions as the first questionnaire and will not be described in detail here. Participants receive €10 for completing each questionnaire.

### **Data analyses**

Descriptive statistics about demographics and UAI with casual partner were obtained. Because only four

respondents (2%) had a non-western cultural background, the analyses are restricted to respondents with a Dutch or western cultural background (N=181). Next, correlations between the TPB constructs and intention (Pearson's correlation) and behavior (point biserial correlation) were obtained. Next, hierarchical linear regression analysis was used to examine relationships between determinants and intention. In the first step the three main determinants of intention were entered. In the second step the two extra determinants (i.e. descriptive and personal norms) were added and in the third step demographics were added. Next, three separate logistic regression analyses were performed to predict UAI with casual partners from intention, perceived behavioral control and behavioral willingness. Finally, a series of Students' T-Test were performed to investigate differences in belief structure between high versus lower intenders and between safe versus unsafe sexual behavior with casual partners<sup>2</sup>. A significance level of .05 was

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<sup>2</sup> Initially, the relation between intention measured at wave 1 and behavior measured at wave 2 was analyzed for new partners because all social-cognitive determinants were assessed for anal sex with new partners. A subsequent explorative analysis of the relation between intention at wave 1 and behavior with steady, casual and regular partners at wave 2 revealed a significant relation between intention and behavior only for casual partners. Because the amount of

used in all analysis, except in the analyses for the differences in beliefs, where a p-value of .01 was used to correct for multiple testing.

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explained variance in behavior was 28% for casual partners and 11% for new partners, only the results for casual partners will be described in detail.



## RESULTS

### **Sample characteristics**

Participants' mean age at wave 1 was 18.9 (sd= 2.3; median: 18, range 16–26). The vast majority had a Dutch cultural background (98%). Forty percent of the respondents (N=63) reported having had sex with casual partners in the six months between wave 1 and wave 2, of whom 32 (51%) had no anal intercourse. Of the YGBM who had anal sex with casual partner(s), 18 (58%) had protected anal intercourse and 13 (42%) had at least one episode of unprotected receptive or insertive anal intercourse. Of all the YGBM who reported sex with a casual partner, 21% reported at least one episode of UAI.

### **Correlations**

First of all, demographic characteristics were not significantly correlated with intention and behavior. Only educational level was significantly positively correlated with attitudes and negatively correlated with behavioral willingness; no other demographic characteristics were significantly correlated with any of the TPB or other social-cognitive variables. Second, there was a significant correlation between intention and behavior ( $r=.40$ ;  $p<.05$ ), indicating that respondents who reported UAI with a casual partner had a lower intention to use condoms. No other variables significantly correlated with behavior. Finally, the

variables most strongly correlated to intention were: attitudinal beliefs, personal norms, descriptive norms and perceived control.

[insert table 1 about here]

### **Prediction of behavior and intention from social-cognitive variables**

First of all, a stepwise backward logistic regression-analysis with drop-out (1=dropout; 2=non-dropout) as dependent variable and background variables (age, and educational level), TPB variables and behavior as independent variables showed that respondents who did not dropout at wave 2 perceived a higher social norm to always use condoms with a new partner (M=4.06) than respondents who dropped out (M=3.70; Adjusted OR=1.88, 95% CI 1.05 - 3.36). No other variables significantly differed between dropouts and non-dropouts.

Next, a hierarchical linear regression analyses showed that a model with three main TPB variables explained 28% of the variance in intention (see Table 2). In this model, only the variables attitudes and perceived behavioral control were significant<sup>3</sup>. Adding descriptive and personal norm to the model

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<sup>3</sup> Because a substantial number of respondents indicated "Don't know" and "Not applicable" for the subjective norm items (see also Table 3), we

increased the percentage of explained variance by 8% (see Table 2). Finally, adding demographics did not significantly increase the percentage of explained variance. Thus, in the final model, attitudes, descriptive norm, perceived behavioral control, and personal norms significantly predict intention.

[insert table 2 about here]

Next, a logistic regression analysis showed that intention significantly predicted condom use (adjusted OR=5.00; 95% CI 1.14 - 21.85; model fit compared to model with only constant: block -2LL= 7.49;  $p < .01$ ). Both perceived behavioral control and behavioral willingness did not significantly predict behavior ( $p > .05$ ). Thus, of the respondents who reported a maximal intention to always use condoms, 77% always used a condom in the six months between wave 1 and wave 2, and of the respondents who reported a less than maximal intention, 36% always used a condom.

### **Differences between beliefs**

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also coded "Don't know" and "Not applicable" as missing. For the sub-group of respondents who do know what their social referents think they should do, subjective norm does significantly predict intention (beta=.19;  $p = .004$ ).

[insert table 3 about here]

First of all, because intention to use condoms with a casual partner was very positive and because 51% of the respondents had a maximal intention, intention was dichotomized by categorizing 'most certainly' as high intention and all other responses as lower intentions. In general, respondents had a positive attitude towards condom use with a new partner. The negative consequences of condom use (i.e. irritating disturbance, creates distrust, less intimate) are not salient for high intenders and somewhat salient for lower intenders. The positive aspects (i.e. hygienic and feeling of being safe) of condom use were more important for high intenders. The subjective norm does not differentiate between high and low intenders. Only the descriptive norm what their best friends do when having sex with a new partner was more salient for high intenders. High intenders held strong moral norms regarding condom use with a new partner. They believe that it is normal to use condoms and that they would feel guilty if they did not use condoms. Moreover, they believe it is against their principles not to use condoms and they feel morally obliged to use condoms when having sex with a new partner. Finally, confidence to use condoms when having anal sex with a new partner was very high. High intenders felt more confident to use condoms with a new partner when they are in love, when the partner is attractive, or when they are sexually aroused.

Also, high intenders expressed more confidence to be able to tell their new partner that they want to use condoms in general and in two specific situations (i.e. when partner wants unprotected insertive or receptive anal sex). High intenders also expressed more confidence to be able to buy and carry condoms and they felt more capable of putting on a condom on oneself and on the partner.

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## DISCUSSION

The Outcomes study aimed to establish the relevant social-cognitive determinants of intention and actual condom use with casual partners. First of all, of the YGBM who reported sex with a casual partner in the six months between wave 1 and wave 2, about one fifth reported at least one episode of unprotected anal sex. Second, the TPB was successful in identifying the relevant determinants of intention to use condoms when having anal sex with a casual partner. The final model, which best predicted intention to use condoms, consisted of attitudes, perceived control, personal norms and descriptive norms. Moreover, condom use with casual partners at six months follow-up was significantly predicted by intention to use condoms.

The Outcomes study showed that for YGBM, social-cognitive factors play a role in the decision to use condoms when having anal sex with a casual partner. Our findings are well in line with previous TPB studies although the level of explained variance is somewhat lower compared to studies of older MSM (e.g. De Wit et al., 2000; Hospers et al., 2003; Kok et al., 2007; Rye et al., 2001; Rosario et al., 1999).

In line with the TPB, we found that behavior at six-month follow-up is best predicted by behavioral intention. Intention explained 28% of the variance in subsequent behavior, a finding which corroborates previous research (see for an overview of reviews Conner & Sparks, 2005). Moreover, the vast majority of the YGBM who expressed a maximal intention to use condoms subsequently acted upon their intention. These results suggest that intention plays an important role in the decision to engage in protected anal sex with casual partner(s).

In general, YGBM hold favorable attitudes towards condom use with a new partner. Whereas YGBM with a lower intention see more disadvantages of condom use (e.g. irritating disturbance, creates distrust), high intenders see more advantages of condoms (e.g. is hygienic and creates feelings of being safe). High intenders are also very confident that they can buy, carry, and use condoms. Moreover, they are confident that they can tell a new partner that they want to use condoms, even in difficult situations such as when they are sexually aroused or when the partner does not want to use condoms. Social influences do not differentiate between high and lower intenders, except for the descriptive belief that their best gay friends always use condoms when having sex with a new partner. Finally, YGBM with a high intention

express more personal responsibility to use condoms. They feel that it is against their principle not to use condoms and they would feel guilty if they do not use condoms when having anal sex.

From a practical point of view, the Outcomes study suggests that HIV-preventive interventions directed at YGBM should focus on attitudes, personal norms, descriptive norms and perceived behavioral control. Furthermore, this study also provided information on which specific beliefs are more relevant in explaining condom use and as such should be targeted in an intervention. YGBM should perceive that condom use has advantages related to HIV and STI prevention but should also anticipate disadvantages of condoms use (e.g. less intimate). Methods for changing attitudes are for example persuasive communication (for an overview, see Albarracín, Johnson, & Zanna, 2005). Furthermore, YGBM should express confidence in buying and carrying condoms and also in negotiating condom use with a casual partner. Also, YGBM should express confidence in applying condoms to oneself and to a casual partner, even under difficult circumstances. Methods for increasing perceived behavioral control are skills training and modeling (Bandura, 1997; Schaalma & Kok, 2006). Finally, the intervention should also try to establish, increase or



reinforce personal norms towards condom use with casual partners.

The Outcomes study has several limitations. First of all, because the Netherlands is known to be a fairly liberal country with respect to homosexuality (Keuzekamp & Bos, 2007), some YGBM may have their coming-out before 16 years of age. Therefore, our results should be interpreted within the context of our sample. Second, because most respondents were recruited at gay Internet sites or at gay venues, it is possible that this study attracted YGBM who are already comfortable with their sexual identity which limits generalisability. However, there is no evidence that YGBM who visit gay related Internet sites or who frequent gay venues are also more comfortable with their sexual identity. In contrast, it is likely that YGBM nowadays use the Internet to search for information about sexuality and coming-out (Franssens, Konings, & Hospers, 2007). Finally, the Outcomes study collected the data online. However, Internet surveys seem to produce as reliable results as telephone interviews or pencil and paper interviews (e.g. Gosling et al., 2004; Rhodes et al., 2002; Whittier, Seely, & St. Lawrence, 2004).

In conclusion, the Outcomes study investigated social-cognitive determinants of YGBMs condom use with a casual partner. Attitudes, perceived control, personal norms and descriptive norms all significantly predict intention to use condoms, and intention in turn predicted actual condom use. Furthermore, the Outcomes study provided information on which beliefs should be changed in an HIV-prevention intervention. The next step in the development of interventions is to select theoretical methods and practical strategies to accomplish the desired changes in the determinants of condoms use with casual partners and to design and implement the actual intervention program.

## REFERENCES

- Abraham, C., Sheeran, P., & Johnston, M. (1998). From health beliefs to self-regulation: Theoretical advances in the psychology of action control. *Psychology and Health, 13*, 569-591.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.
- Albarracín, D., Johnson, B.T., Fishbein, M., & Muellerleile, P.A. (2001). Theories of reasoned action and planned behavior as models of condom use: A meta-analysis. *Psychological Bulletin, 127*, 142-161.
- Albarracín, D., Johnson, B.T., & Zanna, M.P. (2005). *The handbook of attitudes*. New Jersey: Lawrence Erlbaum Associates.
- Armitage, C.J., & Conner, M. (1999). The theory of planned behaviour: Assessment of predictive validity and 'perceived control'. *British Journal of Social Psychology, 38*, 35-54.

- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bartholomew, K.L., Parcel, G.S., Kok, G., & Gottlieb, N.H. (2006). *Planning Health Promotion Programs. An Intervention Mapping approach* (2 Ed.). San Francisco: Jossey-Bass.
- Conner, M., & Armitage, C.J. (1998). Extending the theory of planned behavior: a review and avenues for further research. *Journal of Applied Social Psychology, 28*, 1430-1464.
- Conner, M., & Sparks, P. (2005). The theory of planned behavior and health behaviors. In M. Conner & P. Norman (Eds.), *Predicting health behavior: Research and practice with social cognition models*, (2nd ed., pp. 170-222). Maidenhead: Open University Press.
- De Wit, J.B.F., Stroebe, W., De Vroome, E.M.M., Sandfort, T.G.M., & Van Griensven, G.J.P. (2000). Understanding AIDS preventive behavior with casual and primary partners in homosexual men: the theory of planned behavior and the information-motivation-behavioral-skills model. *Psychology and Health, 15*, 325-340.

- Dudley, M.G., Rostosky, S.S., Korfhage, B.A., & Zimmerman, R.S. (2004). Correlates of high-risk sexual behavior among young men who have sex with men. *AIDS Education and Prevention, 16*, 328-340.
- Fisher, W. A., Rye, B.J., & Fisher, J.D. (1995). Understanding and promoting AIDS-preventive behavior: insights from the theory of reasoned action. *Health Psychology, 14*, 255-264.
- Franssens, D., Konings, M., & Hospers, H.J. (2007). *Outcomes report 1*. Maastricht: Maastricht University.
- Gibbons, F.X., Gerrard, M., Blanton, H., & Russell, D.W. (1998). Reasoned action and social reaction: willingness and intention as independent predictors of health risk. *Journal of Personality and Social Psychology, 74*, 1164-1180.
- Godin, G., Connor, M., & Sheeran, P. (2005). Bridging the intention-behavior 'gap': the role of moral norm. *British Journal of Social Psychology, 44*, 497-512.
- Godin, G., & Kok, G. (1996). The theory of planned behavior: A review of its applications to health-

related behaviors. *American Journal of Health Promotion*, 11, 87-98.

Gosling, S.D., Varize, S., Srivastava, S., & John, O.P. (2004). Should we trust web-based studies? *American Psychologist*, 59, 93-104.

Hogeweg, J.A., & Hospers, H.J. (2000). *Monitor 2000*. Maastricht: Maastricht University.

Hogg, R.S., Weber, A.E., Chan, K., Martindale, S.L., Cook, D., Miller, M.L., et al. (2001). Increasing incidence of HIV infections among younger gay and bisexual men in Vancouver. *AIDS*, 15, 1321-1322.

Hospers, H.J., Dörfler, T.T., & Zuilhof, W. (2003). *Monitor 2003*. Amsterdam: Schorer.

Keuzenkamp, S., & Bos, D. (2007). *Out in the Netherlands. Acceptance of homosexuality in the Netherlands*. The Hague: The Netherlands Institute for Social Research.

Kirby, D.B., Laris, B.A., & Roller, L.A. (2007). Sex and HIV education programs: their impact on sexual behaviors of young people throughout the world. *Journal of Adolescent Health*, 40, 206-217.

- Koblin, B.A., Torian, L.V., Guilin, V., Ren, L., MacKellar, D.A., & Valleroy, L.A. (2000). High prevalence of HIV infection among young men who have sex with men in New York City. *AIDS*, *14*, 1793-1800.
- Kok, G., Hospers, H.J., Harterink, P., & De Zwart, O. (2007). Social-cognitive determinants of HIV risk-taking intentions among men who date men through the Internet. *AIDS Care*, *19*, 410-417.
- Kok, G., Schaalma, H.P., Ruiter, R.A.C., Brug, J., & Van Empelen, P. (2004). Intervention Mapping: a protocol for applying health psychology theory to prevention programs. *Journal of Health Psychology*, *9*, 85-98.
- Manstead, T., & Parker, D. (1995). Evaluating and extending the theory of planned behavior. In W. Stroebe & M. Hewstone (Eds.), *European Review of Social Psychology* (Vol. 6, pp. 69-93). Chichester UK: Wiley.
- Rangel, M.C., Gavin, L., Reed, C., Fowler, M.G., & Lee, L.M. (2006). Epidemiology of HIV and AIDS among adolescents and young adults in the United States. *Journal of Adolescent Health*, *39*, 156-163.

- Rivis, A., & Sheeran, P. (2003). Descriptive norms as an additional predictor in the theory of planned behaviour: a meta-analysis. *Current Psychology, 22*, 218-233.
- Rhodes, S.D., DiClemente, R.J., Cecil, H., Hergenrather, K.C., & Leland, Y.J. (2002). Risk among men who have sex with men in the United States: a comparison of an Internet sample and a conventional outreach sample. *AIDS Education and Prevention, 14*, 41-50.
- Rosario, M., Mahler, K., Hunter, J., & Gwadz, M. (1999). Understanding the unprotected sexual behaviors of gay, lesbian, and bisexual youths: An empirical test of the cognitive-environmental model. *Health Psychology, 18*, 272-280.
- Rye, B.J., Fisher, W.A., & Fisher, J.D. (2001). The theory of planned behavior and safer sex behaviors of gay men. *AIDS and Behavior, 5*, 307-317.
- Schaalma, H.P., & Kok, G. (2006). A school HIV-prevention program in the Netherlands. In L.K. Bartholomew, G.S. Parcel, G. Kok & N.H. Gottlieb (Eds.), *Planning Health Promotion Programs: An Intervention Mapping approach* (2 Ed., 511-544). San Francisco: Jossey-Bass.



Sheeran, P., Orbell, S., & Abraham, C. (1999).

Psychosocial correlates of heterosexual condom use: a meta-analysis. *Psychological Bulletin*, 125, 90-132.

UNAIDS. (2007). *AIDS epidemic update: December 2007*.

Geneva: UNAIDS.

Van Empelen, P., & Kok, G. (2006). Condom use in steady and casual sexual relationships: planning, preparation and willingness to take risks among adolescents. *Psychology and Health*, 21, 165-181.

Weber, A.E., Chan, K., George, C., Hogg, R.S., Remis, R.S., Martindale, S., et al. (2001). Risk factors associated with HIV infection among young gay and bisexual men in Canada. *Journal of Acquired Immune Deficiency Syndromes*, 28, 81-88.

Whittier, D.K., Seely, S., & St. Lawrence, J.S. (2004). A comparison of web- with paper-based surveys of gay and bisexual men who vacationed in a gay resort community. *AIDS Education and Prevention*, 16, 476-485

Table 1. Means, SDs, and significant correlations between social-cognitive determinants, intention and sexual behavior (N=181; p<.05).

Intention (Int)	Int								
Attitude (Att)	.46	Att							
Subjective Norm (SN)	ns	ns	SN						
Perceived Behavioral Control (PBC)	.45	.46	.20	PBC					
Descriptive Norm (DN)	.28	ns	.23	.23	DN				
Personal Norm (PN)	.44	.35	.24	.47	.20	PN			
Behavioral willingness (BW)	-.48	-.41	ns	-.5.	ns	-.39	BW		
Age	ns	ns	ns	ns	ns	ns	ns	Age	
Educational Level (1=low; 2=high)	ns	.20	ns	ns	ns	ns	-.16	ns	EL
Unprotected Anal Intercourse (1=unsafe; 2=safe; N=32)	.41	ns	ns	ns	ns	ns	ns	ns	ns
Mean	6.2	3.8	4.0	4.0	3.3	4.0	2.4	18.9	
Range	1-7	1-5	1-5	1-5	1-5	1-5	1-7	16-26	
SD	1.2	.5	.7	.7	.8	1.0	1.5	2.3	

Table 2. Prediction of condom use intention from social cognitive variables (all reported standardized beta's are significant  $p < .05$ ).

Variable	<i>Model 1</i> $\beta$	<i>Model 2</i> $\beta$	<i>Model 3</i> $\beta$
Theory of planned behavior			
Attitude	.32	.27	.26
Subjective norm	ns	ns	ns
Perceived behavioral control	.31	.19	.18
R <sup>2</sup>	.28		
Other psychosocial variables			
Descriptive norm		.16	.16
Personal norm		.24	.23
R <sup>2</sup>		.36	
Demographic variables			
Age			ns
Educational status			ns
R <sup>2</sup>			.37

Table 3. Differences in means between respondents with a high or lower intention to use condoms when having anal sex with casual partner(s) (N=181). All scores range between 1-5 except for behavioral willingness which scores range between 1-7. A higher score indicates more agreement with each belief. For attitudinal beliefs, negative items were recoded so that a higher score indicates a more positive attitude. As a result, items 1, 3, 4, 5, 6 should be read as follows: a higher score indicates *less* agreement.

Belief	High intention	Lower intention
<b>ATTITUDINAL BELIEFS</b>		
Is an irritating disturbance	3.76	3.05**
Is extra exciting	2.14	2.04
Less feeling	3.24	2.82
Creates distrust	4.34	3.83*
Reminds too much of HIV	4.16	3.83
Is less intimate	3.88	3.26*
Is hygienic	4.50	4.04*
Creates feeling of being safe	4.69	4.27**
Good protection against HIV	4.68	4.42
Good protection against other STIs	4.53	4.46
<b>SUBJECTIVE NORMS</b>		
My gay friends think that I should use condoms (40% checked option "don't know or not applicable")	3.96	3.81
My straight friends think that I should use condoms (43% checked option "don't know or not applicable")	3.95	4.01
My parents think that I should use condoms (31% checked option "don't know or not applicable")	4.34	4.22
<b>PERCEIVED CONTROL</b>		
Confident, when in love	4.16	3.32**
Confident, when partner is attractive	4.40	3.68**
Confident, when sexually aroused	4.06	3.29**
Confident, when drink too much alcohol	3.51	3.15
Confident, when use drugs	3.49	3.10
Confident about telling partner to use	4.83	4.33**

condoms

Idem, if partner does not want to for insertive anal sex	4.71	4.08**
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Idem, if partner does not want to for receptive anal sex	4.73	3.92**
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Confident, always carry condoms	3.88	3.19**
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Confident, buy condoms	4.29	3.85
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Confident, apply condoms to self	4.74	4.28**
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Confident, apply condom to new partner	4.55	4.08*
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## DESCRIPTIVE NORM

My gay friends use condoms	3.66	3.31*
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YMSM use condoms	3.20	3.06
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## PERSONAL NORM

For me, it's normal to use condoms	4.73	4.10**
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I feel guilty if I do not use condoms	4.30	3.23**
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It is against my principles not to use condoms	4.46	3.51**
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I feel morally obliged to use condoms	4.20	3.56*
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## BEHAVIORAL WILLINGNESS

Willing, when new partner says he is HIV-negative	1.78	3.27**
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Willing, when you think new partner is HIV-negative	1.58	2.77**
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When no condoms are present	1.79	3.23**
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When you expect him to become your regular partner	1.76	3.03**
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When you expect him to become your steady partner	2.06	3.87**
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\* p&lt;.01

\*\* p&lt;.001