

# The Impact of a Media Campaign on Cervical Screening Knowledge and Self-efficacy

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## Abstract

A three-phase cross-sectional face-to-face interview study ( $n = 1571$ ) was conducted to investigate the impact of the *PapScreen Victoria* media campaign conducted in English, and the extent to which a media campaign can influence women's perceived self-efficacy associated with having a Pap test. In total, 1571 women aged between 25 and 69 years were interviewed about prompted and unprompted recall of media messages, intention to have a Pap test and perceived self-efficacy associated with having Pap tests, and barriers to cervical screening. Chi-square and logistic regression analyses revealed that women's awareness of Pap testing messages and priority of this health issue was greater at the first follow-up, and was maintained at the second. Multivariate analyses of variance indicated that it was perceived as more difficult to choose a practitioner and ring for results at the first follow-up, and perceived self-efficacy was lower than at baseline. Results suggest that the cognitive processes at work are more complex than previously thought.

## Keywords

*cervical screening, evaluation, media, self-efficacy, theory of planned behaviour*

SINCE SYSTEMATIC cervical screening was introduced in 1989, Victoria has led screening rates in Australia (Australian Institute of Health and Welfare, 1998). Two-yearly cervical screening rates have improved in this State from 50 percent in 1988–9 (Mitchell, Higgins, & Burrows, 1999) to 75 percent in 1998–9 (Mitchell, Higgins, & Burrows, 2000<sup>1</sup>). In addition, the cervical cancer mortality rate has almost halved in the past 15 years (Thursfield, Whitfield, & van Winckel, 1999). As screening rates have increased substantially over the past decade, further increases will be challenging to obtain. Under-screened women are often of low socioeconomic status, and are often from diverse cultures (Fernbach, Jones, Clarke, & Hirst, under review; Stoddard et al., 1998; Suarez, Roche, Nichols, & Simpson, 1997). They also have more barriers to cervical screening (Orbell, Crombie, Robertson, Johnston, & Kenicer, 1995), barriers strong enough to prevent women from presenting for a Pap test.<sup>2</sup> Thus, reaching these women to encourage them to have Pap tests is also challenging.

Within *PapScreen Victoria*, a study of well-screened and under-screened women described a series of eight steps of cervical screening (Fernbach, 2001). It suggested that the experience of having a Pap test, together with making an appointment, choosing a practitioner, and perceived eligibility were the major barriers for under-screened women. The national and statewide 'No excuses' media campaign targeted many of these barriers.

Targeted media campaigns are one of the most effective ways of reaching a broad section of the population (Finnegan & Viswanath, 1997; Marcus & Crane, 1998), and especially those who are under-screened (Murray, 1999). Strategic messages serve to address and overcome barriers to action, such that individuals are able to act in healthy ways that they previously could not. Mass media is an important strategy that has been successful in previous years for the Victorian cervical screening programme (Cockburn, White, Hirst, & Hill, 1991).

One key predictor of behaviour or behavioural intention within the literature is self-efficacy, the perception that one can successfully perform the behaviour required to produce a desired outcome (Bandura 1977, 1986). Self-efficacy features within one theoretical model

commonly used in screening and preventative health: the Theory of Planned Behavior (Ajzen & Fishbein, 1980). Within the Theory of Planned Behavior, evidence shows that self-efficacy is related in many cases to both intention to perform an action and actually performing the action (Ajzen, 1991; Conner & Armitage, 1998). Previous work within the screening literature, however, has had mixed success with the detection of such a relationship. A review of mammography screening reported a positive association between breast checks and perceived self-efficacy in one study, but no association in another (Curry & Emmons, 1994). On the other hand, clear associations were found between self-efficacy and cervical screening (Sheeran & Orbell, 2000). As targeted media messages are designed to reduce perceived barriers to action, it is reasonable to assume that they might increase self-efficacy associated with performing the target behaviour. The present study examines the relationship between self-efficacy and cervical screening behaviour by dividing the cervical screening process into eight steps.

The aim of the current study was to investigate both the impact of the media campaign and the extent to which a mass media campaign can change women's perceived self-efficacy associated with screening. By mapping the relationship over time between self-efficacy and intention, action and barriers, we can understand the role self-efficacy has in light of each step of the cervical screening process. It was expected that knowledge of Pap screening messages would increase after an initial phase of advertising, and that self-efficacy would increase after a sustained media campaign.

## Method

### *Media campaign*

The campaign consisted of a high-intensity (200 Targeted Audience Rating Points [TARPs]<sup>3</sup>) short-duration (three weeks) phase of television, print and radio, a break of two weeks, and then a lower-intensity campaign in these media (75–150 TARPs) over a longer time (12 weeks) in 1999. Eight messages centred around women's excuses associated with not having a Pap test (e.g. 'But I'm too busy to go to the doctor', 'Cervical cancer. Don't make excuses,

make an appointment') and eligibility criteria (e.g. 'But I'm too old to need a Pap smear', 'But I don't have any symptoms'). These messages were common across television, print and radio.

### *Design*

A cross-sectional exploratory study was performed, whereby a sample of women were interviewed face-to-face before the campaign (baseline), another sample were interviewed during the break between phases (follow-up 1), and then a further sample were interviewed at the end of the campaign (follow-up 2). Thus, exposure to the campaign was a central independent variable.

### *Participants*

In total, 1571 women were interviewed, and after excluding women ineligible for medical reasons (hysterectomy, on doctors' advice), the final sample consisted of 1301 participants (431 at baseline, 430 at follow-up 1, 440 at follow-up 2). The women ranged in age between 25 and 69 years ( $M = 42.64$ ,  $S = 11.95$ ) and did not differ in mean age from baseline to follow-up. The majority of interviewees (88 percent,  $n = 1140$ ) spoke English at home, with 9 percent speaking European languages, 2 percent Asian languages, 1 percent Middle Eastern languages, and a further 1 percent speaking other languages. Nineteen women (2 percent) were of Aboriginal or Torres Strait Islander descent. Participants were selected from suburbs of Melbourne, Australia, known to have lower screening rates in order to adequately represent under-screened women in the sample.

### *Measures*

The interview schedule consisted of 22 questions. Four examined the familiarity that women had with the media campaign ('Have you heard any health messages in the media in the last six months? [if yes, what were they?]', 'Have you heard or seen anything about Pap tests in the last year via any of the following media?', 'Can you recall any messages on Pap tests you have seen or heard in the media in the last year? [if yes, What were the main messages?]', 'I am going to read through the list of messages used in campaigns recently. Can you tell me whether you have heard this message or not?'). These questions included one that obtained spontaneous

recall of Pap test messages, and another which prompted women's recall of the eight cervical screening messages. Two messages that have been used in previous campaigns but not the present one were included as a manipulation check. One four-part question established women's cervical screening history ('Have you had a Pap smear test during the last two years? When did you have your last Pap test? Have you ever had a Pap test? When?'). One question elicited information about whether women had a hysterectomy ('Have you had a hysterectomy?'). Two questions asked intention and overall perceived self-efficacy associated with having Pap tests on five-point Likert scales, with self-efficacy being operationalized as ease-difficulty of having a Pap test ('Is it likely or unlikely that you will have a Pap test in the next two years?' [including a prompt 'would that be very ... or just ...?'], and 'If I wanted to, I could easily arrange to have a Pap test'; 1 = very likely/strongly agree, 5 = very unlikely/strongly disagree). Nine questions explored the individual steps of the cervical screening process and barriers associated with each step. With the exception of the first step, eligibility, and the sixth step, the experience, the steps were behavioural ones where women's perceived self-efficacy associated with performing the step was assessed. Self-efficacy was operationalized as ease-difficulty of performing each step ('Of all the different types of women, who is supposed to have a Pap test?', 'Are you supposed to have a Pap test?', 'How difficult or easy would it be: '... to remember to have a Pap test?', '... to choose someone to give you the Pap test?', '... to get around to ringing up to make an appointment?' '... to turn up to the appointment?', 'How easy or difficult would it be to ring up about the result of the Pap test?', 'How easy or difficult would it be for you to have Pap tests every two years?', 'Do any of the steps stop you from having Pap tests?' [if so, respondents were asked which of the steps listed stopped them from having Pap tests]. One additional question asked women to provide any comments on these barriers. Six of these questions were measured on five-point Likert scales (1 = very easy, 5 = very difficult), and two were dichotomous (e.g. 'Are you supposed to have a Pap test?'). Finally, the remaining four questions identified demographic information (age, language spoken at home,

postcode, and if the woman was of Aboriginal or Torres Strait Islander descent).

### *Procedure*

Participants were approached at shopping areas of suburban Melbourne in postcodes with a high percentage of under-screened women (obtained via the Victorian Cervical Cytology Registry). Trained female interviewers introduced themselves as from the Anti-Cancer Council of Victoria and asked potential participants if they would answer a five-minute questionnaire about women's health. The interviews were completed on site. The same areas were sampled in April, June and October of 1999. The interviewers were instructed, on completion of each interview or after a refusal, to approach the next eligible woman they saw. The recruitment criteria were being female and aged between 25 and 69 years. Refusal rate was unknown.

## **Results**

### *Screening status*

Of the 1301 women who reported their screening status, 1056 (81 percent) said they had had a Pap test within the last two years, and the remaining 19 percent said they had not.

After examining the relationship between self-reported screening status (whether or not women had had a Pap test in the last two years) and the year and date they cited for their last Pap test, there was an agreement of 96 percent. Thus it was considered accurate enough to use self-categorized screening status as the screening status measure. There were no differences in screening status as a function of exposure to the campaign (81 percent well-screened at baseline, 81 percent at follow-up 1, 82 percent at follow-up 2,  $\chi^2[2] = 0.37, p > .05$ ).

### *Impact of the media campaign*

To examine the impact of the media campaign, women's exposure to general health messages was examined in the first instance. Second, to see if the *PapScreen Victoria* media campaign influenced women in the predicted way, familiarity with campaign messages was examined. Finally, the outcomes of the media campaign in the form of changes in behaviour were examined.

*General health messages* Of the 1077 women who reported having heard any health messages

in the last six months, smoking messages were mentioned most often (49 percent overall, 50 percent baseline and follow-up 1, 46 percent at follow-up 2), followed by Pap test (38 percent overall, 21 percent baseline, 48 percent follow-up 1, 44 percent follow-up 2), heart (20 percent overall, 23 percent baseline, 20 percent follow-up 1, 16 percent follow-up 2), diet (18 percent overall, 19 percent baseline, 20 percent follow-up 1, 16 percent follow-up 2), and skin messages (13 percent overall, 11 percent baseline, 14 percent follow-up 1, 13 percent follow-up 2). Chi-square tests examining recognition of health messages by screening status and exposure to the media campaign revealed that Pap tests were reported more during follow-up 1 and 2 than at baseline ( $\chi^2[2] = 64.14, p < .001$ ). Of the women who reported having heard any health messages, 72 women mentioned Pap tests at baseline, while 174 and 160 reported that they had heard about Pap tests in the media at follow-up 1 and 2 respectively. No other health messages differed as a function of exposure to the campaign, nor did recognition of any health messages differ as a function of screening status.

To examine whether women recalled messages differently across the three testing periods, the frequency with which the health message was the first mentioned was compared from baseline to follow-up 1 and 2. Chi-square analyses revealed that only 4 percent of women mentioned Pap tests first at baseline, compared with 15 percent at both follow-up 1 and follow-up 2 ( $\chi^2[2] = 35.12, p < .001$ ). First mention of smoking messages did not differ significantly over time (29 percent at baseline, 23 percent at follow-up 1, 24 percent at follow-up 2), nor did heart messages (6 percent at baseline, 8 percent at follow-up 1, 5 percent at follow-up 2), diet messages (4 percent at baseline, 6 percent at follow-up 1, 3 percent at follow-up 2) or skin cancer (2 percent at baseline, 3 percent at follow-up 1, 3 percent at follow-up 2).

*Pap screening messages* When asked where they had heard or seen anything about Pap tests in the last year, women most often reported seeing Pap test messages on television (74 percent of all women), at doctors' surgeries (63 percent), in women's magazines (34 percent), hearing them on the radio (22 percent), through the Anti-Cancer Council of Victoria (21

percent), and in newspapers (15 percent). Only a small number saw or heard messages in other places (3 percent).

To examine whether source cited varied as a function of exposure to the campaign or screening status, logistic regression analyses were performed, including campaign exposure and screening status as predictors of sources of Pap tests in the media (see Table 1). Mention of television as a source of Pap test messages increased from baseline (58 percent) to follow-up 1 (83 percent) and 2 (82 percent), while mention of the Anti-Cancer Council increased from baseline (17 percent) to follow-up 1 (28 percent). Mention of both women’s magazines and doctors/health workers decreased from baseline (39 percent for women’s magazines, 74 percent for doctors/health workers) to follow-up 1 (32 percent for women’s magazines, 64 percent for doctors/health workers) and follow-up 2 (32 percent for women’s magazines, 53 percent for doctors/health workers), and also was lower for under-screened women (28 percent for women’s magazines, 54 percent for doctors/health workers) than well-screened women (36 percent for women’s magazines, 66 percent for doctors/health workers).

Prompted recall of Pap test messages was substantially higher than spontaneous recall (see Table 2). To examine changes in spontaneous and prompted recall of Pap test messages in the media, logistic regression analyses were performed. The dependent variables were spontaneous and prompted recall, dichotomized into recall and no recall. Screening status and exposure to the media campaign were entered as predictors. In the analyses each variable was entered as a categorical variable in a logistic regression model, to produce odds ratios of the association of each category of a variable with

message recall. The first category of each variable was the reference category (baseline exposure, well-screened women). For the logistic regressions examining spontaneous recall, screening status was not a significant predictor of message recall. However, spontaneous recall increased as a function of exposure to the campaign.

The message ‘But I’m too old to need a Pap smear’ was almost seven times more likely to be recalled spontaneously at follow-up 1 than at baseline, and almost 10.5 times as likely to be recalled at follow-up 2. The message ‘But I don’t have any symptoms’ was almost 11 times more likely to be recalled spontaneously at follow-up 2 than at baseline, while ‘But I’m too busy to go to the doctor’ was 13 times more likely at follow-up 1 and over 15.5 times more likely to be recalled at follow-up 2 than at baseline. The message ‘But I’ve only ever had one partner’ was almost 29 times more likely to be recalled at follow-up 1 than at baseline, and 21 times more likely at follow-up 2. Compared to baseline, ‘Cervical cancer. Don’t make excuses, make an appointment’ was recalled spontaneously almost 15 times more at follow-up 1 and over 12 times more at follow-up 2.

Spontaneous recall of the message ‘When did you last have a Pap smear?’ was eight times more likely at follow-up 2 than at baseline. For the message ‘A Pap smear every two years can help prevent up to 90% of cervical cancer’ was almost three times more likely to be recalled at follow-up 1 and twice as likely at follow-up 2 than at baseline. Finally, the message ‘If you are under 70 you need a Pap smear every two years’ was twice as likely to be recalled spontaneously at follow-up 2 than at baseline (see Table 3).

For the logistic regressions predicting prompted recall of cervical screening messages,

Table 1. Summary information for logistic regression analysis predicting sources of cervical screening messages

	Television		Women’s magazines		Anti-Cancer Council		Doctors/health workers	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Baseline	1.00		1.00		1.00		1.00	
Follow-up 1	3.52	2.57–4.82	0.75	0.57–0.99	1.86	1.34–2.58	0.62	0.47–0.84
Follow-up 2	3.24	2.38–4.41	0.73	0.56–0.97	0.97	0.68–1.38	0.41	0.31–0.54
Well-screened	1.00		1.00		1.00		1.00	
Under-screened	1.05	0.75–1.46	0.68	0.50–0.93	0.76	0.53–1.10	0.60	0.45–0.79

Newspapers and radio were not predicted by campaign exposure or screening status and are not reported here

Table 2. Spontaneous and prompted recall of cervical screening messages by campaign exposure

Message	Baseline	Follow-up 1	Follow-up 2
	Spontaneous ( <i>n</i> = 431) Prompted ( <i>n</i> = 431)	Spontaneous ( <i>n</i> = 426) Prompted ( <i>n</i> = 430)	Spontaneous ( <i>n</i> = 438) Prompted ( <i>n</i> = 440)
But I'm too old to need a Pap smear	5 (1%) <b>287 (67%)</b>	32 (7.5%) <b>357 (83%)</b>	48 (11%) <b>387 (88%)</b>
But I don't have any symptoms	2 (0.5%) <b>237 (55%)</b>	7 (2%) <b>317 (74%)</b>	21 (5%) <b>355 (81%)</b>
But I'm too busy to go to the doctor	5 (1%) <b>321 (74%)</b>	58 (14%) <b>369 (86%)</b>	68 (15.5%) <b>390 (89%)</b>
But I don't remember when I had my last Pap smear	0 (0%) <b>202 (47%)</b>	8 (2%) <b>231 (54%)</b>	16 (4%) <b>272 (62%)</b>
But I've only ever had one partner	2 (0.5%) <b>296 (69%)</b>	51 (12%) <b>351 (82%)</b>	40 (9%) <b>368 (84%)</b>
Cervical cancer. Don't make excuses, make an appointment	3 (1%) <b>282 (65%)</b>	40 (9%) <b>355 (83%)</b>	35 (8%) <b>349 (80%)</b>
When did you last have a Pap smear?	2 (0.5%) <b>325 (76%)</b>	6 (1%) <b>326 (77%)</b>	16 (4%) <b>330 (75%)</b>
A Pap smear every two years can help prevent up to 90% of cervical cancer	14 (3%) <b>347 (81%)</b>	36 (9%) <b>347 (81%)</b>	30 (7%) <b>376 (86%)</b>
If you are under 70 you need a Pap smear every two years	16 (4%) <b>249 (58%)</b>	22 (5%) <b>250 (58%)</b>	33 (7.5%) <b>269 (61%)</b>
Symptoms only appear when cervical cancer is well advanced	0 (0%) <b>109 (25%)</b>	15 (3.5%) <b>204 (48%)</b>	17 (4%) <b>246 (56%)</b>

screening status was not a significant predictor. Prompted recall increased as a function of exposure to the campaign, although not to the same extent as spontaneous recall.

The message 'But I'm too old to need a Pap smear' was almost 2.5 times more likely to be recalled when prompted at follow-up 1 and almost four times more likely to be recalled at follow-up 2 than at baseline. The message 'But I don't have any symptoms' was twice as likely to be recalled when prompted at follow-up 1 and almost 3.5 times more likely at follow-up 2. 'But I'm too busy to go to the doctor' was twice as

likely at follow-up 1 and almost three times as likely to be recalled at follow-up 2 than at baseline. The message 'But I don't remember when I had my last Pap smear' was almost twice as likely to be recalled at follow-up 2 than at baseline, while 'But I've only ever had one partner' was twice as likely to be recalled when prompted at follow-up 1 and almost 2.5 times as likely at follow-up 2 than at baseline. Compared to baseline, 'Cervical cancer. Don't make excuses, make an appointment' was recalled when prompted over 2.5 times more at follow-up 1 and was twice as likely to be recalled at follow-up 2.

*Table 3. Logistic regression predicting unprompted recall of cervical screening messages*

	<i>Too old</i>		<i>No symptoms</i>		<i>Too busy</i>		<i>Partner</i>		<i>Excuse</i>		<i>Last Pap smear</i>		<i>Prevent up to 90%</i>		<i>Under 70s need PT</i>	
	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>
Baseline	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Follow-up 1	6.92	2.67–17.94	3.59	0.74–17.36	13.43	5.33–33.84	28.87	7.03–118.56	14.76	4.53–48.05	3.06	0.62–15.27	2.75	1.46–5.18	1.41	0.73–2.73
Follow-up 2	10.47	4.13–26.57	10.75	2.50–46.14	15.64	6.24–39.19	21.35	5.16–88.31	12.35	3.77–40.43	8.12	1.86–35.54	2.19	1.15–4.20	2.12	1.15–3.91
Well-screened	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Under-screened	0.87	0.48–1.58	0.49	0.15–1.64	0.88	0.54–1.44	1.07	0.62–1.84	0.87	0.47–1.62	0.90	0.30–2.66	1.10	0.63–1.95	1.20	0.66–2.16

Don't remember, symptoms well adv. were not predicted by campaign exposure or screening status and were not reported here

*Table 4. Logistic regression predicting prompted recall of cervical screening messages*

	<i>Too old</i>		<i>No symptoms</i>		<i>Too busy</i>		<i>Don't remember</i>		<i>Partner</i>		<i>Excuse</i>		<i>Symptoms well adv.</i>	
	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>
Baseline	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Follow-up 1	2.49	1.80–3.44	2.32	1.74–3.10	2.11	1.49–2.99	1.31	1.00–1.72	2.05	1.49–2.83	2.62	1.90–3.61	2.71	2.03–3.61
Follow-up 2	3.81	2.67–5.42	3.46	2.55–4.69	2.84	1.96–4.12	1.84	1.40–2.41	2.43	1.75–3.37	2.11	1.55–2.88	3.74	2.81–4.99
Well-screened	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Under-screened	0.93	0.66–1.32	0.82	0.60–1.11	0.90	0.62–1.31	0.75	0.57–1.00	0.87	0.63–1.22	0.75	0.54–1.03	0.87	0.65–1.17

Last Pap smear, prevent up to 90%, and Under 70s need PT were not predicted by either variable and hence are not reported here

Finally, the message ‘Symptoms only appear when cervical cancer is well advanced’ was over 2.5 times more likely to be recalled when prompted at follow-up 1 than at baseline, and over 3.5 times as likely at follow-up 2 (see Table 4).

The cervical screening messages were categorized into those included in the media campaign and those not included in the media campaign. Six of the eight campaign messages were recalled more when prompted by the end of the campaign. However, two changed very little from baseline to follow-up. In general, however, those messages included within the campaign were recalled to a greater extent than those excluded (see Table 5).

Finally, the number of messages spontaneously recalled by women was significantly correlated with self-efficacy (Pearson’s  $r = -.10$ ,  $p < .001$ ), where those who recalled more messages had lower perceived self-efficacy.

*Outcomes: changes in attitudes and behaviour* To investigate the impact of the media campaign on women’s cervical screening attitudes and behaviour, the process of cervical screening was divided into eight steps: perceiving the self to be eligible; remembering or choosing to have a Pap test; selecting a practitioner to perform the test; making an appointment; turning up to the appointment; the experience of having the Pap test; ringing to get the results; and repeating the test every two years. Perceiving the self to be eligible is necessary before an

individual can even contemplate having a Pap test, hence it is used as a screening question within this eight-step procedure. In addition, the experience of the Pap test is an important step within the procedure but is a negative outcome expectancy rather than a behavioural step that relates to an individual’s perceived self-efficacy. As a result, it was not included in these analyses.

Women’s self-reported intention and perceived self-efficacy, together with the perceived difficulty women had completing each behavioural step, were examined as a function of exposure to the campaign and screening status using a multivariate analysis of variance. This yielded a main effect for each independent variable, but no interaction (see Table 6).

For intention to screen, well-screened women reported that it was more likely they would have a Pap test in the next two years than under-screened women. However, this variable did not differ as a function of exposure to the campaign. Similarly, well-screened women perceived it as easier to arrange to have a Pap test than under-screened women (a measure of overall perceived self-efficacy). However, at follow-up 1 and 2, women thought it was more difficult to arrange a Pap test than at baseline.

The first step of the screening process is eligibility. Almost all (1270 of the 1297 women who answered the question) believed that they themselves were supposed to have a Pap test. Two percent said that they were not eligible, while only three women (0.2 percent) said that they did not know whether they were supposed to

Table 5. Change from baseline of prompted recall of cervical screening and dummy messages

	Prompted recall	
	Baseline (%)	% change from baseline
<b>Cervical screening (targeted) messages</b>		
Symptoms only appear when cervical cancer is well advanced	25	+31
But I don’t have any symptoms	55	+26
But I’m too old to need a Pap smear	67	+21
But I’m too busy to go to the doctor	74	+15
But I’ve only ever had the one partner	69	+15
Cervical Cancer. Don’t make excuses, make an appointment	65	+15
A Pap smear every two years prevents up to 90% of cervical cancer	81	+5
If you are under 70 you need a Pap smear every two years	58	+3
<b>Dummy (non-targeted) messages</b>		
But I don’t remember when I had my last Pap smear	47	+15
When did you last have a Pap smear?	76	-1

Table 6. Means and standard deviations of screening steps as a function of campaign exposure and screening status

Screening steps	Baseline		Follow-up 1		Follow-up 2		F(2,1285)	Well-screened		Under-screened		F(1,1285)
	M	(SD)	M	(SD)	M	(SD)		M	(SD)	M	(SD)	
Intention to screen <sup>#</sup>	4.73	(0.82)	4.58	(0.79)	4.68	(0.83)	1.35	4.79	(0.60)	4.10	(1.28)	158.86***
Self-efficacy <sup>#</sup>	4.80 <sup>a</sup>	(0.58)	4.60 <sup>b</sup>	(0.67)	4.63 <sup>b</sup>	(0.67)	10.53***	4.72	(0.60)	4.47	(0.79)	30.37***
Remember to have a Pap test <sup>^</sup>	4.05	(1.17)	4.03	(1.11)	3.98	(1.09)	1.14	4.13	(1.05)	3.52	(1.31)	56.13***
Choose a practitioner <sup>^</sup>	4.19 <sup>a</sup>	(1.15)	4.04	(1.14)	3.95 <sup>b</sup>	(1.19)	8.01***	4.23	(1.02)	3.30	(1.44)	140.82***
Make an appointment <sup>^</sup>	4.25	(1.01)	4.24	(0.93)	4.18	(0.96)	3.57*	4.36	(0.84)	3.63	(1.24)	126.10***
Turn up to appointment <sup>^</sup>	4.48	(0.79)	4.37	(0.82)	4.44	(0.72)	1.08	4.51	(0.68)	4.08	(1.04)	69.88***
Ring to get results <sup>^</sup>	4.19 <sup>a</sup>	(1.07)	4.21 <sup>a</sup>	(0.95)	4.01 <sup>b</sup>	(1.04)	4.51*	4.21	(0.97)	3.81	(1.18)	32.38***
Repeat every 2 years <sup>^</sup>	4.33	(0.95)	4.26	(0.92)	4.25	(0.89)	1.59	4.47	(0.72)	3.44	(1.21)	287.04***

<sup>a,b</sup> For each step, different superscripts indicate significantly different means

<sup>#</sup>Higher means indicate greater levels of variable

<sup>^</sup>Higher means indicate greater ease performing the stage

\*  $p < .05$ , \*\*  $p < .01$  \*\*\*  $p < .001$

have a Pap test or not. Thus, in general, women were aware that they were eligible for Pap tests.

The second step of the screening process is remembering to have a Pap test. This did not differ as a function of exposure to the media campaign. However, under-screened women perceived remembering to have a Pap test as more difficult than well-screened women.

The third step of the screening process is choosing a practitioner. Women at follow-up 2 perceived choosing a practitioner to be more difficult than those at baseline. While under-screened women believed that this was more difficult than well-screened women, there was a significant interaction effect ( $F[2,1285] = 3.30, p < .05$ ), where under-screened women at follow-up 2 perceived choosing a practitioner to be most difficult, and well-screened women at baseline perceived it to be least difficult. Thus, the initial differences between screened and under-screened women became more marked over time.

The fourth step of the screening process is making an appointment, and the fifth is turning up to the appointment. Making an appointment was more difficult at follow-up 2 than at baseline or follow-up 1. Step 5 did not vary as a function of exposure to the campaign. However, under-screened women perceived it to be more difficult to perform both of these steps than well-screened women. In addition, there was a significant interaction effect for the fifth step ( $F[2,1285] = 3.45, p < .05$ ), where it was perceived as more difficult to turn up to the appointment by under-screened women at follow-up 2.

The sixth step of the screening process is the actual experience of having a Pap test. However, this is not a behavioural step and was not included in this analysis.

For the seventh step, ringing to get results, it was perceived as more difficult at follow-up 2 than either baseline or follow-up 1 to ring and get results. In addition, under-screened women perceived it as more difficult to get results than well-screened women.

Finally, the eighth step is to repeat the procedure every two years. This did not differ as a function of exposure to the campaign. However, under-screened women perceived it as more difficult to repeat Pap tests every two years than well-screened women.

To investigate the role of the perceived diffi-

culty of performing these steps in the prediction of intention and self-efficacy, simple regression analyses were performed for under-screened women. Regression analysis predicting intention to screen for under-screened women revealed that the first step (perceiving the self to be eligible) and the last step (repeating Pap testing every two years) were significant predictors ( $F[7,233] = 7.05, p < .001$ ). This equation explained 15 percent of the variance in values. Women who perceived themselves as eligible to have a Pap test ( $\beta = .36$ ), and who thought that it was easy to repeat Pap testing every two years ( $\beta = -.23$ ), had more intention to screen than those who thought it was more difficult, or who thought they were ineligible.

To examine the relationship between the single-item overall measure of self-efficacy and the perceived difficulty of performing each of the cervical screening steps for under-screened women, a simple regression analysis was performed. Self-efficacy was significantly predicted by the perceived difficulty of performing some of the steps of the cervical screening process ( $F[7,233] = 6.33, p < .001$ ), where perceiving the self to be eligible to have a Pap test ( $\beta = .13$ ), finding it easy to choose a practitioner ( $\beta = -.15$ ) and ringing to make an appointment ( $\beta = -.27$ ) were associated with increased self-efficacy. This equation explained 13 percent of the variance.

These regression analyses were repeated using the barriers to Pap testing (the steps that stop women from having a Pap test) as predictors of intention and self-efficacy. Results were almost identical and are not reported here.

## Discussion

Analysis of women's recognition of health messages indicated that both well-screened and under-screened women recalled the same types of health messages. This is encouraging with respect to Pap test messages as the women most at risk for cervical cancer, under-screened women, were exposed to the *PapScreen Victoria* communication strategies.

Also encouraging is the fact that both women's awareness of Pap testing messages and priority of this health issue were greater at follow-up 1, and remained at the same level at the second follow-up. Research indicates that sustained exposure to a health message is more

effective than short intensive periods for health programmes (Jenkins et al., 1999). As expected, awareness of other health messages did not change over time, indicating that the effects measured were a result of the media campaign.

Television and doctors' surgeries were the most commonly cited sources of Pap test information. As predicted, awareness of Pap test messages on television increased as a result of the media campaigns. Of interest was the increase of the Anti-Cancer Council of Victoria as a source of information at follow-up 1 and the decrease at follow-up 2. This mirrors the level of community activity exhibited by *PapScreen Victoria* through the Anti-Cancer Council of Victoria during this period. There was a decrease over time of exposure to Pap test information through doctors' surgeries and through women's magazines, perhaps reflecting the emphasis on other media throughout the campaign, which most likely displaced women's memory of these sources.

On examination of the spontaneous and prompted recall of Pap testing messages, it is clear that some messages were more difficult for women to remember. In particular, two of the eight messages were poorly recalled, especially in the unprompted form. The poorly recalled messages were 'A Pap smear every two years can help to prevent up to 90 percent of cervical cancer', and 'If you are under 70 you need a Pap smear every two years'. These were quite complex messages and perhaps recall was affected as a result. Familiarity with cervical screening messages generally increased at follow-up 1, and was maintained at the second follow-up. In addition, prompted recall of the two messages which were tested but not included in the campaign—the 'dummy' messages—did not improve to the same extent as the campaign messages. Thus, consistent with previous research (Jenkins et al., 1999; Marcus & Crane, 1998), the media campaign was successful at reaching target women and maintaining their awareness of the cervical screening messages over time.

The psychological and behavioural outcomes of the media campaign were clearly evident. It was shown that there were few effects as a result of interactions between exposure to the media campaign and screening status. This indicates that under-screened women received the

messages and responded to them in a similar way to well-screened women.

Under-screened women appeared to find most steps of the screening process difficult. Early and late steps (e.g. perceiving the self to be eligible, and repeating the test every two years) affected their intention to screen, while decreased self-efficacy was influenced by the perceived difficulty of performing the middle steps of the process. It is possible that an initial resistance to screening was created when women contemplated the general screening process. This may have reduced under-screened women's *intention* to screen. A secondary resistance may have been developed when under-screened women contemplated the actual steps involved in having a Pap test: choosing a practitioner, making an appointment and getting results. It may have been overwhelming for these women to imagine performing the steps, hence decreasing their perception of their ability to do the task.

Independent of this finding were clear effects on perceived difficulty of each cervical screening stage as a function of exposure to the media campaign. It was perceived as more difficult to choose a practitioner and ring for results at follow-up. In addition, intention to screen and perceived self-efficacy were lower at the first follow-up than at baseline. These effects appear to be counterintuitive and, at worst, appear to suggest that the campaign was detrimental to women's screening attitudes. In a review of the Theory of Planned Behavior, Conner and Armitage (1998) surmised that situations perceived as uncontrollable would be likely to reduce self-efficacy, whereas those that an individual could control would increase self-efficacy (Ajzen, 1991). A situation where women can choose to have or not to have a Pap test is a controllable situation, one in which women would be expected to increase in self-efficacy according to the Theory of Planned Behavior.

On the other hand, the barriers to cervical screening may be perceived as things women cannot change or control—and thus the Theory of Planned Behavior would predict a reduction in self-efficacy when the barriers became salient. The campaign increased the salience of negative media messages by focusing on excuses for not screening, which would explain the decrease in self-efficacy reported here. Similar results were

found for under-screened women in a mammography screening intervention in the US. This study reported that a media campaign appeared to inhibit first-time mammography screening (McCaul, Jacobson, & Martinson, 1998). It would appear that attempts to reduce barriers to screening by addressing them explicitly within a media campaign emphasizes these barriers and consequently decreases women's perceived self-efficacy.

However, evidence suggests that the media campaign *did* influence people: the more unprompted messages women remembered, the lower was their perceived self-efficacy. Information on screening rates from the Victorian Cervical Cytology Registry indicated that the screening rate increased by 16 percent over the campaign period (Gilchrist, 1999). In spite of their decreased self-efficacy, women had more Pap tests. Therefore, either screening rates, intention to screen and perceived self-efficacy may be unrelated, or the relationship is a more complex one than previously thought.

Nonetheless, there were some shortcomings in the measurement of self-efficacy and intention that may have affected the findings. Self-efficacy was operationalized as the perceived ease of performing behaviour, and used a single item for global self-efficacy and a single item for self-efficacy relating to each behavioural step. Intention to have a Pap test was also a single-item measure. Field research of this nature must be practical to administer so the interview schedule must be reasonably short to ensure a sufficiently high response rate. Thus, sacrifices in sophistication of measurement are characteristic of such research. While this cost is high, the benefit is gathering data from a real population, reflecting their genuine attitudes and behaviours. Clearly, replication of the research using more robust measures of key constructs would be useful.

In summary, the media campaign successfully changed women's awareness of cervical screening and improved recognition of cervical screening messages. However, perceived self-efficacy decreased over time in spite of an increase in screening in the population from which these samples were drawn. The reason why women in this study did not exhibit patterns consistent with existing theory will be addressed in future work.

## Notes

1. Note that this 75 percent rate is converted from the rate calculated using estimated resident population, to that using census figures, to be consistent with screening rate for 1988–9.
2. In Australia the cervical smear test is known as the Pap test, after its founder, George Papanicolaou.
3. 'TARP' is the standard advertising industry measure of the weekly volume of television advertising weight, and is an estimate based on ratings surveys. One TARP represents 1 percent of the target audience who have had the opportunity to see a campaign advertisement on television. In the case of the 1999 *PapScreen Victoria* media campaign, the target audience varied but included women aged 18–54 years.

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