Master thesis

An Online Intervention to Increase the Intention to Use Condoms through Action and Coping Plans.

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Abstract

This research aims at increasing the motivation to use condoms amongst adolescents since they are frequent victims of sexually transmitted infections and/or unplanned pregnancies. An online intervention investigated the effects of four interventions including motivational components or volitional components. In the main study adolescents between 12 and 19 years (N = 395) filled out a questionnaire in which we used randomised controlled trials with five intervention groups (matching persuasive arguments to sexual self-schema, mismatching this message and sexual self-schema, providing action and coping plans as support to condom use, combining planning & match and control). The possible barriers to use condoms were investigated in a pilot study (N = 248) and used for creating action and coping plans upon these barriers in the planning condition of the main study. Univariate analysis of variance showed a main effect of receiving plans on the motivation to use condoms for all participants. Multivariate analysis of variance showed an interaction effect for ethnicity and condition on the motivation to prepare for condom use. The planning condition and combined condition only showed increased motivation for non-native Dutch adolescents. It appears useful to include planning in interventions aiming at increasing adolescents' motivation to have safe sex. Especially non-native Dutch adolescents benefit interventions including persuasive arguments to prepare for safe sex when these match their sexual self-schema and cognitive plans that support for these preparatory behaviours.

Key words: action plans, coping plans, sexual behaviour, intervention, condom use

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Sexually transmitted infections and unplanned pregnancies are prominent global public-health issues (Philpott, Knerr & Maher, 2006). An American representative study of the CDC (Centers for Disease Control and Prevention, 2008) found that one in four teenage girls between the ages of 14 and 19 years in the United States have a sexually transmitted infection (STI) like HPV and chlamydia. People under the age of 25, and especially girls, are at the highest risk of attracting an STI (National Center for HIV, STI and TB Prevention, 2006). In The Netherlands 970 hiv-dagnoses have been proposed in 2006 and in 2007 14,114 HIV infected people were registered at hiv-care centres and the HIV monitoring foundation (National institute for public health and the environment, RIVM). In 2007 78,062 people went to the centres to get help for a sexual transmitted infection to the STI centres in the Netherlands, which is an increase of 13% in relation to 2006. Usually 51% of consulted people are male (28% MSM included), 41% is younger then 25 years and 80% has a Dutch background (SOA Aids The Netherlands).

Research on sexual health should always take into account culture and gender differences. In the Netherlands, for example, teenage motherhood occurs relatively often in the first generation of Surinamese and Antillean females; in 2005 2,1% of Surinamese and 4,3% of Antillean females under twenty years old were victim of unwanted pregnancy (Garssen, 2005). For native born Dutch females the rate was 0,4% for unplanned pregnancies. The girls whom it concerns are in high risk of becoming a long term single mother which heightens the risk to get in a very low SES standard position.

For young people in the Netherlands it becomes easier to have sex at an earlier age due to shifting attitudes and norms to have more sex partners, although many of these adolescents do not use condoms consistently. Therefore, adolescents are in high risk of getting sexual transmitted diseases and unplanned pregnancies which bring a heavy burden to their lives. Planning sexual health behaviour, such as condom use, is very often one of the missing factors to prevent adolescents from actually using them. This research will highlight the important role of action planning (how, when and where will I use condoms?) and coping planning (what if barriers will appear to restrain me from acting on my intention to use condoms?) on sexual health behaviour.

Changing attitudes

In a comparative study ('Sex under the age of 25') of the Dutch Institute of Sexual Health (Rutgers Nisso Groep, RNG) researchers found a change in attitudes towards sexual behaviour. For example, an increase was found in having a positive attitude regarding having sexual intercourse when partners were merely attracted to each other, in comparison to couples who are truly in love. More interestingly, the attitude of having sex while not even truly liking each other rose from 16% to 25% between 1995 and 2005. This means that the attitude to have sex changed amongst Dutch adolescents. Furthermore, next to an increase of number of sexual partners (Bakker, 2004), young people in the Netherlands, as in other Western countries, have become sexually active at an earlier age during the last three decades (Vanwesenbeeck, Bakker, Van Fulpen, Paulussen, Poelman & Schaalma, 2003).

Failing consequent condom use

Many adolescents do not use condoms consistently. In 2002, a large population study in the Netherlands showed that among 15- to 35-year-old participants 22% regarded acquiring an STI as an acceptable risk. Over two-thirds of the sample reported using a condom when

having sex with a casual partner. Consistent use of condoms with a steady partner was reported by only 17% of the participants (Bakker & Vanwesenbeeck, 2002).

A reason why adolescents fail to use condoms, despite of their intentions, is not sufficiently thinking ahead contemplating how to prepare the safe sex behaviour. The use of condoms is a complex and multifaceted behaviour which needs to be repeated over time to be effective. It involves multiple preparatory actions, including purchasing condoms, carrying them with you, discussing condom use with a sexual partner, and correct handling of condoms (Bryan, Fisher, & Fisher, 2002; Sheeran, Abraham & Orbell, 1999). These preparations, in turn, are complex and require well-defined cognitive strategies. Thinking of preparations, and thus planning, for condom use before having sex appears to enhance safer sexual behaviour (Abraham, Sheeran, Norman, Conner, de Vries, Otten, 1999).

Adolescents are more at risk getting a STI and HIV infection because they tend to have a higher number of partners and more concurrent partnerships than older age groups (Van Empelen & Kok, 2007). Despite an increase in condom use among young people, 25% of males and 35% of females use condoms only at the beginning of their relationship (Rutgers Nisso Group, 'Sex under the age of 25'). But only one-third of the boys and less than one-fifth of the girls reported having used a condom during their last sexual intercourse. This research will focus on condom use as a mean of protection because male and female condoms remain the only methods available that guard against STI, including HIV infection, during sexual intercourse (French, Latka, Gollub, Rogers, Hoover & Stein, 2003). They also provide reliable protection against unplanned pregnancy.

The purpose of this research is to contribute to interventions that target sexual health preventive behaviour. We tested the effect of a planning intervention and of an intervention in which health messages match the sexual attitude to serve as a motivational predictor for the use of condoms.

Interventions

Numerous interventions have been designed to promote safer sexual behaviour amongst young people, like using condoms, but relatively few have proved to be effective (Fisher & Fisher, 1992). Most studies were relied only on social cognitive factors and few sexual health programmes were based on theory. Recent experimental studies have shown that cognitive predictors, like planning health behaviour, can make a difference in changing health behaviour. Sniehotta, Scholz and Schwarzer (2006) found that interventions that help people to plan how they will carry out behaviour work for cardiovascular patients who needed to improve their physical exercise. Also, Luszczynska, Tryburcy and Schwarzer (2007) found (as well as the previous authors) that interventions that build self-efficacy were effective on consuming fruits and vegetable behaviour. Schwarzer (2008) concludes that these results attest to the fact that these plans are operative constructs that facilitate volitional processes, such as effort and persistence. Abraham et al. (1999) found that cognitive planning distinguished female university students who did and who did not use a condom the first time they had intercourse with a new partner. In particular, planning for negotiating the use of condoms appeared to be of importance. In their study thinking of preparations for condom use before having sex appeared to enhance safer sexual behaviour.

Next to that Schwarzer (2008) states that the point at which a sexual intervention appears to be effective may depend on the stage of the motivation to the preferred health behaviour as well as the degree of commitment of the target group to act on the behaviour. Firstly, one should ask whether the intervention is aimed at motivating people to form intentions about certain health behaviour or at carrying out the actual behaviour. In our research both the motivational component (attitude towards condom use) as well as the volitional part (planning) will be examined. Secondly, most of the interventions have targeted 'intenders' – people who intend to carry out the target behaviour (e.g. Ziegelmann, Lippke, &

Schwarzer, 2006). When treating these highly motivated clients, the focus is on volitional treatment components such as strategic planning, action control, or maintenance self-efficacy. In contrast, this research involves adolescents from all 'backgrounds'; there will be adolescents who intend to have safe sex and also adolescents who have never explicitly thought about condom use, for example because of their young age. The focus here is on motivational as well as volitional processes.

So, although people report to have good intentions to have safe sex, these intentions do not necessarily guarantee corresponding actions. A meta-analysis of psychosocial correlates of condom use reported average intention-use correlations of .39 across 9 independent samples in cross-sectional studies *(N* = 1,890) and .46 across 21 independent samples in longitudinal studies *(N* = 1,408; Sheeran and Orbell, 1999). These results suggest that, on average, intention measures account for approximately 20% of the variance in reported condom use. This confirms the importance of intention measures as indexes of the likelihood of future condom use but simultaneously highlights the unaccountable gap of 80% between condom-use intentions and actual condom use (Abraham et al., 1999). Apparently, the concept of behavioural intentions alone is insufficient to understand lifestyle changes. There is a missing link in understanding health behaviour, a 'gap' between intentions and actions (Abraham et al., 1999).

Planning

Changing health-related behaviours requires two separate processes that involve motivation and volition (Luszckynska & Schwarzer, 2003). First, a person develops an intention to change, partly on the basis of self-beliefs. Next, the change must be planned, initiated, and maintained, and relapses must be managed. Self-regulation plays a critical role in these processes. A two-layer model that can be applied either as a continuum or as a stage model is the Health Action Process Approach (HAPA; Schwarzer, 2008; Schwarzer and

Fuchs, 1996; Schwarzer and Renner, 2000). It includes self-efficacy, outcome expectancies and risk perception as distal predictors, intention as a middle-level mediator and volitional factors (such as planning) as the most proximal predictors of behaviour. It pays particular attention to what happens after someone formulates the intention to change behaviour, and it conveys an explicit self-regulation perspective. It suggests a distinction between the motivational processes that take place before a goal is set and the volitional processes that arise afterwards.

The volitional part of behavioural change can be subdivided into a sequence of activities, such as planning, initiation, maintenance, relapse management, and disengagement, although these categories are not distinct. The importance of planning has been emphasized by Gollwitzer (1999), who reviewed research on what he called 'implementation intentions'. These plans specify the when, where, and how of a desired action, and they have the structure ''When situation S arises, I will perform response R''. They form cognitive links between situational circumstances or opportunities and the goal behaviour. It is argued that goals do not induce actions directly, but that they may lead to highly specific plans that, in turn, may induce actions.

Luszczynska and Schwarzer (2003) found in their research using the HAPA model that planning appeared to be the best predictor of breast-self-examination behaviours by 418 young women, followed by self-efficacy. The results point to the influential role that self-regulatory strategies (such as planning) play in translating goals into action. Risk perception was found to have a negligible influence in a path analysis, whereas self-efficacy emerged as the best predictor for intention and planning.

Thus, the introduction of planning as a mediator between the intention and behaviours lowers direct effects of post intentional beliefs. This is a promising finding, underscoring the importance of self-regulatory strategies (such as planning) as opposed to rather dispositional

self-beliefs. Self-efficacy operates on a behaviour mainly *through* intentions and planning, which is also documented by the existence of considerable indirect effects.

Action and Coping plans

In sum, planning is regarded as highly valuable in the process of health behaviour change (Gollwitzer, 1999; Luszckynska & Schwarzer, 2003; Sniehotta, Schwarzer, Scholz & Schüz, 2005). Sniehotta et al. (2005) found that planning bridges the gap between behavioural intentions and health behaviour in physical exercise. They made a further distinction between action planning and coping planning. *Action planning* (Sniehotta, Schwarzer, Scholz & Schüz, 2005) can help initiate action by specifying when, where and how to act and can be considered synonymous with implementation intentions (Gollwitzer, 1999). Furthermore, action planning can solve persistence problems because the underlying perceptual, attentional, and mnemonic mechanisms endure even if the execution of a behavioural intention has been postponed without conscious self-control. *Coping planning* (Sniehotta, Scholz, & Schwarzer, 2006) can help a person to overcome obstacles and to cope with difficulties by anticipating personal risk situations (i.e. situations that endanger the performance of intended behaviour) and planning coping responses in detail.

One of the reasons why young people may fail to act on their intentions and use condoms is exactly their lack of planning (Gebhardt, Kuyper & Dusseldorp, 2006). According to these authors, condom use was positively related to cognitive planning. That is exactly what this research intends to develop further. Adolescents should prepare their action plan (when, where, how to discuss with partner) as well as the coping strategies (I will act on my plan, even if I come across barriers) to enhance their intentions and successfully behave according to these.

This Research

The general aim of this study is to develop an intervention that promotes condom use by focusing on motivational and volitional processes. Although the focus of this research is on the volitional part of changing health behaviour, motivational components were included to understand the function better attitudes serves before forming intentions to actually accomplish the goal behaviour. The parallel research of Boesten (2008) elaborates further on these motivational aspects. As short overview is presented of the motivation study since functional matching mostly concerns attitude change.

According to the principle of functional matching, attempts to influence attitudes will be more effective when the persuasive message matches the attitude's functional basis (Petty, Wheeler & Bizer, 2000). Cooper, Shapiro and Powers (1998) showed in their research that people can and do use sex strategically to meet different psychological needs. Different factors may maintain or promote sexual behaviour among individuals for whom sex serves different underlying needs. Since sexual self-schemas form a mental frame of reference that directs sexual behaviour and influence the way adolescents' process sexual information, we matched persuasive messages for condom use to this functional sexual self-schema. A distinction between relationship-oriented and sex-oriented self-schema exists (De Wit, Breeman & Woertman, 2008), which hold respectively more relationship beliefs or other focused beliefs and pleasure or self-centered beliefs. Our study investigates if adolescents' motives to engage in (un)safe sex differ according to their sexual self-schema as a prerequisite to volitional processes.

Hypotheses

We investigated to what extent cognitive planning affects the motivation to use condoms of adolescents and whether this intervention adds to a motivational intervention that is matched to adolescents' motives to have sex. Specifically, we expect that adolescents

benefit matching arguments to their sexual self-schema in motivation to use condoms in comparison to a control condition or mismatching condition (H1). We expect the same effect for this matching condition on the motivation to prepare for condom use (H2). Then, we expect that adolescents benefit an intervention including planning components like action and coping plans on their motivation to use condoms, compared to a control condition or a non-planning condition (H3). We expect the same effect for a planning condition on adolescents' motivation to prepare for condom use (H4). Finally, we expect that adolescents benefit a combined intervention including both matching persuasive arguments on sexual self-schema as well as planning, compared to a control condition or the conditions including exclusively matching or planning (H5). We expect the same effect of a combined intervention on the motivation to prepare for condom use.

Pilot Study 1

In this pilot study we investigated the potential barriers adolescents might experience when they will prepare for condom use or actually use them. The results from this pilot were combined with barriers according to sources from literature and used in the main study to form action and coping plans to measure their effects on the motivation to use condoms. Also, differences in reasons to use condoms as well as motivations to engage in safe sex according to sexual self-schema were measured to get a better understanding of adolescents' motivation to use condoms.

Methods

Procedures

We approached six senior (secondary) vocational educational schools (ROC) either by email or by phone. One senior vocational school agreed to cooperate in the research (response rate 17%). We gave a short introduction about the study to students during a regular class hour in a computer classroom. Students were informed that the online questionnaire would

take approximately 10 minutes to complete, and that participation was voluntarily and confidentially. One class filled out the questionnaires in a computer classroom immediately. Other students, who were recruited through discussion boards, could fill it out at home. We recruited them by writing an introduction about the research (the same information as we told the students in classes) on the discussion board and then asking them to follow the link to the online questionnaire if they were interested to participate. All participants were told that we would raffle one cd-voucher of €15 under all participants as an extra incentive to participate. Informed assent was obtained for all adolescents by including a disclaimer stating that all information would be treated confidentially and the students have consented on this on the first page of the online questionnaire.

Participants

A total of 248 adolescents enrolled in the study and completed the questionnaire. The convenience sample consisted of Dutch adolescents in the age of 18 (n=113) and 19 (n=135). The group of participants consisted of 62 (25%) males, and 186 (75%) females. The majority (94%) of the respondents were born in the Netherlands and have Dutch ancestors, whereas the other participants had predominantly a Moroccan, Turkish, Surinamese or other background. Most of them (85%) had had experience with sexual intercourse. Most respondents had a relationship self-schema (73%). Relationship oriented participants were predominantly female (t = -2,73; df = 246; p<.05), whereas sex oriented participants were mostly male (t = 2.53; df = 246; p<.05).

Measures

Sexual self-schema. To assess sexual self-schema we used the adolescents sexual self concept scale (ASSCS, De Wit, Breeman & Woertman, 2008), which consists of six items; 'I am relationship-oriented', 'I am romantic' and 'I am passionate', 'I am lascivious', 'I am a partygoer', 'I am experimental'. High scores on the first three items indicate a relationship-

oriented self-schema (Cronbach's α = .64) and the latter three items a sex-oriented self-schema (Cronbach's α = .52). All six items were assessed on a 5-point Likert scale (1 = not at all, 5 = very much).

Motives for sex. The six items on the specific motivations for having sex (based on Cooper et al., 1998, and translated into Dutch) commenced with "The first time I had sexual intercourse with my most recent partner, I did this…" The answers were given on a 5-point scale (1= completely agree, 5=completely disagree). The *intimacy* motive (Cronbach's α = .88) included five items, e.g. "To be more intimate with my partner". The motive for having sex to *experience arousal* (Cronbach's α = .82) also consisted of five items, e.g. "For excitement". The *self-image* motive for having sex (Cronbach's α = .84) was constructed by adding the scores of five items, e.g. "To prove my attractiveness". The *coping* motive (Cronbach's α = .78) comprised five items, e.g. "To feel better when I'm lonely". The *partner* motive for having sex (Cronbach's α = .90) encompassed four items, that is, "Because I fear my partner will no longer love me if I don't have sex". Finally, the *others* motive (Cronbach's α = .88) consisted of five items, e.g. "I worry that people will talk about me if I don't have sex". All predictor scales were constructed by adding the scores of the items and dividing the sum score by the number of items. The scores for each scale, therefore, ranged from 1 to 5. The intercorrelations among the determinants were .53.

Barriers to use condoms. Six items measured participants' reasons not to engage in protected sex, which can be understood as barriers to use condoms. These items were: "Because it is unpleasant", "Because I have difficulty buying them", "Because I have difficulty discussing condom use with my sexual partner", "Because I never carry them with me", "Because I think I am not susceptible to STIs, pregnancy, HIV or AIDS" and "Because I think they are too expensive". Other reasons that participants added were categorized and used to calculate the following items: "I use other contraceptives", "I am in a steady

relationship and trust my partner", "My partner and I have been tested for STIs", "Condoms decrease pleasure" and "I have never had sex (with anyone but my present partner)".

Reasons to use condoms. Eight items measured reasons to use condoms: "To avoid pregnancy", "To avoids STIs", "To avoid HIV/AIDS", "For my health", "Because condoms are pleasant", "Because my partner wants to use condoms", "In order not to regret it afterwards" and "To be able to have carefree sex".

Results

Motives for sex. T-tests were used for all analysis. Sexual self-schema accounted for several differences in motives for sex. Relationship schematics more often reported having sex in order to obtain intimacy (t = -3.56; df = 246; p<.05) and approval of others (t = -2.01; df = 246; p<.05). Contrary, sexual schematics engaged in sex mostly for coping (t = 2.30; df = 246; p<.05) and arousal motives (t = 2.30; df = 246; p<.05). Overall, the most important reasons to engage in sex were the motive to please others (mean = 4.87; SD = .44) or obtain intimacy (mean = 3.94; SD = .89).

Barriers to use condoms. Participants with a sexual self-schema differed from those with a relationship self-schema in that they reported significantly more often "not to carry condoms with them" (t = 3.15; df = 246; p<.05) as a barrier to use them. The respondents also differed on the barrier "I am in a steady relationship and trust my partner". Not surprisingly, relationship schematics reported this barrier far more often than sexual schematics (t = -2.65; df = 246; p<.05). Boys were more likely to mention the barrier "Using condoms is unpleasant" (t = 2.45; df = 246; p<.05) than girls. Girls, however, more often reported to use a different means of conception (t = -2.28; df = 246; p<.05), having a steady partner (t = -2.28; df = 246; p<.05) and both being tested for STI's (t = -1.95; df = 246; p<.05) as reasons not to use condoms.

Reasons to use condoms. Sexual self-schema did not account for any differences in motives to use condoms. The main reasons participants reported in favour of condom use were: “To avoid contracting an STI” (87%), “To avoid contracting HIV/AIDS” (84%), “To avoid pregnancy” (70%) and “In order to have carefree sex” (58%). Boys only differed from girls in that they more often reported to “use condoms because my partner wants to” ($t = 2.09$; $df = 246$; $p<.05$).

Discussion

The motivation for adolescents to have sex differs according to sexual self-schema. Adolescents with a more sexual self-schema report more coping and arousal motives to have sex in contrast to relationship-oriented adolescents who report more the motives to obtain intimacy and to get approval of others. These results have been used in the main study to create a persuasive text to have safe sex differing for sex-oriented and relationship-oriented participants in order to be able to create a match or mismatch between sexual self-schema and persuasive message.

Also the reasons not to use condoms differ between adolescents with a sexual- or relationship-oriented self-schema. The former simply report not to carry a condom with them as a barrier to use them. The latter argue that they do not use condoms because they are in a steady relationship and trust their partner. These results are a confirmation and an addition to the preparatory barriers, including purchasing condoms, carrying them with you, discussing condom use with a sexual partner, and correct handling of condoms which were found by other researcher like Bryan, Fisher and Fisher (2002) or Sheeran, Abraham and Orbell (1999).

The reasons to use condoms do not differ between sex-oriented and relationship-oriented people which means that both report the same most important reasons for condom use.

Main Study

In this main study we aimed to investigate the effect of interventions including motivational and/or volitional components on the motivation to use or prepare for condoms. Therefore, adolescents were randomly divided into one of the five conditions (control, match, mismatch, planning or match). We expect that adolescents in the match condition report a higher score on their motivation to use or prepare for condoms than participants in a control condition or who received a mismatching message to have safe sex according to their sexual self-schema. Furthermore, we expect that adolescents in the planning condition report a higher motivation to use or prepare for condoms than young adults who do not receive action and coping plans as a support to implement condom use. Finally, we expect that combining the functional matching on sexual self-schema with the planning intervention affects adolescents to report a higher score on their motivation to use and to prepare for condoms, compared to all other conditions.

Methods

Procedure and design

We have chosen secondary schools at random, selected from the school catalogue or the online Dutch phonebook. The participating schools were located in major cities (e.g., Amsterdam, Den Haag, Utrecht) and middle-sized cities (e.g., Purmerend, Delft, Arnhem). A total of 87 schools were approached, of which 12 agreed to participate in the study (response rate of 14%). Six thousand invitation letters to participate were spread in the schools, of which 395 adolescents agreed to actually participate (response level 7%). All levels of education, like vocational (VMBO) and university preparatory education (a-level and b-level), were included.

We have instructed the teachers about the research and we have given them the choice either to instruct the students by themselves or to let us instruct them. Teachers were free to

choose the best available classes to participate in the research. Then, researchers or teachers provided a ten minute introduction to students about the intervention during regular class hours. When teachers did the introduction part by themselves we supplied an instruction beforehand. Students were informed that the online questionnaire would take approximately 15 minutes to complete, that participation was on a voluntary basis, and that their answers would be treated confidentially. At all schools, the participants were told that we would raffle one I-Pod nano among all participants as an extra incentive to participate, which has been done after all data were collected.

Informed (parental) consent was obtained for adolescents aged 12 – 17 years by an informative letter. The older adolescents (18 and 19 years old) were allowed to give only their own informed consent. Both students as well as their parents or caretakers received an information letter in which all details and objectives of the investigation were explained to them. On the last page of the letter they could sign for informed consent. These last pages had to be returned to the teacher or researchers before the adolescents could fill out the questionnaire. Accordingly to the informed consent protocol, the students and their parents or caretakers were informed that adolescents' responses to sexual behaviour and condom use items would be kept confidential. The medical ethic examination commission of the University Medical Centre (UMC) in Utrecht authorized the informed consents by this method.

Once randomly assigned to one of the five conditions (control, n = 73; match, n = 88; mismatch, n = 75; planning, n = 84; planning & match; n = 75) the adolescents followed the route suiting the condition. This means that for the match and mismatch condition adolescents received a text about sexual health behaviour (mis)matching their sexual self concept. More precisely: adolescents who fell in the category of relationship-oriented self-schema received a text with reasons to use condoms that were proved to be important for this category (e.g. use

condoms to have carefree intimate moments with your partner) in the match condition. Sex-oriented participants received a text with reasons like ‘to use condoms to have carefree sex’. In the mismatch condition we swapped the texts and the sex-oriented received the relationship-oriented text and vice versa.

In the planning condition, three barriers were presented, concerning buying condoms and carrying them with you on times you might need them, discussing condom use with your sexual partner and barriers concerning the actual use of the condom. These corresponded with the barriers we found in the pilot study combined with findings from literature. Participants could choose one barrier for which they would be helped by receiving a tip. Once they had chosen one of the three barriers, four possible tips related to that barrier were presented. Together with the tip they received a direct action or coping plan; how to put this tip into practice. For example: when a participant had chosen the barrier buying and carrying condoms, he could choose between the tips ‘ask a good friend to accompany you to buy condoms’, ‘buy condoms in a shop where you do not come that often so you will not meet any friends’, ‘buy condoms anonymously via the internet (website provided)’, ‘put the condoms somewhere in a hidden pocket in your jacket or trousers’. Again, they had to choose one of these four tips and received an action or coping plan, stating that the best way to implement the condom use is to make a detailed plan how, when and where to use it. An example of an action plan: ‘when I go out, I will make sure that I put a condom in my jacket or bag at a place where it will not be damaged.’ After these choices, the participants were asked about how useful they rated the tip. In the control condition participants did not receive any intervention, so no text or tips.

Participants

The majority of the participants in the studied sample were female (64%) and reported their sexual orientation as heterosexual (91%). Next to this, 4% of the participants were males

who reported being sexually interested in males, and were provided with an adapted route. Girls who reported mainly being sexually interested in women were excluded from the study because we reasoned that condom use would not be an important issue in lesbian relationships. Therefore, the final sample includes only those who report heterosexual activity and boys who report homosexual activity.

The participants were mainly Dutch (68%), Surinamese (4%), Moroccan (10%), Turkish (3%), Dutch Antilles/Aruba (3%) or other ethnic backgrounds (10%), and had a mean age of 15,75 years (SD = 1.89). For the difference between native Dutch participants and not native Dutch participants the following definition was used: when at least one of their parents was born in another country than The Netherlands the participant was counted as non-native Dutch participant. Half of the participants (51%) followed education at vocational level, whereas 49% percent was more highly educated. Of the 39% religious participants, 32,9% reported to be Catholic, 31% Islamic, 13,5% Protestant, 5,8% Hindu, 5,8% Calvinist and 11% had another religion. One third (38%) was in a steady relationship at the time of the investigation, and two thirds (63%) of those in a steady relationship reported having experience with sexual intercourse. Of all participants, 62% reported not to be experienced with sexual intercourse.

Measures

Independent variables

Sexual self-schema. This variable was assessed in the same way as described in Pilot 1. We used the same distinction in sexual self-schema as De Wit et al. (2008) has found: sexual-oriented self-schema and relationship-oriented self-schema. To be able to divide the participants to one of the two schemas, according to their answers on the six items, we subtracted the scores from sex-oriented self-schema of relationship-oriented self-schema. Participants whose score was zero, were assigned to relationship-oriented self-schema. This

time, scores were used to create match and mismatch routes. The majority of respondents (70%) were relationship-oriented.

Condition. This variable was assessed by five different conditions. The first condition was the control group, in which participants were neither presented with a message nor with action and coping plans. The second condition presented participants with a message that matched their sexual self-schema. Participants that were assigned to the third condition received a mismatched message. In the fourth condition participants were provided with three possible barriers from which they could choose the most problematic one. After this first choice, four tips appeared as a support to overcome this self-chosen barrier. Next to the tip, an action and/or coping plan regarding the behaviour was provided to help the adolescent to make a specific plan to put this (preparatory) behaviour according condom use into practice. The fifth condition presented participants with both a matched message and action and coping plans.

Dependent variables

Intention to use condoms. This variable was measured by seven items of which four assessed the intention to use condoms (α = .89). For example: "I intend to always use condoms when having intercourse with a new person" (1=totally disagree, 5= totally agree).

Intentions to prepare for condom use. This variable was measured by three measuring the intention to buy condoms, carry condoms and discuss condom use with a sexual partner (α = .69). For example: "I intend to buy condoms when I think I might need them" (1=totally disagree, 5= totally agree).

Moderator variables

To investigate whether the effect of condition on the intention to use or to prepare for condom use were moderated by any variables, six factors were used to check any interaction effects.

Sexual experience. One single question was used to measure sexual experience by asking how often participants engaged in sexual intercourse. The item was assessed on a 5-point Likert scale (1= never, 5= very often).

Also *gender* (boy or girl), *educational level* (low or high), *ethnicity* (native Dutch or non-native Dutch), being in a *relationship* (yes or no) and being *religious* (yes or no) were used as moderator variables. Participants that reported being in a steady relationship reported significantly more experience with intercourse (62%) than those who were not currently in a steady relationship (38%).

Results

Condom use and intervention

The average of the behavioural motivation ratings were combined in a single factor 'condition' (control, match, mismatch, planning or match) between-participants analysis of variance (ANOVA). This analysis revealed a significant main effect of condition, $F(4, 395) = 2.39$, $p = .05$, $\eta^2 = 0.024$. Post hoc comparisons using the LSD showed that planning ($M = 0.29$, $SD = 0.014$) increases motivational intentions regarding condom use, compared to a control condition ($M = 0.25$, $SD = 0.015$), a match ($M = 0.24$, $SD = 0.013$), a mismatch condition ($M = 0.24$, $SD = 0.015$), or a planning and match condition ($M = 0.27$, $SD = .013$). See table I for the means and standard deviations of all cells. Thus, hypothesis 3 has been confirmed. Neither matching nor mismatching had an effect on the motivation to use condoms, nor combining the planning and match condition, which indicate that hypotheses 1 and 5 were rejected.

Preparatory behaviour for condom use and intervention

No significant effects were found for the five conditions on adolescents' intention to prepare for condom use (all F's $\leq .534$, ns). This means that hypotheses 2, 4 and 6 have been rejected.

Table I

Mean Motivation Scores of Adolescents on Behavioural Intention Divided by Condition

Route	*M*	*SD*	*n*
Control	.25	.11	73
Match	.24	.09	88
Mismatch	.24	.07	75
Planning	.29*	.19	84
Planning & Match	.27	.14	75
Total	.26	.13	395

Note. ** p<.01 and * p< 0.05.

Moderation analysis condom use

Moderator variables did not account for any differences between participants who had been provided with different conditions, indicating that the interventions had the same effect on all subgroups. No interaction effects were found (all *F*'s ≤ .165, ns).

Moderation analysis preparing for condom use

A marginal two-way interaction effect of condition with ethnicity was found; $F(4, 395) = 2.12$, $p = .078$, $\eta^2 = .022$. This indicates a difference between native Dutch participants and non-native Dutch participants in their intention to prepare for condom use. A multivariate analysis of variance (MANOVA) showed a simple effect for non-native Dutch participants, who had a higher motivation to prepare for condom use. A post-hoc comparison within the simple effect design showed a main effect for the control condition $F(1, 394) = 7.69$, $p = .006$, and the combined condition of planning and match within this group $F(1, 394) = 7.40$, $p = .007$. A marginal significant effect was found for the planning condition $F(1, 394)$

= 2.88, p = .090. Table II shows means on motivation to prepare for condom use. None of the other moderator variables were significant (all F's ≤ .015, ns).

Table II

Mean Motivation Scores of Dutch and non-native Dutch Adolescents to Prepare for Condom Use

Route	M		*SD*		*n*	
	Dutch	Other	Dutch	Other	Dutch	Other
Control	.25	.33**	.04	.17	48	25
Match	.28	.30	.10	.04	66	22
Mismatch	.28	.27	.08	.04	48	27
Planning	.26	.30	.13	.24	49	35
Planning & Match	.27	.36**	.08	.22	52	23
Total	.27	.31	.09	.17	263	132

Note. ** p<.01 and * p< 0.05.

Discussion

Interventions on condom use

First, we expected that the adolescents in the match condition report a higher score on their motivation to use condoms than participants who received a mismatching message according to their sexual self-schema. The results showed this hypothesis not to be confirmed. The intervention of matching a persuasive message with the sexual self-schema did not show an effect. This means that specified messages that address a self-schema or attitude will not be evaluated as more persuasive than messages that do not match. Furthermore, it could mean that motivational components are not the most vital factor for increasing the motivation for

condom use. Second, we hypothesized that adolescents in the planning condition report a higher motivation than young adults who did not receive action and coping plans as a support to implement condom use. This hypothesis has been confirmed since the planning condition showed an effect on the motivation to use condoms. These results show that male and female adolescents from different educational levels, different cultural and religious backgrounds, with or without sexual experience and with or without a steady relationship could benefit from planning their sexual behaviour.

Third, we expected that combining the functional matching with the planning intervention would affect adolescents to report the highest scores on their motivation to use condoms, compared to all other conditions. No effect, however, was found of combining the two interventions which means that in our intervention volitional processes were tapped only, but no motivational processes related to condom use were addressed.

Interventions on preparing for condom use

No match, mismatch, planning or combined intervention showed any difference in motivation to prepare for condom use. This means that none of the interventions alone could count for changes in motivation. We found an exception for the combined planning and match intervention in which especially non-native Dutch adolescents benefit this intervention. So they benefit persuasive messages matching their sexual self-schema as well as receiving support to make detailed plans how to buy condoms, carry them with them and discussing the condom use with their sexual partner. Also, for an intervention including plans how to prepare for condom use, non-native Dutch adolescents benefited more than native Dutch adolescents. These are interesting results since it seems that all adolescents could benefit planning for actual condom use but that support in planning preparing for condom use is in some groups more important than in other, for example non-native Dutch youth. Also, this group is

susceptible for persuasive arguments about preparatory behaviours, which could be an important factor for information based interventions.

General discussion

Interventions that could contribute to sexual health behaviour are in urgent need, since the numbers of STIs and unplanned pregnancies among adolescents are still increasing. This study was an attempt to understand the factors better that could improve the intention-behaviour relation. Very specifically planning the steps that one needs to finally act upon the desired health behaviour, in this case condom use, has proven to increase the motivation to use condoms. A follow up study will investigate whether these plans have worked for actual condom use as well after three months.

Limitations of this study

Several limitations to the study should be noted. Firstly, we recognize that the topic of sexual behaviour is a highly sensitive one to many adolescents. They might have been concerned about their privacy and fill out their answers in a more social desirable manner. Nevertheless, we have stressed the confidentiality, and participants filled out the questionnaire individually. Secondly, a large part of the sample consisted of adolescents attending practical or vocational high school, which are the lowest educational levels in the Netherlands. We tried to design an intervention that would be effective and comprehensible for adolescents from all educational levels and ages and tried to keep the language as simple as possible. Being aware of the problems that might be encountered while working with these adolescents (e.g. not understanding all the words), questionnaires were filled out in class in the presence of a teacher or researcher, to whom questions could be addressed. When required, one of the researchers assisted individual students while filling out the questionnaire. Although the students reported not to mind this intrusion, their answers might have been more socially desirable because of the presence of a researcher. Since these schools are populated with teenagers that are at the highest risk for negative sexual outcomes, we decided to include them in our investigations.

Implications for future research

Several implications for future research can be named. First, after discovering that planning increases the motivation to use condoms, an appealing second step would be to measure the effect on actual condom use. Therefore we planned to conduct a follow up study after three months in which we will compare the reported condom use with the actual behaviour in three months. The participants have provided their email addresses in the present study and are prepared to be approached for a second time. We hypothize that the provided action and coping plans will effect their condom use since the specific plans create cognitive links between the situation or anticipated opportunities and the goal-related behaviour, like Gollwitzer (1999) found. These links need to be strong enough to 'survive' the three months period and adolescents need to recognize the specific situations in which they should act.

Second, since we have found an effect of planning in a sample group of adolescents who intend to and act upon having safe sex and who did not explicitly intend to use condoms, it would be relevant to examine the differences between groups of precontemplaters, contemplaters, preintenders, intenders, actors in effectiveness of the intervention on condom use. Precontemplaters are people who have not considered carrying out the specific health behaviour, like very young adults who are not involved in sexual activities yet, and intenders are people who intend to carry out the target behaviour, like people who need to do physical activity for cardiac rehabilitation (e.g. Ziegelmann, Lippke, & Schwarzer, 2006; Sniehotta, Schwarzer, Scholz, 2006). When involving highly motivated people, the focus is on volitional components such as strategic planning, action control, or maintenance self-efficacy. If, like Schwarzer (2008) suggested, we explicitly target 'preintenders', who are not committed to carrying out the behaviour, we might be able to make further distinctions (such as between 'precontemplators' and 'contemplators'). We have made a start in this study to involve pre-intenders, intenders and actors using randomised controlled trials with four intervention

groups and we have found a result on the entire sample group for planning. Further specifying on the effect of planning between motivational and volitional processes is recommended.

Third, now we have found that adolescents with a non-native Dutch background are susceptible for different interventions than native Dutch adolescents it might be necessary to specify which ethnicities benefit of planning or matching to functional self-schema and to what degree. In the Netherlands, for example, Von Bergh and Sandfort (2000) found that Turkish adolescents have less knowledge about safe sexual preventive behaviour compared to Dutch adolescents. It might be possible that support in planning preparatory behaviours works differently on Turkish adolescents than on other ethnicities. Also, Moroccan and Antillean adolescents reported more often to use other means of safe sex behaviour, like monogamy or no intercourse. Support on making specified plans how to prepare condom use, might be a missing factor for them in knowing how to use condoms. Next to that, different persuasive arguments should be used in stimulating those adolescents in using condoms, since there sexual self-schema might differ in comparison to native Dutch adolescents.

Conclusion

This study has aimed to design an intervention that increases the motivation to prepare for condom use or to actually use condoms. The study which contained five different conditions, in which four possible interventions and one control group were randomly allocated to adolescents, showed a promising finding for supporting adolescents with a planning intervention. In case adolescents were provided with specified tips, action and coping plans about when, where and how to use condoms, their motivation to use condoms proved to be higher than adolescents who did not receive any intervention. So, interventions containing support for cognitive planning might promise safer sexual behaviour. For buying condoms, carrying them with you or discussing condom use with a sexual partner, planning was not a main factor which increased the motivation. However, when we focused on the ethnicity of

participants positive effects for planning preparations for condom use and matching persuasive messages to the sexual self-schema were found only for non-native Dutch adolescents. It is recommended to observe these differences in susceptibility between different ethnical groups when designing an intervention aimed at changing sexual health behaviour.

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