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An online study combining the constructs from the Theory of Planned Behaviour ~~with~~ and Protection Motivation Theory in predicting intention to test for chlamydia in two testing contexts.

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Abstract

Chlamydia is a common sexually-transmitted infection that has potentially serious consequences unless detected and treated early. The health service in the UK offers clinic-based testing for chlamydia but uptake is low. Identifying the predictors of testing behaviours may inform interventions to increase uptake. Self-tests for chlamydia may facilitate testing and treatment in people who avoid clinic-based testing. Self-testing and being tested by a health care professional (HCP) involve two contrasting contexts that may influence testing behaviour. However, little is known about how predictors of behaviour differ as a function of context. In this study, theoretical models of behaviour were used to assess factors that may predict intention to test in two different contexts: self-testing and being tested by a HCP. Individuals searching for, or reading about chlamydia testing online were recruited using Google Adwords. Participants completed an online questionnaire that addressed previous testing behaviour and measured constructs of the Theory of Planned Behaviour and Protection Motivation Theory, which propose a total of eight possible predictors of intention. The questionnaire was completed by 310 participants. Sufficient data for multiple regression were provided by 102 and 118 respondents for self-testing and testing by a HCP respectively. Intention to self-test was predicted by vulnerability and self-efficacy, with a trend-level effect for response efficacy. Intention to be tested by a HCP was predicted by vulnerability, attitude and subjective norm. Thus, intentions to carry out two testing behaviours with very similar goals can have different predictors depending on test context. We conclude that interventions to increase self-testing should be based on evidence specifically related to test context.

Keywords

Chlamydia; Protection Motivation Theory; Theory of Planned Behaviour; self-testing; home-testing.

Introduction

Genital chlamydia (*Chlamydia trachomatis* serotypes D-K) is a sexually transmitted infection (STI) of the urethra (and the cervix in women) (Horner, 2008). Infection with chlamydia may be asymptomatic but, if untreated, can cause various complications including pelvic inflammatory disease (women) and urethritis (men) (NHS Choices, 2013). Chlamydia is the most commonly diagnosed STI in the UK (Cole, 2008), one of the most common STIs in countries across Europe (ECDC, 2008) and the most prevalent STI in the USA (CDC, 2012). It is important to identify infected individuals early to enable treatment, reducing the risk of long-term complications and transmission to others.

The UK health service offers free clinic-based testing for chlamydia but uptake is low. In a sample of 16-44 year-olds, only 21.4% reported visiting a sexual health clinic in the previous five years (Sonnenberg et al., 2013). Self-test kits are widely available e.g. from pharmacies, online and, in England, through the NCSP (National Chlamydia Screening Programme, 2007). For the present study, we defined a self-test as one where people provide a urine or vulvo-vaginal swab sample which is either sent to a laboratory for testing or tested by the individual at home. Results, whether positive, negative or 'invalid' (indicating need for repetition) are either assessed by the individual or communicated directly from a laboratory (e.g. by text, internet or email). Importantly, individuals learn their results without speaking to a doctor or nurse. Randomised controlled trials have demonstrated that posting home sampling kits yields higher response rates than sending invitations to be tested at a clinic (Cook et al., 2007; Østergaard, Andersen, Olesen, & Møller, 1998; Xu et al., 2011). It is therefore important to understand factors influencing people's intentions to self-test.

In a study where members of the general population were invited to use postal self-sampling kits for chlamydia testing, 33% accepted the invitation (Low et al., 2007). Qualitative interviews indicated that participants welcomed the convenience and privacy of the tests but were concerned about the

testing method, being put off by the vulvo-vaginal swab, or worried about urine samples leaking (Mills, Daker-White, Graham, Campbell, for the Chlamydia Screening Studies (ClaSS) Group, 2006).

Most research has either not specified the context of testing, or has not examined the self-test option. In addition, most research into chlamydia testing behaviour has not utilised theoretical frameworks. Booth, Norman, Harris and Goyder (2013) found that intention to be tested for chlamydia was predicted by the Theory of Planned Behaviour (TPB) variables subjective norm, attitude and perceived behavioural control in college students. However, the researchers did not specify the context of chlamydia testing.

TPB (Ajzen, 1991), Protection Motivation Theory (PMT, Rogers, 1975; Rogers, 1983) and the Common Sense Self-Regulation Model (CS-SRM, Brownlee, Leventhal, & Leventhal, 2000; Leventhal, Brissette, & Leventhal, 2003) have been shown to predict or explain screening behaviour. Weinstein (1993) argues that it is valuable to compare constructs from multiple theories in order to best evaluate the importance of variables in understanding behaviour, though such comparisons are rarely conducted. Both PMT and TPB posit that a behaviour (e.g. self-testing) is predicted by a person's intention or motivation to perform that behaviour. Within PMT, perceptions of the severity of the health threat and perceived vulnerability to it influence motivation to perform a protective behaviour, with fear having an indirect effect on motivation by influencing the severity appraisal. Believing the behaviour will be effective in reducing the threat (response efficacy) and confidence in performing the behaviour (self-efficacy) also increase motivation to perform the behaviour. Perceiving barriers or costs to a behaviour (response costs) will reduce motivation. According to the TPB, intention to self-test would be predicted by attitude towards self-testing, subjective norm and perceived behavioural control of the self-testing behaviour. Perceived behavioural control and self-efficacy are similar constructs in that 'both are concerned with perceived ability to perform a behaviour' (Ajzen, 2002, p668) and for parsimony across models self-efficacy was operationalized in the present study. The CS-SRM (CS-SRM, Brownlee, et al., 2000; Leventhal, et al., 2003) posits that

when faced with a health threat, people form representations about the threat (identity, cause, consequences, timeline and cure/control); these representations influence coping behaviours, including seeking information through testing.

A qualitative study exploring perceptions about self-testing for chlamydia in university students suggested that constructs of TPB and PMT are relevant to understanding self-testing intentions, in particular response efficacy (perceptions of test accuracy), self-efficacy, perceived costs and subjective norm (Powell, Pattison, & Marriott, 2010). CS-SRM constructs seemed less pertinent. However, being aware that chlamydia can be symptomless enhanced participants' concerns about the disease, and awareness of effective treatment appeared to make testing for chlamydia seem worthwhile. The present study therefore focussed on TPB and PMT, including only the CS-SRM constructs of identity and control/cure. Although not formally incorporated into any of these models, there is strong evidence that past behaviour predicts future (similar) behaviours (Ouellette & Wood, 1998; Sutton, 1994). A full model of chlamydia testing is therefore likely to include this variable.

It was clear in our earlier interview study that participants considered testing in the context of a behavioural choice: whether to self-test or to go to a professional to be tested. The present study therefore addressed not only cognitions about self-testing, but also thoughts about being tested by a health care professional (HCP). This would enable us to ascertain whether the same cognitions predict intentions in both contexts or whether different cognitions are important depending on test method. Grispen, Ronda, Dinant, de Fris and van der Weijden used the Theory of Planned Behaviour, Protection Motivation Theory and the Health Belief Model to identify predictors of self-testing for cholesterol, glucose and HIV. While some variables (e.g. self-efficacy) were associated with self-testing across conditions, others were test-specific (e.g. subjective norm predicted HIV testing only). Variables predicting self-testing do not necessarily generalise across test type and context.

It is likely that individuals who are interested in self-testing are particularly concerned about privacy, making this a challenging population to recruit for a large-scale quantitative study. We used an anonymous, internet-based questionnaire to minimise embarrassment.

Research question

Which theoretical constructs predict intention to test for chlamydia in the context of a) self-testing and b) being tested by a HCP?

Methods

Ethical approval was received from the University's Research Ethics Committee.

Participants and Procedure

Participants were recruited to an online survey using a Google AdWords campaign from 18 March 2011 to 11 January 2012. The study advertisement was displayed to UK-based individuals who used Google to actively search for keywords related to chlamydia testing. From 17 May 2011 'display adverts' were also used whereby the study advertisement was displayed when people navigated to webpages containing the keywords related to chlamydia testing. Participants who clicked on the Google advert were taken to a study information webpage. At the end of this webpage, participants were invited to 'click here' if they wished to take part in the study. This link took participants to the consent form and questionnaire on SurveyMonkey™.

The study advertisements were shown 3,466,905 times by Google and received 2,983 clicks. The study webpage received a total of 2,946 views; 2,740 of these views were unique. Questionnaire responses were received from 313 participants. The data from three participants were deleted because they reported ages below the study limit of 16, leaving a sample of 310. The sample size

was not constant throughout the questionnaire (generally reducing as the questionnaire progressed), hence variability in sample size reported in analyses.

Measures

Background Information

Participants were asked for their gender, ethnicity (Office for National Statistics, 2009), age and the number of years in full-time education (analysed as up to vs over 11 years). Participants were asked how many sexual partners they had had over their lifetime and over the last 12 months, and how often they use a condom when they have sex with a new partner and in a long-standing relationship (always/sometimes/never).

Previous testing behaviour

Definitions were provided for self-testing and being tested by a HCP (see Table 1). Participants were asked whether they had previously tested for chlamydia and, if 'yes', whether they had tested using a self-test (and, if so, how many times) or with the support of a doctor or nurse. Participants were also asked whether they had previously used self-test kits for other illnesses or as a health check.

TABLES 1 & 2

Thoughts about chlamydia

The variables included, with questionnaire items, are presented in Table 2. For CS-SRM, single items assessed identity and treatment control. Items measuring constructs of PMT and TPB were developed using material elicited in interviews according to guidelines (Ajzen, 2006; Conner & Sparks, 2005; Francis et al., 2004 for TPB; Norman, Boer, & Seydel, 2005 for PMT). A draft questionnaire was piloted with 20 individuals to identify repetitive items and difficulties in understanding and answering questions. Items were selected for the final questionnaire with the goals of a) reducing questionnaire length by removing redundant or confusing items ~~and those causing confusion~~ and b) having similarly worded items for self-testing and being tested by a HCP.

The PMT and TPB constructs severity, vulnerability, fear, response efficacy, response costs, self-efficacy, attitude and subjective norm were assessed ~~(see Table 2)~~. For severity, Cronbach's α=0.60 and was only marginally improved on removing any item so all items were summed. The correlation between vulnerability's two items was very low (r_s=0.17) so these items were analysed separately. The correlation between the two items for response costs was also low (r_s=0.07 for self-testing; r_s=0.04 for HCP-testing), and these items were analysed separately. Fear and response efficacy were assessed using single items. The correlation between self-efficacy's two items was 0.61 for self-testing; these items were summed. The correlation was lower for HCP-testing (r_s=0.43) but the items were summed to be consistent with the self-testing measure. The three items assessing attitude showed good internal consistency for both behaviours (α = 0.90 and 0.76 for self- and HCP-testing respectively) and were summed. Subjective norm was assessed with one injunctive norm and one descriptive norm item (~~see~~ Table 2). For each behaviour the correlation between these items was low (r_s = -0.21 and 0.03 for Self- and HCP-testing respectively) and the items were analysed separately. Intention was operationalised with a single item for each behaviour, reflecting the high internal consistency found in piloting (Cronbach's alphas >.99) and pilot participants' preferences.

Analysis

Where associations were identified at p<0.15, independent variables were entered into multiple regression equations (Bendel & Afifi, 1977). Hierarchical regression equations were run with *intention to self-test* and *intention to be tested by a HCP* as dependent variables. The first step included the theoretically-derived variables identity, treatment control, severity, vulnerability, fear, response efficacy, response costs, self-efficacy, attitude, subjective norms, and previous testing behaviours (past self-testing OR HCP-testing for chlamydia and previous self-testing for other conditions). Step 2 contained the demographic variables gender, ethnicity, education, number of sexual partners (over lifetime and in previous 12 months) and condom use.

Results

Most of the participants were female (225, 72.6%). The median age was 24 years (IQR: 19, 33, range 16-76, n=131). The majority (82%, n=133) reported their ethnicity as White British. Descriptive data related to participants' previous testing are provided in Table 3. Associations between independent variables and intention outcomes are shown in Table 4; Tables 5a and b contains intercorrelations between theoretical independent variables.

TABLES 3, 4, 5a & 5b

The variables entered into the multiple regression predicting intention to self-test were previous self-testing for other conditions, treatment control, severity, vulnerability (2), fear, response efficacy, response costs (2), attitude, subjective norm (2), self-efficacy, gender, number of sexual partners (lifetime and 12 months) and condom use (new partner). For condom use to be entered in the multiple regression, two dummy variables were created. As shown in Table ~~4~~6, participants were less likely to intend to self-test if they had previously self-tested for other conditions. Higher v~~V~~ulnerability and self-efficacy predicted higher intention. Although men had higher intention to self-test than women the second step did not add a significant amount of additional variance. A trend-level effect was seen for response efficacy (β=0.19, p=0.053): people who had higher beliefs about test accuracy had higher intentions to self-test.

TABLE~~S 3 & 4~~ 6

The variables entered into multiple regression to predict intention to be tested by a HCP were: previous testing by a HCP; vulnerability (2); self-efficacy; attitude; subjective norm; the number of sexual partners over the last 12 months. Vulnerability, attitude and subjective norm independently contributed to the equation, with higher vulnerability, attitude and subjective norm scores all predicting higher intention to be tested by a HCP (Table ~~5~~7).

TABLE ~~5~~7

The sample size for these two regressions differed because of missing data. A sensitivity analysis was conducted: the regression equations were re-run with the 98 participants who completed all the measures in both regression equations (Tables 6 & 7). In predicting intention to self-test, only small

changes were seen in the sensitivity analysis: no β weight changed by more than 0.03. In predicting intention to be tested by a HCP, the differences in β values were again reasonably small for the theoretical variables, with the greatest weight change being 0.06 (for self-efficacy and number of sexual partners). This change led to self-efficacy reaching significance (β=0.18, p=0.049).

Discussion

This study examined the predictors of two behaviours with the same goal: establishing one's chlamydia status. Although these behaviours share a goal, the process of obtaining test results is quite different, and this is reflected in the finding that the two behaviours had different predictors.

Intention to self-test for chlamydia was predicted by perceptions of vulnerability and self-efficacy, with a trend-level effect for response efficacy. Participants were more likely to intend to self-test if they perceived themselves to be at risk of chlamydia, were confident they could self-test and thought the test result would be accurate. These findings are consistent with our qualitative interview findings: a key concern was whether self-test results would be accurate. The previous use of self-testing for 'other conditions' (i.e. not chlamydia) was a predictor of intention to self-test for chlamydia but in an unexpected direction: previous self-testing was associated with lower intentions to self-test for chlamydia. This finding is counter-intuitive given the pervasive finding that past behaviour predicts future behaviours (Ouellette & Wood, 1998; Sutton, 1994). It may be that, previously, self-tests were difficult to use, or gave inconclusive results leading to the need to seek professional medical help.

In predicting intention to be tested by a HCP, again vulnerability was significant: participants needed to feel at risk of chlamydia to form intentions to test. The importance of perceiving oneself to be at risk was also identified by Langille et al., (2008). Attitude and subjective norm were also important in this testing context. The subjective norm item reaching significance was the descriptive norm item: 'Many people like me would be tested for chlamydia by a doctor or nurse'. In the earlier qualitative

study, thinking about what condition other patients at a genitourinary medicine clinic might have, and having others wonder why they themselves were attending, seemed very off-putting to participants (Powell, Pattison, & Marriott, 2010). The social context of testing seems to be highly relevant, therefore, for this more public method of testing, and the extent to which other patients are perceived to be 'like me' could perhaps influence whether people would attend a clinic.

Two studies have used the TPB in predicting STI testing intentions without specifying test context. Booth et al. (2013) reported that attitude, subjective norm and perceived behavioural control were significant predictors of intentions to 'get tested for chlamydia'. Boudewyns and Paquin (2011) reported that attitude and subjective norm, but not perceived behavioural control, predicted intention to test for sexually transmitted diseases among college students. These studies findings both correspond well with our findings in that attitude and subjective norm were significant predictors of intention to be tested by a HCP (and self-efficacy reached significance in the sensitivity analysis). However, when addressing intention to self-test, other than self-efficacy, TPB variables were not significant.

Strengths and Limitations

To our knowledge, this is the first study to examine whether theoretical constructs predict chlamydia testing intention across two different behaviour contexts, and across two theories. Previous research has tended not to specify the precise context of testing (e.g. Booth et al 2013) and this study therefore provides evidence that variables predicting self-testing may differ from those predicting testing intention in other contexts. It also demonstrates the benefit of utilising constructs from multiple theories to gain a more complete understanding of behaviour.

One goal of the present research was to assess the feasibility of recruiting an online sample. Our recruitment methods yielded a reasonable sample size for the questionnaire, with 310 participants starting the questionnaire and approximately one third of these providing sufficient data to be

entered into multiple regression. However, the adverts yielded 2,983 clicks; our sample is therefore a small proportion of the total number of confirmed views. We therefore do not know the extent to which our sample is representative of the wider population. Nevertheless, given that we were using a very de-personalised approach to recruitment to gain access to a population of individuals concerned about a stigmatised condition, and that, despite our best efforts to keep the questionnaire short it was still somewhat lengthy (and perhaps not too interesting to complete), our response rate suggests that it is feasible to develop future work using this recruitment method.

Internal consistency of some measures was low, necessitating vulnerability, response costs and subjective norm items to be analysed as separate variables. The measures were constructed with great care, following standard guidelines, grounding them in qualitative data and further amending the questionnaire following piloting. However, a key goal in questionnaire development was also to keep the questionnaire as short as possible to maximise participant completion. Items which were considered repetitive by pilot participants were removed, which is likely to have reduced internal consistency. However, internal consistency was so low for some measures that it may be not be appropriate to conceptualise these as unitary constructs.

Our approach to measuring response efficacy may be considered unusual in that the item addressed whether the participant thought the test results would be accurate, rather than whether the behaviour (testing) would successfully impact health threat. Our preliminary qualitative research indicated that the outcome of importance to participants was not whether or not the health risk would reduce, but whether or not the test would give an accurate result. Testing differs from many health behaviours in that testing does not itself affect health risk – additional behaviours are required for this (e.g. accessing treatment after a positive result). Grispen et al. (2011) used a similar operationalization of response efficacy in identifying predictors of self-testing, including items about the perceived reliability and accuracy of the test.

Conclusions

This study identified that constructs from Protection Motivation Theory and the Theory of Planned Behaviour are predictors of intentions to test for chlamydia. Even though the two testing behaviours, self-testing and being tested by a HCP, have similar goals, the predictors of these behaviours differed, with intention to self-test being predicted by self-efficacy, vulnerability and a trend-level effect for response efficacy while attitude, subjective norm and vulnerability predicted intention to be tested by a HCP. The context in which behaviour is performed is thus an important consideration for research that aims to predict or explain health-related behaviour.

References

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control and the Theory of Planned Behavior. *Journal of Applied Social Psychology, 32*(4), 665-683.

Ajzen, I. (2006). Constructing a TPB Questionnaire: Conceptual and Methodological Considerations, from http://www.people.umass.edu/aizen/pdf/tpb.measurement.pdf (last retrieved 2 October 2014).

Bendel, R. B., & Afifi, A. A. (1977). Comparison of stopping rules in forward 'stepwise' regression. *Journal of the American Statistical Association, 72*(357), 46-53.

Booth, A. R., Norman, P., Harris, P. R., & Goyder, E. (2013). Using the theory of planned behaviour and self-identity to explain chlamydia testing intentions in young people living in deprived areas. *British Journal of Health Psychology, 19*(1), 101-112.

Boudewyns, V., & Paquin, R. S. (2011). Intentions and beliefs about getting tested for STDs: Implications for communication interventions. *Health Communication, 26*(8), 701-111.

Broadbent, E., Petrie, K. J., Main, J., & Weinman, J. (2006). The Brief Illness Perception Questionnaire. *Journal of Psychosomatic Research, 60*, 631-637.

Brownlee, S., Leventhal, H., & Leventhal, E. (2000). Regulation, self-regulation, and construction of the self in the maintenance of physical health. In M. Boekaertz, P. R. Pintrick & M. Zeidner (Eds.), *The Handbook of Self Regulation* (pp. 369-416). San Diego, CA: Academic Press.

CDC (Centers for Disease Control and Prevention). (2012). Sexually Transmitted Disease Surveillance 2011. Atlanta, GA: Department of Health and Human Services. Retrieved from http://www.cdc.gov/std/stats11/Surv2011.pdf, 1 July 2013.

Cole, A. (2008). Young people carry a disproportionate burden of sexually transmitted infections in the UK. *BMJ, 337*, a854.

Conner, M., & Sparks, P. (2005). Theory of Planned Behaviour and health behaviour. In M. Conner & P. Norman (Eds.), *Predicting Health Behaviour: Research and Practice with Social Cognition Models* (2nd ed., pp. 170-222). Maidenhead: Open University Press.

Cook, R. L., Ostergaard, L., Hillier, S. L., Murray, P. J., Chang, C. C. H., Comer, D. M., & Ness, R. B. (2007). Home screening for sexually transmitted diseases in high-risk young women: randomised control led trial. *Sexually Transmitted Infections, 83*(4).

ECDC (European Centre for Disease Prevention and Control). (2008). Review of chlamydia control activities in EU countries. Technical report. Stockholm. Downloaded from http://ecdc.europa.eu/en/publications/Publications/0906_GUI_Chlamydia_Control_in_Europe_pdf, 1 July 2013

Francis, J. J., Eccles, M. P., Johnston, M., Walker, A. E., Grimshaw, J. M., Foy, R., . . . Bonetti, D. (2004). Constructing questionnaires based on the Theory of Planned Behaviour. A manual for health services researchers. Centre for Health Services Research, University of Newcastle upon Tyne, UK.

Grispen, J. E. J., Ronda, G., Dinant, G. J., de Vries, N. K., & van der Weijden, T. (2011). To test or not to test: A cross-sectional survey of the psychosocial determinants of self-testing for cholesterol, glucose, and HIV. *BMC Public Health, 11*, 112. http://www.biomedcentral.com/1471-2458/11/112

Horner, P. (2008). Chlamydia (uncomplicated, genital). *BMJ Clinical Evidence, 6*, 1607.

Langille, D. B., Proudfoot, K., Rigby, J., Aquino-Russell, C., Strang, R., & Forward, K. (2008). A pilot project for chlamydia screening in adolescent females using self-testing. *Canadian Journal of Public Health, 99*(2), 117-120.

Leventhal, H., Brissette, I., & Leventhal, E. A. (2003). The common-sense model of self-regulation of health and illness. In L. D. Cameron & H. Leventhal (Eds.), *The Self-Regulation of Health and Illness Behavior* (pp. 42-65). London: Routledge.

Low, N., McCarthy, A., Macleod, J., Salisbury, C., Campbell, R., Roberts, T. E., . . . for the Chlamydia Screening Studies Project Group. (2007). Epidemiological, social, diagnostic and economic evaluation of population screening for genital chlamydial infection. *Health Technology Assessment, 11*(8).

Mills, N., Daker-White, G., Graham, A., Campbell, R., & for the Chlamydia Screening Studies (ClaSS) Group. (2006). Population screening for *Chlamydia trachomatis* infection in the UK: A qualitative study of the experiences of those screened. *Family Practice, 23*(5), 550-557.

National Chlamydia Screening Programme. (2007). Maintaining Momentum: Annual report of the National Chlamydia Screening Programme in England 2006/07: NHS.

NHS Choices. (2013). Chlamydia - Complications Retrieved from http://www.nhs.uk/Conditions/Chlamydia/Pages/Complications.aspx, 2 October 2014.

Norman, P., Boer, H., & Seydel, E. R. (2005). Protection Motivation Theory. In M. Conner & P. Norman (Eds.), *Predicting Health Behaviour: Research and Practice with Social Cognition Models* (2nd ed., pp. 81-126). Maidenhead: Open University Press.

Office for National Statistics. (2009). Rehearsal Questionnaire for England, 2010, from http://www.ons.gov.uk/census/2011-census/2011-census-questionnaire-content/2009-rehearsal-questionnaire

Østergaard, L., Andersen, B., Olesen, F., & Møller, J. K. (1998). Efficacy of home sampling for screening of Chlamydia trachomatis: Randomised study. *British Medical Journal, 317*, 26-27.

Ouellette, J. A., & Wood, W. (1998). Habit and intention in everyday life: The multiple processes by which past behavior predicts future behavior. *Psychological Bulletin, 124*(1), 54-74.

Powell, R., Pattison, H. M., & Marriott, J. F. (2010, 15-17 September 2010). *'Nobody else has to be involved': Attitudes towards self-testing for chlamydia.* Paper presented at the 13th BPS Division of Health Psychology Annual Conference, Queens University, Belfast.

Rogers, R. W. (1975). A protection motivation theory of fear appeals and attitude change. *The Journal of Psychology, 91*, 93-114.

Rogers, R. W. (1983). Cognitive and physiological processes in fear appeals and attitude change: A revised theory of protection motivation. In J. T. Cacioppo & R. E. Petty (Eds.), *Social Psychophysiology* (pp. 153-176). New York: The Guilford Press.

Sonnenberg, P., Soazig, C., Beddows, S., Field, N., Soldan, K., Tanton, C., . . . Johnson, A. M. (2013). Prevalence, risk factors, and uptake of interventions for sexually transmitted infections in Britain: Findings from the National Surveyes of Sexual Attitudes and Lifestyles (Natsal). *Lancet, 382*, 1795-1806.

Sutton, S. (1994). The past predicts the future: Interpreting behaviour-behaviour relationships in social psychological models of health behaviour. In D. R. Rutter & L. Quine (Eds.), *Social Psychology and Health: European Perspectives* (pp. 71-88). Aldershot: Avebury.

Weinstein, N. D. (1993). Testing four competing theories of health-protective behavior. *Health Psychology, 12*(4), 324-333.

Xu, F., Stoner, B. P., Taylor, S. N., Mena, L., Tian, L. H., Papp, J., . . . Markowitz, L. E. (2011). Use of home-obtained vaginal swabs to facilitate rescreening for *Chlamydia trachomatis* infections. *Obstetrics and Gynecology, 118*(2/1), 231-239.

Table 1: Definitions for testing behaviours provided to participants

Behaviour	Definition
Use a self-test to test myself for chlamydia	A self-test kit is a test where you provide a urine or swab sample which is sent to a laboratory for testing or, in some cases, it might be possible for you to test the sample in your own home. You find out the results by yourself or directly from the laboratory (e.g. by text, internet or email), WITHOUT speaking to a doctor or nurse.
Be tested for chlamydia by a doctor or nurse	Being tested by a doctor or nurse means either directly giving a urine or vaginal swab sample (women only) to a health professional (usually a doctor or nurse) for it to be tested, or they may take a swab sample for you.

Table 2: Theoretically-derived measures

Theory	Construct	Item(s)	Cronbach's α/ r_s
CS-SRM	Identity	Men/women who are infected with chlamydia: always /sometimes /never have symptoms/don't know.	n/a
CS-SRM	Treatment Control	How much do you think treatment can help chlamydia? (from Brief Illness Perception Questionnaire (Broadbent, Petrie, Main, & Weinman, 2006), adapted for chlamydia)	n/a
PMT	Severity	1. For me, chlamydia would be a serious health problem 2. Chlamydia could cause me to become infertile 3. Having chlamydia would have stigma attached	α=0.60
PMT	Vulnerability	1. Anyone can get chlamydia 2. I am currently at risk of chlamydia	r_s=0.17
PMT	Fear	The thought of having chlamydia makes me feel worried	n/a
PMT	Response Efficacy	If I [did behaviour - used a self-test kit to test myself/were tested for chlamydia by a doctor or nurse], the results would be accurate	n/a
PMT	Response Costs	For each behaviour: 1. [the behaviour] would be expensive 2. I would have professional support (e.g. someone to talk to who could give me advice) if I [did behaviour]	Self-test r_s=0.07 HCP-testing r_s=0.04.
PMT & TPB	Self-efficacy	For each behaviour: 1. It would be easy to [do behaviour] 2. I am confident that I could [do behaviour]	Self-testing r_s=0.61 HCP-testing r_s=0.43
TPB	Attitude	Being tested for chlamydia [for each behaviour] would be: 1. Useful 2. Beneficial 3. Convenient	Self-testing α=0.90 HCP-testing α=0.76
TPB	Subjective Norm	1. Injunctive norm: I feel under pressure to [do behaviour] 2. Descriptive norm: Many people like me would [do behaviour]	Self-testing r_s=-0.21 HCP-testing r_s=0.03
PMT & TPB	Intention	I intend to [do behaviour]	n/a

Note: CS-SRM = Common Sense Self-Regulation Model; PMT = Protection Motivation Theory; TPB = Theory of Planned Behaviour

Table 3. Experiences of using self-tests for chlamydia.

Question	Response options	Frequency (%)
Have you ever done a test for chlamydia?	Yes	136 (44.2)
	No	172 (55.8)
	Total	***308 (100)***
Past testing for chlamydia	As a self-test	28 (20.7)
	With the support of a doctor or nurse	79 (58.5)
	Both of the above	28 (20.7)
	Total	***135 (100)***
Median number of times participants had self-tested for chlamydia: 1(IQR=1,2; N=51)		
Have you ever used a self-test kit for an illness other than chlamydia/to see how healthy you are?	Yes	25 (19.8)
	No	101 (80.2)
	Total	***126 (100)***

Table 4: Relationships between independent variables and the Intention outcome variables.

Measure	Intention (Self-testing)		Intention (HCP-testing)	
	r_s	p	r_s	p
Treatment Control	0.14	0.11	-0.10	0.29
Severity	0.20	0.02	0.05	0.54
Vulnerability (1)	0.12	0.18	-0.02	0.84
Vulnerability (2)	0.41	<0.01	0.35	<0.01
Fear	0.16	0.06	0.05	0.54
Response Costs (1)	0.06	0.51	-0.05	0.55
Response Costs (2)	-0.21	0.02	-0.10	0.27
Response Efficacy	0.34	<0.01	-0.01	0.92
Self-efficacy	0.46	<0.01	.32	<0.01
Attitude	0.32	<0.01	0.31	<0.01
Subjective Norm (1)	0.05	0.58	-0.01	0.87
Subjective Norm (2)	0.28	<0.01	0.44	<0.01
No. sexual partners (lifetime)	0.21	0.02	0.05	0.60
No. sexual partners (last 12 months)	0.36	<0.01	0.20	0.03
Age	-0.04	0.62	-0.09	0.32
	Z (Mann-Whitney)	**p**	**Z (Mann-Whitney)**	**p**
Past self-testing for chlamydia (0=no, 1=yes)	-1.17	0.24	----------	----------
Past HCP-testing for chlamydia (0=no, 1=yes)	----------	----------	-2.55	0.01
Previous self-testing for other conditions (0=no, 1=yes)	-2.38	0.02	-2.26	0.02
Gender (0=female, 1=male)	-2.00	0.05	-0.48	0.63
Ethnicity (0=white British, 1=other groups)	-0.56	0.58	-0.56	0.58
Education (0=up to 11 years, 1=more than 11 years)	-0.52	0.61	-0.90	0.37
	χ^2 (Kruskal-Wallis)	**p**	**χ^2 (Kruskal-Wallis)**	**p**
Identity	5.22	0.16	7.63	0.06
Condom Use (new partner)	5.06	0.08	0.81	0.67
Condom Use (long-standing relationship)	0.44	0.80	2.76	0.25

Note: for Response Costs, Response Efficacy, Self-efficacy, Attitude and Subjective Norm, the measures relevant to the target behaviour (Self-testing or HCP-testing) were used as appropriate. Sample sizes ranged from N=105 to N=133. Shading indicates significance at p<0.15.

Table 5a: Matrix of correlations (r_s) between theoretical predictors of intentions to self-test

	2	3	4	5	6	7	8	9	10	11	12
1. Treatment Control	.16*	.23**	.17*	.16*	-.04	-.13	.22**	.26**	.31**	-.19*	.33**
2. Severity		.32**	.30**	.55**	.10	-.14	.06	.20*	.12	.04	.30**
3. Vulnerability (1)			.17*	.42*	.04	-.19*	.09	.17*	.24**	-.04	.11
4. Vulnerability (2)				.28**	.18*	-.18*	.11	.10	.12	.12	.16
5. Fear					.11	-.18*	.17*	.05	.07	.07	.19*
6. Response Costs (1)						.07	.02	-.03	.05	.13	.16
7. Response Costs (2)							-.18*	-.24**	-.09	-.05	-.26**
8. Response Efficacy								.43**	.22**	-.05	.42**
9. Self-efficacy									.42**	-.19*	.61**
10. Attitude										-.09	.44**
11. Subjective Norm (1)											-.21*
12. Subjective Norm (2)											

Note: * p<.05, ** p<.01

Table 5b: Matrix of correlations (r_s) between theoretical predictors of intentions to be tested by a health care professional

	2	3	4	5	6	7	8	9	10	11	12
1. Treatment Control	.16*	.23**	.17*	.16*	-.15	-.27**	.17*	.24**	.09	-.07	-.01
2. Severity		.32**	.30**	.55**	.08	-.20*	.28**	.14	-.02	.08	-.01
3. Vulnerability (1)			.17*	.42*	-.07	-.26**	.20**	.13	.08	-.03	.00
4. Vulnerability (2)				.28**	.10	-.02	.04	.03	.00	.15	.09
5. Fear					-.04	-.23**	.28**	.13	.10	.10	.05
6. Response Costs (1)						.04	-.07	-.02	-.04	.20*	.05
7. Response Costs (2)							-.26**	-.45**	-.11	.14	-.22**
8. Response Efficacy								.31**	.01	-.02	.02
9. Self-efficacy									.32**	-.14	.44**
10. Attitude										-.30**	.38**
11. Subjective Norm (1)											.03
12. Subjective Norm (2)											

Note: * p<.05, ** p<.01

Table 6: Hierarchical multiple regression of variables predicting Intention to Self-Test.

	Model 1: primary analysis		Model 1: sensitivity analysis		**Model 2: primary analysis**		Model 2: sensitivity analysis	
	β	**p**	β	p	**β**	**p**	β	P
Other previous self-testing	**-0.22**	**0.01**	-0.25	<0.01	**-0.22**	**0.01**	-0.24	0.01
Treatment control	**-0.10**	**0.27**	-0.12	0.19	**-0.08**	**0.38**	-0.09	0.35
Severity	**-0.04**	**0.72**	-0.04	0.70	**0.01**	**0.94**	0.00	1.00
Vulnerability (2)	**0.41**	**<0.01**	0.38	<0.01	**0.33**	**<0.01**	0.33	<0.01
Fear	**-0.01**	**0.94**	0.00	1.00	**-0.01**	**0.89**	0.00	0.95
Response Efficacy	**0.18**	**0.06**	0.16	0.11	**0.19**	**0.05**[a]	0.17	0.10
Response Costs (2)	**0.03**	**0.76**	0.03	0.78	**0.00**	**0.97**	0.01	0.94
Attitude	**0.01**	**0.89**	-0.02	0.99	**0.07**	**0.48**	0.05	0.63
Subjective Norms (2)	**-0.15**	**0.14**	-0.12	0.24	**-0.17**	**0.11**	-0.15	0.17
Self-efficacy	**0.40**	**<0.01**	0.42	<0.01	**0.34**	**0.01**	0.37	0.01
Gender					**0.18**	**0.04**	0.15	0.09
No. sexual partners (lifetime)					**0.00**	**0.97**	-0.03	0.74
No. sexual partners (12 months)					**0.09**	**0.38**	0.09	0.40
Condom use –new partner (dummy 1)					**-0.06**	**0.57**	-0.08	0.50
Condom use – new partner (dummy 2)					**0.04**	**0.68**	0.04	0.72
ΔR^2	**0.44**		0.44		**0.05**		0.04	
ΔF	**7.03 (p<0.001)**		6.77 (p<0.001)		**1.77 (p=0.13)**		1.26 (p=0.29)	

Note: **The primary analysis findings are shown in bold (available data, N = 102, [a]=0.053).** The sensitivity analysis findings (complete data) are shown in standard font (N=98).

Table 7. Hierarchical multiple regression of variables predicting Intention to be Tested by a HCP.

	Model 1: primary analysis		Model 1: sensitivity analysis		**Model 2: primary analysis**		Model 2: sensitivity analysis	
	β	**p**	β	p	**β**	**p**	β	p
Past HCP-testing for chlamydia	**0.12**	**0.14**	0.13	0.14	**0.11**	**0.18**	0.11	0.18
Vulnerability (2)	**0.30**	**<0.01**	0.29	<0.01	**0.28**	**<0.01**	0.24	0.01
Attitude	**0.18**	**0.04**	0.19	0.03	**0.21**	**0.02**	0.24	0.01
Subjective Norm (2)	**0.30**	**<0.01**	0.32	<0.01	**0.29**	**<0.01**	0.31	<0.01
Self-efficacy	**0.12**	**0.18**	0.17	0.07	**0.12**	**0.17**	0.18	0.049
No. sexual partners (12 months)					**0.10**	**0.27**	0.16	0.09
ΔR^2	**0.35**		0.39		**0.01**		0.02	
ΔF	**12.03 (p<0.001)**		11.73 (p<.001)		**1.25 (p=0.27)**		2.90 (p=0.09)	

Note: **The primary analysis findings are shown in bold (available data, N = 118).** The sensitivity analysis findings (complete data) are shown in standard font (N=98).