Factors affecting attendance for a cervical smear test: A prospective study.

A collaboration between the Irish Cervical Screening Programme (MWHB) and the National University of Ireland, Galway (Psychology Dept).

Author: Dr. Jane Walsh

Dr Marian O'Reilly

**Fiona Treacy**

1

Table of Contents

Introduction

Cervical cancer is the second most common cancer among women worldwide after breast cancer accounting for 6% of all malignancies in women (Greenlee, Murray, Bolden, *et al.*, 2000). Cervical cancer is one of the most preventable cancers and 90% of cases can easily be identified and treated in its early stages in a simple outpatient procedure. Despite technological advances in its detection and treatment, over 5,000 women die each year in the US from cervical cancer (Greenlee, Murray, Bolden, *et al.*, 2000) and over 100 women die in Ireland each year from this disease (Irish Department of Health Statistics).There is substantial evidence that mortality from cervical cancer can be reduced by screening and that reductions in incidence and mortality seem to be proportional to the intensity of the screening efforts (Laara, Day & Hakama, 1984; Miller, Lindsay & Hill, 1976). The Irish Cervical Screening Programme (ICSP) was set up recently to improve attendance rates for screening in the Mid-Western Health Board area (funded by the Department of Health) with the intention of becoming a nationwide initiative. This is the first such initiative in this country and the first to record women's attendance for cervical screening in a systematic manner. Past research, however, has shown that the uptake of new screening initiatives can be low, particularly in the target groups most at risk of cervical cancer (Makuc,

Freid & Kleinman, 1989, often because such programmes do not address the underlying psychological variables that may influence a person's decision to attend for screening and actual attendance (Bish *et al.*, 2000).

Psychological research on the predictors of attendance at screening programmes has concentrated on developing models of health behaviour to explain the cognitive processes involved in making the decision to attend for screening. The primary models that have been studied to date are the Health Belief Model (HBM) (Becker, 1974) and the Theory of Planned Behaviour (TPB)/Theory of Reasoned Action (TRA) (Fishbein & Azjen, 1975). Bish, Sutton and Golombok (2000) concluded that whilst the Theory of Planned Behaviour may be the most effective in predicting intention, the problem posed for researchers is to bridge the gap in our understanding of the processes that occur between intention and behaviour. Recent theoretical frameworks have been devised to explore this gap (e.g. Gollwitzer's 1993 implementation intentions). These perspectives argue that further cognitive activity is required to translate an intention into action. Individuals who have furnished their goal intentions ("I intend to do x") with implementation intentions ("I intend to do x when situation y is encountered") should be more successful in achieving their goal (e.g. having a smear test).

One of the criticisms of the social cognition models is that they do not adequately take into account emotional factors in the decision- making process. In particular, there is a growing body of evidence that anticipated regret strengthens intentions and improves the intention-behaviour consistency (Abraham & Sheeran, 2002 personal communication). De Nooijer et al. (2003) found that intention to seek medical help for cancer detection and prevention was associated with higher levels of anticipated regret. Taking into account these and other findings, the following model was proposed for the present research.
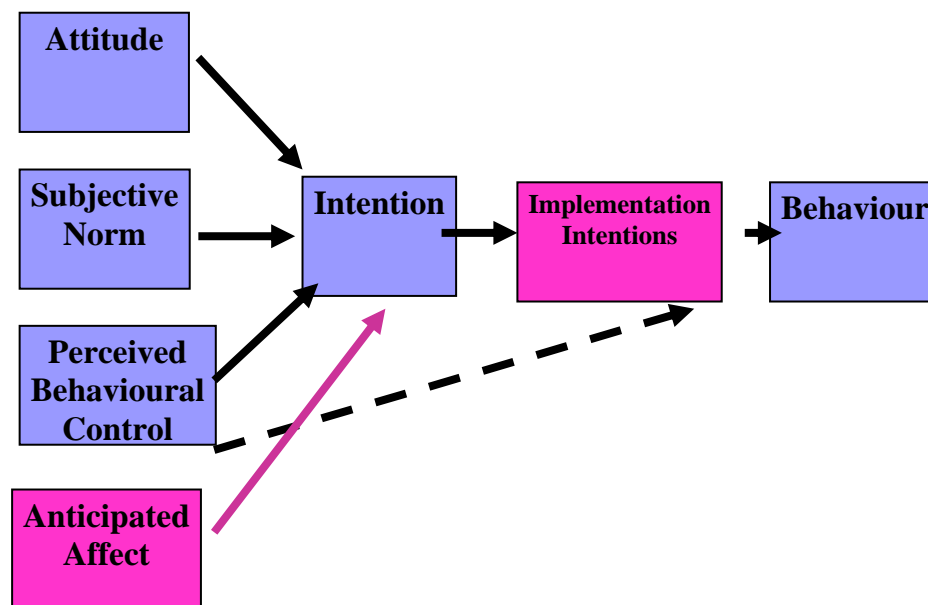
Figure 1   Proposed Model for the present study

Aims of the present study

The present study proposes to identify predictors of the uptake of a routine cervical smear test in a sample of over 1,000 women. The present study will examine women's information levels with respect to cervical screening as well as their access to information on the topic. This study will also provide information on possible barriers to attendance for cervical screening.

The present study was designed to overcome the methodological difficulties of previous research in this area by examining the role of emotional as well as cognitive factors that influence attendance and attempts to bridge the intention-behaviour gap. In addition, this study will examine the effect of the formation of implementation intentions on attendance for cervical screening in this group of women.

Method

Participants and procedure

Participants were randomly selected (N = 3,000) from the Irish Cervical

Screening Programme register in the Mid-Western Health Board area in Ireland

(N = 73,000).

The sample size was calculated on the basis of response rates reported in similar

research studies (e.g. Sheeran et al., 2000, Bish *et al.*, 2000; Rutter, 2000). Selected

participants were sent a letter inviting them to attend for a free cervical smear

test and were also sent the study questionnaire, containing a SAE. A reminder

was sent after two weeks with a copy of the questionnaire and another SAE. Data

were collated after a cut-point of 3 months after the invitation to attend for a free

smear test was sent out.

Questionnaire

Items assessing attitudes, subjective norms, anticipated affect, perceived

behavioural control, and intention were all measured on 5-point scales. Attitude

toward the cervical smear test were measured by responses to the stem: "For me,

going for a cervical smear test within the next 3 months would be…" on eight

scales (reassuring, unpleasant, embarrassing, unwise, important, worrying,

worthwhile, healthy). Response options ranged from *not at all* to *extremely.*

Reliability was moderate (α = 0.65). Subjective norm was measured using two

items ("most people who are important to me would think that I should go for a

cervical smear within the next 3 months"; *strongly agree – strongly disagree)* and

"most people who are important to me would approve of me attending for a

smear test in the next 3 months if I am given the chance"; *strongly agree – strongly*

disagree). Reliability was good (α = 0.87). Perceived behavioural control was

measured by two items: "How easy or difficult would it be for you to go for a

cervical smear within the next 3 months?" (*very easy – difficult)*, "How confident

are you that you will be able to go for a cervical smear within the next 3 months"

(*very confident – very unconfident).* Reliability was quite good (α = 0.77).

Anticipated regret was measured using five items using the question: "How

would you feel if you did not attend for a smear test in the next 3 months when

given a chance?" Ratings were made on a five-point scale *(extremely – not at all)*

on five items (anxious, tense, guilty, worried, regretful). Reliablity was very good

for this scale (α = 0.91). Intention was measured by two items: "I intend to go for

a cervical smear within the next 3 months" *(strongly agree – strongly disagree).* And

"I will try to go for a cervical smear within the next 3 months" *(strongly agree –*

strongly disagree). Reliability was high (α = 0.87). The questionnaire also consisted

of items assessing previous screening behaviour.

Measurement of Behaviour

Uptake of the cervical smear test within the 3-month period following the invitation was reliably determined using computerised records sent directly from the cytology laboratories to the ICSP, recording the smear result of the women registered under the programme.

Implementation Intention Manipulation

Participants were randomly assigned to the experimental or control condition. Participants in the experimental group were asked to form an implementation intention specifying when, where and how they would make an appointment to go for a cervical smear test. The following two lines were added to the postal questionnaire for the experimental group and were presented after the items assessing theory of planned behaviour and anticipated affect variables: "You are more likely to for a cervical smear if you decide when and where you will go. Please write in below when, where, and how you will make an appointment." Space was included to allow participants to write in their answers in each case. The questionnaire for the control group was identical in all respects to that of the experimental groups except for the omission of this item.

Results

Response rates

Of the 3,000 participants, 268 (9%) were non-contactable. Of the remainder, 1,114 questionnaires were returned, yielding a response rate of 41%. Forty-five women (1.5%) were classified as ineligible (due to hysterectomy or pregnancy).

Demographic details of the sample

Of those who responded to the questionnaire, 70% were married, 20% were single and 4% were widowed. A summary of the sample's occupations is illustrated by the chart below:
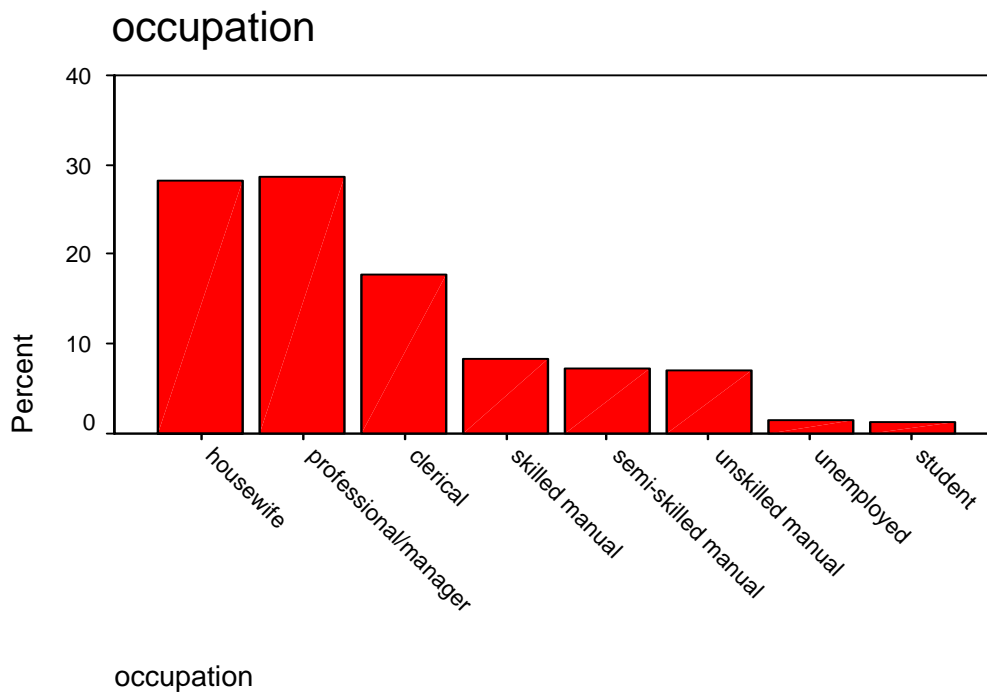
The following charts highlight the occupational status of the sample and their residential locations:

occupational staus

	full-time	part-time	retired	unemployed	other
Percent					

residential location

	city	town	village	rural	other
Percent					
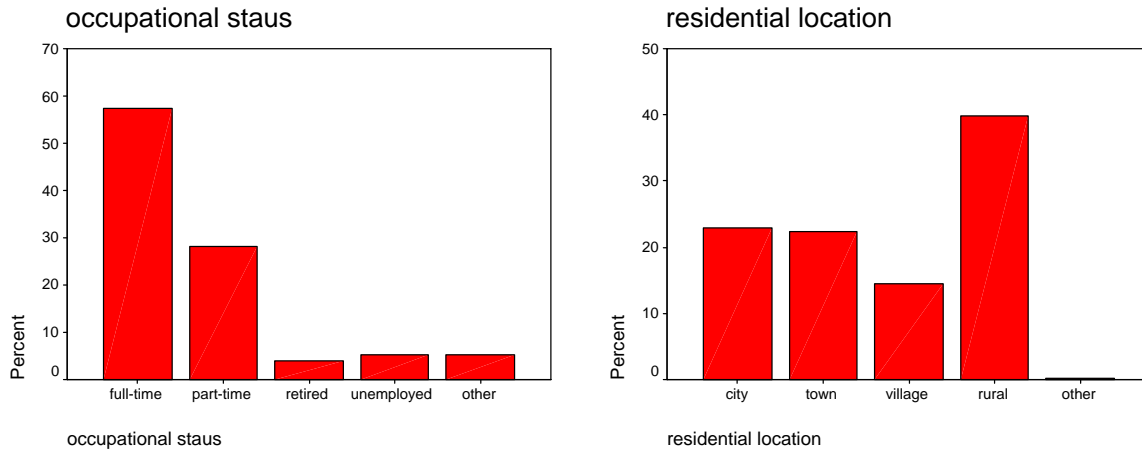
In relation to GMS status, 19% of the sample reported that they had a medical card, 70% stated that they were private patients and 11% described themselves as having other arrangements.

Knowledge and access to information about cervical smear testing

Respondents were asked a series of questions about their level of knowledge about cervical smears and access to information. The results indicated that 29% of women believe that a smear test is to detect infection. A staggering 78% of women believe that the purpose of a cervical smear test is to detect cervical cancer. Less than half of the women surveyed stated that a cervical smear is carried out to prevent cervical cancer (48%). Twenty-one percent of women

11

believe that a cervical smear detects STDs. Almost 70% of women surveyed

stated that a smear test was performed to detect changes in the cells of the cervix.

Only 1% of women said that they did not know what the purpose of a cervical

smear test was.

When women were asked where they had received their information on cervical

smear testing from to date, the following responses were observed.:

Source of information about smear testing	Percentage
Doctor	70%
Family	7%
Radio	9%
Newspaper	19%
Practice nurse	10%
Friend	16%
Television	8%
Internet	6%

When asked if they felt that they had access to sufficient information about

cervical screening, 37% of women reported that they felt that they had not had

sufficient information about cervical smear testing in the past. Only 4% of women reported having a family history of cervical cancer.
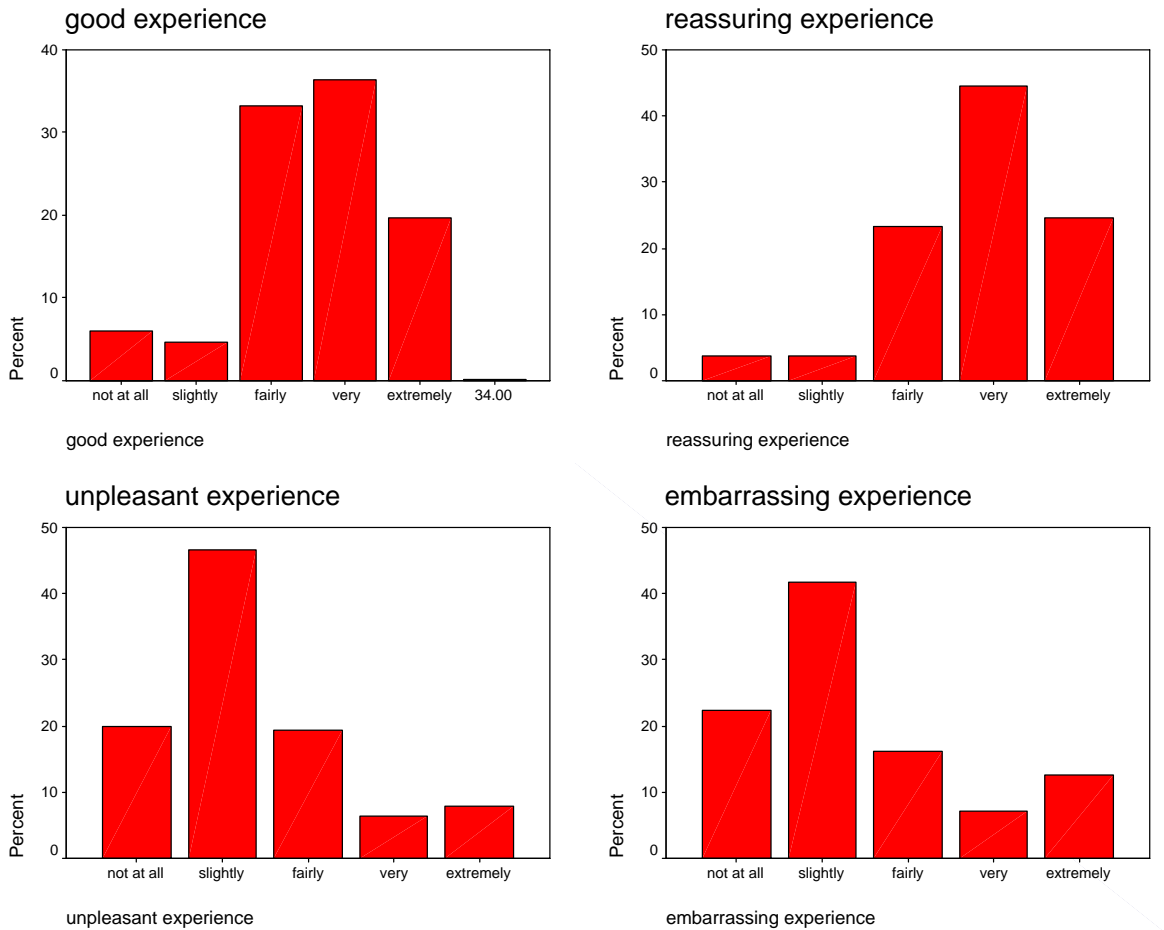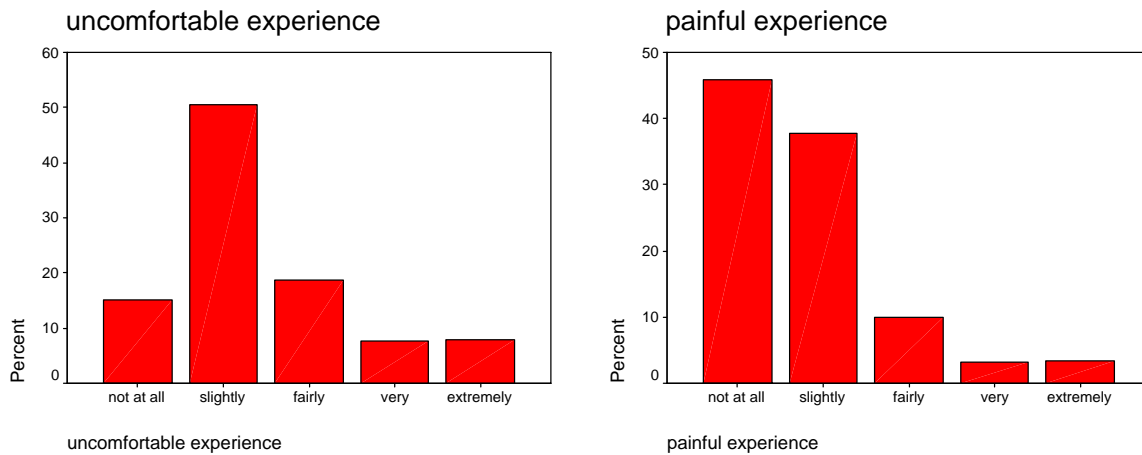
Barriers to attendance

The women in the present study reported significant barriers to attendance for a cervical smear. Chi-square tests further revealed that reported barriers were significantly associated with poorer attendance. Only 6% of women said that a lack of time would prevent them from attending for a smear test. These women were significantly less likely to attend for a smear test (only 19% attended compared with 40% of those that said that time was not a factor) (X^2 = 17.89, df = 1, p = 0.000). A further 19% of women said that other commitments would prevent them from attending for a smear test. Women who disagreed with this statement were twice as likely to attend for a smear test (42% versus 21%, χ^2 = 33.73, df = 1, p = 0.000). Only 4.6% of women said that difficulty getting to the surgery would prevent them from attending for a smear test. As expected, these women were significantly less likely to attend for a smear test (21% versus 40%, %, χ^2 = 6.91, df = 1, p = 0.01). Nineteen percent of women said that unsuitable appointment times would prevent them from attending for a smear test. Of women who made this statement, 27% attended for a smear compared with 40% of those who disagreed with this statement (χ^2 = 14.53, df = 1, p = 0.000). Thirty-

five percent of the current sample said that a male smeartaker would be a barrier to their attendance for a cervical smear test. Of women who made this statement, 30% attended for a smear compared with 42% of those who said that this would not be a barrier (χ^2 = 19.66, df = 1, p = 0.000).

Women's experience of cervical smear testing

Respondents were asked to answer a series of questions describing their experience of cervical smear testing to date. These findings are summarised by the bar charts below.

good experience

reassuring experience

unpleasant experience

embarrassing experience

uncomfortable experience

painful experience

Attendance for cervical screening

In the sample of contactable, eligible participants, only 17% (n = 465) of all women invited to attend for a cervical smear attended for a smear test within three months of receiving their invitation. Twenty-eight percent of respondents (N = 300) attended for a smear test compared with 10% (N = 165) of non-respondents (χ^2 = 131.40, df = 1, p < 0.000). Almost 10% of women who responded to the questionnaire (N = 109) reported having attended for a cervical smear test within the past 12 months. This was reflected in their subsequent attendance with only 24% of this group attending for a smear compared with 39% of those had not attended within the past 12 months (χ^2 = 10.02, df = 1, p = 0.002). A further 27% (N = 301) reported having attended within the past 3 years (but more than one year ago). This was again reflected in attendance with 32% of

this group attending for a smear within 3 months compared with 40% of those

who had not attended in the past three years ($\chi^2 = 7.09 = 1$, p = 0.008).

The Theory of Planned Behaviour and attendance

Table 1 presents the results of t-tests examining the univariate relationship

between age, ratings of health, the TPB variables and anticipated affect. The

results show that all of the TPB variables are strongly associated with attendance.

Table 1 Comparison between attenders and non-attenders on TPB variables,
anticipated affect and age.

Variable	Attenders [a] Mean (SD)	Non-attenders [b] Mean (SD)	t
Age	45.06 (10.06)	42.91 (11.17)	3.00**
Ratings of health	3.67 (0.96)	3.69 (0.89)	-0.24
PBC	4.55 (0.57)	4.21 (0.80)	7.94***
Attitude	4.35 (0.58)	4.16 (0.83)	3.95***
Subjective Norm	4.40 (0.59)	4.20 (0.72)	4.04***
Anticipated	2.67 (1.16)	3.03 (1.31)	4.27***
Affect	4.62 (0.62)	4.06 (1.08)	10.37***
Intention			

[a] N = 300, [b] N = 751

16

Women who had more negative anticipated affect were more likely to attend for a cervical smear test. Although intentions to attend were significantly lower in those who had attended within the past 12 months (t = 2.7, df = 1046, p = 0.008), no differences were observed in intention to attend between those who reported having attended within the past 3 years and those who did not (t = 1.55, df = 1045, p = 0.12).

A multiple regression revealed that overall, the model predicted 41% of the variance in intention to attend for a cervical smear test.
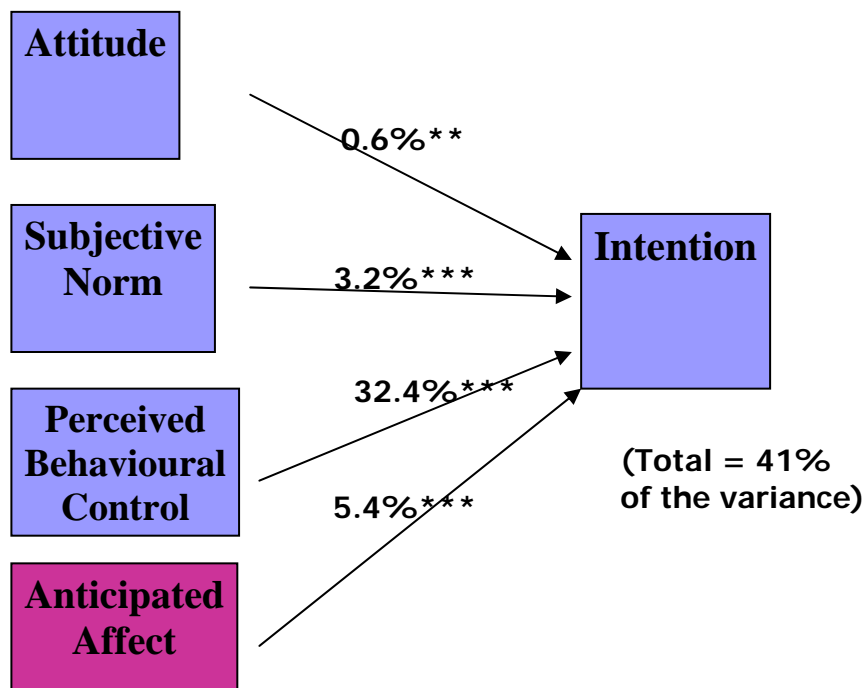
*p<.05. **p<.01 ***. p<.001

Randomisation check

In order to ensure that the randomisation of participants to the experimental (N = 589) and control (N = 525) conditions was successful, the two groups were compared on theory of planned behaviour variables, anticipated affect, number of previous smears and age. A MANOVA was non-significant ($F_{(7, 854)} = 0.908$, $p = 0.50$). Univariate tests confirmed that there were no differences between the groups on any of the variables (see Table 2).

Table 2   Comparison of Experimental and Control Groups on Theory of Planned Behaviour Variables, Anticipated Affect, number of previous smears and age.

Variable	Experimental group [a] Mean (SD)	Control group [b] Mean (SD)	F [c]
Age	43.00 (10.76)	42.60 (10.76)	0.32
No. of previous smears	2.88 (2.40)	2.88 (2.56)	0.00
PBC	4.33 (0.69)	4.40 (0.65)	2.13
Attitude	4.21 (0.71)	4.27 (0.72)	1.69
Subjective Norm	4.26 (0.65)	4.31 (0.66)	1.30
Anticipated Affect	2.90 (1.24)	2.97 (1.24)	0.53
Intention	4.28 (0.91)	4.38 (0.85)	1.42

[a] N = 525, [b] N = 589

[c] Values do not meet the $p < 0.05$ criterion for statistical significance.

The results show that both groups had positive attitudes, subjective norms and

perceived behavioural control prior to the intervention. Table 2 also illustrates

that both groups were not having particularly high levels of anticipated regret. In

addition, both groups had high levels of intention to attend for a smear test prior

to the experimental manipulation.

Implementation intervention findings

Only 405 women (77%) in the experimental group completed the implementation

intervention findings. Despite the somewhat depleted rate of participation, in

order to determine the efficacy of asking participants to form implementation

intentions regarding when, where and how they would make an appointment to

attend for the cervical smear test on subsequent attendance, condition

(experimental vs control) was cross-tabulated with attendance or non-

attendance. A significant association was found (χ^2 = 5.77, df = 1, p < 0.02).

Twenty-five percent of the control group attended for a cervical smear within

three months compared with 32% of those in the experimental condition.

Comparisons within the experimental group between those (eligible for a smear)

who completed the implementation intention items (n = 392) and those who did

not (n = 112) revealed that 37% of those who completed the items attended for a

smear test compared with only 14% of those who did not (χ^2 = 20.66, df = 1, p <

0.000).

Prediction of attendance using the proposed model.

A logistic regression was run to examine the overall ability of the TPB to predict

attendance for a cervical smear test, incorporating anticipated affect and

implementation intention formation. A test of the full model with all seven

predictors against a constant only model was statistically reliable, $\chi 2$ (df =7,

N=271) = 88.00, p=0.00, indicating that the predictors, as a set, reliably predicted

those patients who attended for a smear test. The model correctly classified 71%

of participants, and was a more effective predictor of non-attenders (95%). The

variance in attendance accounted for overall was small, however, with Cox &

Snell R2 = 0.10 (see Table X)

Table X   Results of the logistic regression

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	AGE	-.014	.007	3.574	1	.059	.986
	PBC2	-.314	.170	3.390	1	.066	.731
	ATTITUD2	-.079	.123	.413	1	.521	.924
	SUBJNORM	.023	.134	.030	1	.862	1.024
	AFFECT	.016	.069	.054	1	.816	1.016
	INTENTIN	-.779	.157	24.579	1	.000	.459
	EXP_CONT(	.350	.155	5.084	1	.024	1.419
	Constant	6.307	.869	52.618	1	.000	548.282

a. Variable(s) entered on step 1: EXP_CONT.

In summary, the results from the logistic regression show that women with strong intentions who formed implementation intentions were the most likely to attend for a smear test.

Discussion

The results from the present study found that predicting attendance for a smear test is complex and multidimensional. A number of factors interplay to determine whether or not a woman actually attends for a cervical smear.

One of the first findings of the present study is that women perceive a number of barriers to attending for a cervical smear and that these barriers are significantly associated with reduced attendance rates. The main reported barriers were the prospect of a male smeartaker (35%), other commitments (19%) and unsuitable appointment times (19%).

Another finding evident from the present study was that many women were uncertain about the function of a cervical smear test. Over 78% of women stated that they believed that the primary function of a cervical smear test was to detect cervical cancer, with a more modest percentage believing that it was primarily to prevent cancer (48%) and a large percentage stated that a smear test was carried out to detect changes in the cells of the cervix (70%).

The present study also suggested that although women obtain information about cervical smear testing from a large variety of sources including; the doctor (70%), newspapers (19%), friends (16%), television (8%) and the internet (6%), 37% of women still felt that they had not had sufficient information about cervical smear testing in the past.

One of the striking findings of the present study is the poor level of attendance for a smear test. Only 17% of eligible, contactable women attended for a smear test within three months of receiving their invitation. One of the possible reasons for this statistic is that it is the first time that such a programme has been run in this country. Unlike other studies where women respond to a cue from the GP to remind them to attend each time. It was noted that lmost 10% of women who responded to the questionnaire (N = 109) reported having attended for a cervical smear test within the past 12 months. Despite this, 24% of this group attended for a smear test, a higher proportion than was observed in the overall sample. This finding highlights the important influence of past behaviour on future behaviour.

The results of this study demonstrated that anticipated regret was a significant predictor of intention to attend for a smear test. The univariate analysis also

showed that women were more likely to attend for a smear test if they anticipated greater levels of regret for not attending (t = 4.27, p < 0.000). This is in line with previous research (Crawford et al., 2002). This may have implications for health promotion programmes and the way that messages are presented to women to encourage them to attend for cervical screening. For example, by suggesting to women that their failure to attend for a cervical smear may result in a sense of regret at not having done so might result in more women attending for a cervical smear.

One promising finding from the present study was that the implementation intention intervention was effective in increasing rates of attendance for a cervical smear test. This was despite the fact that only 77% of women in the experimental group actually completed the implementation intention items. Twenty-five percent of the control group attended for a cervical smear within three months compared with 32% of those in the experimental condition. A significant association was found (χ^2 = 5.77, df = 1, p < 0.02). This is an increase of over 25% in the rate of attendance.

Summary

- Overall attendance rate for smear testing was poor (17%).

- Attendance rates were significantly higher in responders (28%) than non-responders (10%).

- Women reported a number of barriers to attendance, in particular the prospect of a male smeartaker (35%),

- Older women were significantly more likely to attend for a smear test.

- Anticipated affect added significantly to the amount of variance explained in intention to attend for a smear test.

- The TPB (plus affect) was a good predictor of intention, explaining 41% of the variance. It was, however, a weak predictor of attendance overall.

- Attendance rates were significantly higher in women who formed implementation intentions.

Conclusion

- A concerted effort is needed to improve the attendance rates reported in the ICSP.

- Barriers to attendance should be addressed in programmes designed to promote the uptake of cervical screening, particularly in relation to gender sensitivity.

- The efficacy of the implementation intention intervention has practical implications for the future national rollout of the ICSP.

- The mediating effect of affect in the TPB and on attendance warrants further exploration.

Dissemination of findings to date

Conference presentations

Walsh, J (2002). Predicting the uptake of a routine cervical smear test: The effects of anticipated affect and forming implementation intentions. *The 16th Conference of the European Health Psychology Society*. Lisbon.

Walsh, J. (2002). A prospective study of the social and psychological predictors of attendance for cervical screening. *Annual Conference of the Psychological Society of Ireland*. Waterford

Walsh, J. (2003). An evaluation of an intervention to improve attendance rates for cervical screening: The impact of anticipated affect and the formation of implementation intentions. AUDGPI, Dublin.

Walsh, J. (2003). An evaluation of an intervention to improve attendance rates for cancer screening in the Irish Cervical Screening Programme (ICSP). 20th All Ireland Social Medicine Meeting, Newcastle, Co. Down.

Walsh, J. (2003). An evaluation of an intervention to improve attendance rates for cervical screening: The effects of anticipated affect and the formation of implementation intentions. *Annual Conference of the British Psychological Society (Health Division). Stafford, UK.*

Publications

Walsh, JC (2003). An evaluation of an intervention to improve attendance rates for cancer screening in the Irish Cervical Screening Programme (ICSP). *National Institute of Health Sciences Research Bulletin.Vol 2(1)pp. 32-33.*

Walsh, J.C. (2002). A prospective study of the social and psychological predictors of attendance for cervical screening. *The Irish Psychologist,* 29 (4): 51 (abstract).

Walsh, J.C. (2002).Predicting the uptake of a routine cervical smear test: The effects of anticipated affect and forming implementation intentions. Proceedings of the 16th Conference of the European Health Psychology Society: Health Through the Life Cycle: A Life Span Perspective, p. 208 (abstract).