

**University of Kent
Department of Psychology
Centre for Research in Health Behaviour**

Final Report to NHSBSP

**Increasing Attendance at Breast
Cancer Screening: Field Trial**

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Summary

Background

In a previous investigation supported by the NHSBSP, we established that a simple intervention was capable of increasing attendance for breast cancer screening. The intervention was based on the concept of implementation intentions, and asked women to make specific plans for attending. A randomised controlled trial was designed, and it was found that, for women who wrote down their plan, uptake was some 10% higher than in the control groups. Further analysis included in the published paper from the work showed that the women most likely to plan were those who wished strongly to attend but did not believe they would be able to overcome the likely obstacles, such as arranging time off work (Rutter, Steadman, & Quine, 2006). The intervention succeeded by helping women to plan who *needed* to plan.

The present investigation

The purpose of the present investigation was to evaluate the approach in the field. Two studies were conducted, both using randomised controlled designs. In the first, we tested an intervention sent out by post as part of the invitation to screening. There were three conditions: complete the intervention pro-forma and return it to us; complete the pro-forma and keep it; and do nothing (a non-intervention control condition). The purpose of the control condition was to provide a baseline that was identical to the normal process of inviting women for screening; the purpose of the alternate experimental conditions was to test whether the commitment of divulging the plan might increase adherence to it, or whether retaining the plan for reference might be more helpful. There were 2642 women in total, and they were allocated randomly to condition by the screening centre.

In the second study, we tested whether there might be a group for whom interventions were particularly effective. The expectation from our earlier work was that they would be women whose intentions to attend were strong but whose beliefs in their ability to overcome likely obstacles to attendance were weak. The effect of the intervention would be to strengthen those weak beliefs. Only women who were being invited for their first screen were included this time, and all 1036 who were eligible were allocated randomly to one of three conditions: intervention, questionnaire-only, and control. The intervention took the same form as in the first study, and was accompanied by a questionnaire designed to measure intentions and perceptions of control over whatever obstacles to attendance the respondent foresaw. The pack also contained a second questionnaire to be completed immediately after the intervention, to

test whether intentions and control beliefs had been strengthened by the act of planning. The questionnaire-only condition was included to control for the possibility that merely completing a questionnaire about breast screening might increase attendance.

Results

1. The first study revealed no difference in attendance across conditions. The figures were all high: 86% in the 'return' condition, 85% in the 'keep' condition, and 83% in the control condition.
2. The second study similarly showed no overall effect of conditions: 88% attendance in the intervention condition, 86% in the questionnaire-only condition, and 86% in the control condition.
3. However, our expectation that there might be a sub-group for whom the approach would be particularly effective was confirmed. Women who emerged from the procedure with strengthened beliefs in their ability to overcome obstacles were more likely to attend than women in either of the other conditions: 100% uptake, against 86% in the questionnaire-only condition and 86% in the control condition.

Conclusions and recommendations

1. An intervention based on implementation intentions was found to increase uptake among a particular group of women – those whose perceptions of control over potential obstacles to attendance were strengthened.
2. Since it is not possible to identify the group in advance, we recommend that the intervention should be administered routinely, as part of the invitation letter, to all women invited to breast screening. Its effectiveness is likely to be greatest in areas of poor uptake.
3. Since obstacles to attendance differ from individual to individual, we recommend the 'open' format we have used here, so that women plan for their own particular circumstances.
4. We recommend that consideration should be given to extending the use of the procedure to other forms of screening, particularly those for which uptake is poor.

Introduction

1. Background

Breast cancer accounts for some 25% of all female cancers (Parkin, Bray, & Devesa, 2001), and is the most common cancer in women in much of the world. Although its incidence has been rising for many years in the West (Botha, Bray, Sankila, & Parkin, 2003), earlier detection and improved drug treatment have helped mortality to fall (Blanks, Moss, McGahan, Quinn, & Babb, 2000; NHS Breast Screening Programme, 2006). The UK, in common with most other European Countries and North America, has for twenty years offered regular mammography through the NHS Breast Screening Programme. The service has national coverage, and offers free screening by invitation every three years to women aged between 50 and 64 – extended to 70 in 2004. National attendance is 75% (NHS Breast Screening Programme, 2006). Among women who do not attend, the most common reasons given are having been screened privately through work schemes, being unwell, being away on holiday, having no transport, and finding it difficult to arrange time off work (Rutter, Calnan, Field, & Vaile, 1997; Saidi, Sutton, & Bickler, 1998; Sutton, Saidi, & Bickler, 1993). Attendance and non-attendance are known to be underpinned by beliefs, attitudes, and perceived social pressure (for example, Rutter, 2000; Steadman, Rutter, & Field, 2002; Sutton, Bickler, Sancho-Aldridge, & Saidi, 1994).

2. Previous attempts to increase attendance for breast screening

To try to increase uptake, several writers have devised and tested interventions. Initially, they were aimed at motivation (Aiken, West, Woodward, Reno, & Reynolds, 1994; Bankhead et al., 2001; Champion et al., 2003; Richards et al., 2001), on the assumption that non-attendees were unmotivated to attend and were low in intention. For the majority of women, however, the assumption is false, for the evidence shows that intention is strong (Rutter, 2000), but is impeded by such things as having to negotiate time off work, having to make special travel arrangements, and sometimes having to change the appointment (Rutter, Calnan, Field, & Vaile, 1997; Saidi, Sutton, & Bickler, 1998). In other words, the problem is *volitional*, not motivational, and another type of intervention is needed, one that helps women to carry out their already strong intentions to attend. In several recent interventions, a new approach has been tested, using the concept of 'implementation intentions' (Gollwitzer, 1993, 1999). The approach was first applied to breast screening by Rutter, Steadman, & Quine (2006). The purpose of this report is to present the results of a follow-up investigation.

3. The concept of implementation intentions

Implementation intentions are plans of action. They take the form “I intend to initiate goal-directed behaviour X when situation Y is encountered”, and thus extend goal intentions (“I intend to achieve X”) by specifying when, where and how they will be achieved. If the implementation intention is well-formed, it may help to bridge the gap between goal intentions and action. The strength of the bridge is known to be influenced by a number of ‘external’ factors, however, including the strength of the goal intentions (Sheeran, Webb, & Gollwitzer, 2005) and the quality of the planning strategy (Dieffendorff & Lord, 2003). Moreover, whether or not an intervention will succeed is thought to depend on how much time pressure there is (Betsch, Haberstroh, Molter, & Glockner, 2004; Einstein, McDaniel, Williford, Pagan, & Dismukes, 2003), and how difficult the goals may be to achieve (Dewitte, Verguts, & Lens, 2003; Gollwitzer & Brandstätter, 1997). It is also suggested that success may be greater with ‘direct’ goal behaviours (for example, taking medication at a given time) than with behaviours that are ‘in the service of’ more distant goals, such as arranging time off work to make attendance at screening possible (Rutter, Steadman, & Quine, 2006; Sheeran, 2002; Sheeran & Orbell, 2000). Despite these unresolved issues, the literature reports favourably on the success of implementation intentions interventions, meta-analyses indicating sample-weighted differences between means ranging from .54 to .70, which is considered a medium size of effect (Koestner, Lekes, Powers, & Chicoine, 2002; Sheeran, 2002).

4. Implementation intentions interventions and health behaviours

The early work on implementation intentions interventions in health behaviour was mostly conducted with student populations. Behaviours that benefited included daily consumption of Vitamin C tablets (Sheeran & Orbell, 1999), eating a healthier diet (Armitage, 2004; Verplanken & Faes, 1999), taking more exercise (Milne, Orbell, & Sheeran, 2002; Prestwich, Lawton, & Conner, 2003), breast self-examination (Orbell, Hodgkins, & Sheeran, 1997) and testicular self-examination (Steadman & Quine, 2004). Dental flossing, however, did not improve (Lavin & Groarke, 2005), and there was only a modest reduction in adolescent smoking (Higgins & Conner, 2003). Student studies also raise familiar questions of external validity (Gordon, Slade, & Schmitt, 1986; Greenberg, 1987).

The evidence from ‘clinical’ populations, most of it conducted more recently, is less conclusive. Success has been reported for recovery of functional activities after joint-replacement surgery (Orbell & Sheeran, 2000), and for promoting attendance at cervical screening (Sheeran & Orbell, 2000) and antenatal screening for Down’s Syndrome (Michie, Dormandy, & Marteau,

2004). For increasing fruit and vegetable consumption among cardiac patients, however, an implementation intentions intervention added nothing to routine education and a monthly telephone call (Jackson et al., 2005). Interpretation of the inconsistency in findings is difficult, given the range of behaviours, populations, and methods used, but among the likely explanations are the salience of the behaviour, its complexity and, as we noted earlier, the nature of the relationship between the behaviour and the goal – whether the behaviour achieves the goal directly, or whether it is carried out ‘in the service of’ the goal.

From our own study of breast screening (Rutter, Steadman, & Quine, 2006), a further possibility emerged. Participants were required to formulate plans in respect of behaviours such as taking time off work, to help them to attend their appointment. A full ‘intention to treat analysis’, which provides a comparison of all randomised participants with the control group (Hollis & Campbell, 1999), revealed no overall effect. However, not everyone in the experimental group followed the instruction to formulate plans, and a comparison between those who did and those who did not revealed a significant effect of the intervention (more than 90% attendance against 80%). Further analysis of the group that ‘benefited’ showed that planners differed from non-planners in their initial ratings of perceived control: those who wrote down a plan reported less confidence in their ability to overcome potential obstacles to attendance than those who did not. Our interpretation was that women with weak control beliefs needed to write a plan in order to identify how to overcome their barriers, and it was this that the intervention helped them to do. The finding also raises the unforeseen possibility that forming implementation intentions affects motivation (as well as volition), causing participants to engage in decision-making. Planning may help those who are unsure whether they can obtain the goal to identify the means to do so, and may thus be seen as not just pre-decisional but post-decisional too. In the present investigation, we report two field studies, in which we (a) test the effectiveness of a revised and shortened version of our original intervention and (b) explore further the links between control beliefs, planning, and attendance.

Study 1

1. Rationale

The purpose of the first study was to test the effectiveness of a simple implementation intentions intervention administered by post as part of the invitation to attend for screening. There were three conditions: complete the intervention pro-forma and return it to us; complete the intervention pro-forma and keep it; and do nothing (a non-intervention control condition). The

purpose of the control condition was to provide a baseline that was identical to the normal process of inviting women for screening; the purpose of the alternate experimental conditions was to test whether the commitment of divulging the plan might increase adherence to it, or whether retaining the plan for reference might be more helpful.


2. Method

Design and participants The study used a randomised controlled design. Following approval by the local NHS Research Ethics Committee, women from three screening 'batches' were each assigned at random to one of the three conditions: 'return'; 'keep'; and 'control'. The women came from two districts in Kent, and their appointments were sent out by the Kent Breast Screening Service, together with the materials for the study. There were 2642 women in total, and they were allocated randomly to condition by the screening centre.

Procedure Materials were posted to participants with the invitation. In the 'return' condition, they consisted of a single-sided professionally produced sheet, on which was printed the intervention. It was to be read and completed and then returned to the investigators, and it had adhesive edges and was easily folded and stuck down. Our address was printed on the back, and the return postage was pre-franked. The sheet is reproduced in Figure 1. The intervention consisted first of a brief introduction, which outlined things that might get in the way of attending screening – for example, having to make travel arrangements, arranging time off work, getting someone to look after dependants, and needing to change the appointment. The introduction also gave our contact details in case a participant might wish later to withdraw from the study. The introduction was followed by 'yes' / 'no' boxes to tick whether or not difficulties were foreseen. Women who ticked 'yes' were then asked to identify the possible problems, to write what they would do to solve each one, and finally when they would do it. Spaces were provided for the responses. Once the sheet was completed, it was to be sealed and posted back to us. In the 'keep' condition, the same intervention was printed on a single sheet in the same way, but there were now no sticky edges, and no address or stamp on the back, and participants were asked to keep the sheet. In the control condition, women were sent nothing.

Measures One single measure was taken, attendance for the appointment. It was recorded for us by the screening centre, and included attending either the appointment offered by the centre's staff or one made by the woman for a re-arranged time.

Figure 1: Study 1 Intervention Material



Getting to Breast Screening

Sometimes people find that things get in the way of attending their appointment for breast screening – for example, having to make travel arrangements, finding somewhere suitable to park, arranging time off work, getting someone to look after dependents or needing to change the appointment. We have asked researchers at the University of Kent to conduct a study to see if we can help people to identify things that might stop them attending their breast screening appointment. You do not have to take part in this study, but it will help us to make our service more efficient if you do. If you decide not to take part this will not affect your medical treatment either now or at any time in the future. If you decide to take part now but later wish to withdraw you are free to do so. Just call 01227 823961 and quote the number at the top of this page. If you are willing to take part, please complete the information below.

Is it possible that *anything* will get in the way of *you* going to *your* breast screening appointment? Please put a tick in either the 'Yes' box or the 'No' box.

Yes No

If you ticked the 'Yes' box, please think about how you will deal with the situation. In the box below, please write out a plan of what you will do and when you will do it.

Describe the possible problem(s)	What will you do to solve the problem(s)?	When will you do it?
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Thank you for filling in this sheet. Please keep it until you have been to your appointment. Results of the study will be available from Professor Rutter, at the University of Kent, upon request. He can be contacted on 01227 827573 or e-mail D.R.Rutter@kent.ac.uk. If you have any questions please contact either Professor Rutter or his Research Assistant, Sue Thompson (01227 827871, email: sat27@kent.ac.uk).

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3. Results

Two questions were asked: whether more women attended in the intervention conditions than the control condition; and whether there was a difference between the 'return' and 'keep' versions of the intervention. The results are given in Table 1, and they show that to both questions the answer is no. The percentages of women who attended were 86.1% in the 'return' condition, 84.7% in the 'keep' condition, and 83.1% in the control condition. The overall χ^2 value across the three conditions was $\chi^2 (2) (n=2642) = 3.14, ns$. For the comparison between the 'return' and control conditions, the value was $\chi^2 (1) (n=1766) = 2.90, ns$; and for the comparison between the 'keep' and control conditions it was $\chi^2 (1) (n=1779) = 0.77, ns$. There was thus no effect of either intervention condition.

Table 1: Study 1 Attendance by condition

	Attended		Did not attend	
	n	%	n	%
'Return' intervention	743	86.1	120	13.9
'Keep' intervention	742	84.7	134	15.3
Control	750	83.1	153	116.9

$\chi^2 (2) (n=2642) = 3.14, ns$

Study 2

1. Rationale

The purpose of the second study was to test whether the overall lack of effect in Study 1 might conceal a sub-group for whom the intervention did have an impact. In our previous work, we had found that attendance after an intervention was greatest for women who had begun with strong intentions to attend but weak perceptions of their ability to overcome the obstacles that might get in the way. In the present study, we re-examined that finding, and also tested whether the women who 'benefited' from the intervention were those whose intentions or perceptions of control had been strengthened by it.

2. Method

Design and participants The study again used a randomised controlled design. Following approval by the local NHS Research Ethics Committee, women from three screening 'batches' were each assigned at random to one of three conditions: 'intervention'; 'questionnaire-only'; and 'control'. The women came from two districts in Kent, and, as in the first study, their appointments were sent out by the Kent Breast Screening Service, together with the materials. Only women who were being invited for their first screen were included this time, since habit is known to be a strong predictor of attendance in subsequent rounds (Rutter, 2000). All 1036 who were eligible were allocated randomly to condition by means of an online tool (Urbaniak & Plous, 2007). A total of 108 of the 1036 had to be excluded from the subsequent analysis – because they contacted the centre to refuse screening (62), because they had been screened recently elsewhere (24), or because they were already under medical care for breast problems or had moved away to an unknown address (22). Of the remaining 928, 310 were in the intervention condition, 311 the questionnaire-only condition, and 307 the control condition.

Procedure Materials were posted to participants with the invitation. In the intervention condition, they consisted of a stapled pack containing an information sheet about the study, a single-sided questionnaire to test beliefs and intentions, the intervention material, and a final single-sided sheet of questions to test *post-decisional* beliefs and intentions immediately after the intervention had been completed. Women in the questionnaire-only condition received just the information sheet and the first questionnaire, and those in the control condition were sent nothing. The information sheet outlined the purpose of the study, and explained that the data were confidential, and it gave our contact details in case a participant wished later to withdraw her questionnaire data from the study. The first of the questionnaires measured intentions about attending for screening, and perceptions of control over any impediments that might occur. The second questionnaire contained the same items, but re-ordered, to allow us to measure any post-decisional change in intentions and control beliefs. The intervention was again designed to encourage participants to think of things that might get in the way of attending their appointment, and to plan ways of overcoming them. They were asked to tick whether or not they thought there would be difficulties, and then to write down a plan for overcoming them if they did. The intervention sheet is reproduced in Figure 2.

Figure 2: Study 2 Intervention Material

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Breast Screening Study

Sometimes people find that things get in the way of attending their appointment for breast screening - for example, having to make travel arrangements, arranging time off work, getting someone to look after dependants, or needing to change the appointment. Will anything get in the way of you attending your appointment for breast screening? Please put a tick in either the 'Yes' box or the 'No' box.

Yes

No

If you ticked the 'Yes' box, please think about how you will deal with the situation. Write out a plan of how you will make the necessary arrangements so that you can attend the appointment. The plan should state what the difficulty is, what you need to do, how you will do it, and when you will do it. Please write your plan in the box below.

Measures The opening questionnaire included five items to assess intention to attend for screening and eight items to assess perceptions of control over keeping the appointment. All thirteen items were measured on five-point scales from 1 (weak intention or control beliefs) to 5 (strong intention or control beliefs), with anchors reading 'definitely not' to 'definitely' for some of the items and 'a little' to 'completely' for the others. The five intention items were summed successfully into a single scale, and Cronbach's alpha was 0.70. For control beliefs, three items had to be removed from the analyses before a reliable scale was achieved, and the alpha across the five that remained was 0.86. The items included in the two scales are shown in Table 2. The one remaining measure, attendance, was recorded for us by the screening centre. As in the first study, the measure included attending either the appointment offered by the screening staff or one made by the woman for a re-arranged time.

Table 2: Study 2 Items to measure intention and perceptions of control

Intention

- I intend to attend my appointment for breast screening
- I expect to attend my appointment for breast screening
- I would like to attend my appointment for breast screening
- I want to attend my appointment for breast screening
- How likely is it that you will attend your appointment for breast screening?

Perceptions of Control

- I am confident that I shall be able to attend my appointment for breast screening
 - I believe that I have the ability to attend my appointment for breast screening
 - To what extent do you see yourself as capable of attending your appointment for breast screening?
 - How much control do you feel you have over attending your appointment for breast screening?
 - How confident are you that you will be able to attend your appointment for breast screening?
-

3. Results

The first question we asked was whether the intervention had an overall effect. The results are given in Table 3, and the short answer is that it did not. Attendance was 88.1% in the intervention condition, 85.9% in the questionnaire-only condition, and 86.3% in the control condition. The data were examined by χ^2 , and the value was $\chi^2 (2) (n=928) = 0.73$, ns. Of the 24 women in the intervention condition who said at Time 1 that they would have difficulty keeping the appointment, all 24 completed a plan, while the figure for those who predicted no difficulty was only 4 out of 101 ($\chi^2 (1) (n=125) = 102.9$, $p<0.001$). Planning showed no association with attendance when it was examined univariately ($\chi^2 (1) (n=124) = 0.49$, ns). However, when logistic regression was used to examine planning and predicted problems together, the results showed that, for attending the appointment offered, attendance was now very nearly significantly associated with planning ($B=2.40$, Wald 3.72, df 1, $p<0.054$), and was highly significantly associated, negatively, with predicted problems ($B=-2.90$, Wald = 6.95, df 1, $p<0.001$). Attendance was thus associated positively with writing down a plan for attending but negatively with expecting that there would be obstacles to overcome.

Table 3: Study 2 Attendance by condition

	Attended		Did not attend	
	n	%	n	%
Intervention	273	88.1	37	11.9
Questionnaire-only	267	85.9	44	14.1
Control	265	86.3	42	13.7

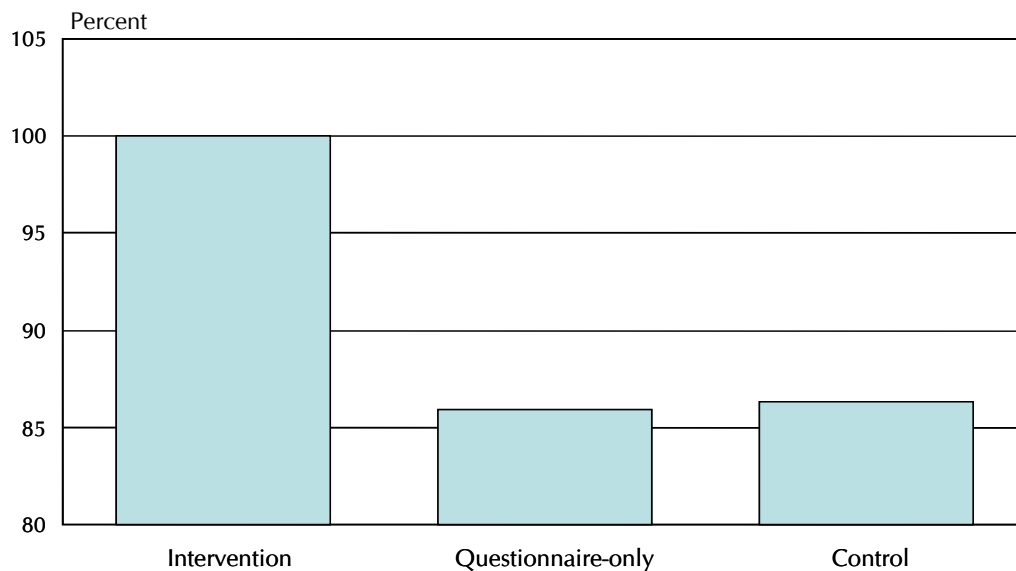
$\chi^2 (2) (n=928) = 0.73$, ns

The second question we asked was whether there might be a sub-group for whom the intervention was particularly effective – women whose intentions or control beliefs were strengthened by it. Two analyses were conducted. First, women in the intervention condition whose intentions had increased from Time 1 to Time 2 were selected, and their attendance was compared with that of the women in the questionnaire-only and control conditions. There was no significant difference between the groups ($\chi^2 (2) (n=629) = 1.80$, ns).

In a second analysis, we repeated the first analyses, but on control beliefs, and this time the pattern was different. All 14 of the women whose control beliefs had strengthened in the

intervention condition attended, against 85.9% of the women in the questionnaire-only condition and 86.3% in the control condition (Figure 3). The overall likelihood ratio did not reach statistical significance, (4.2 (2) (n=632), ns), but the separate comparisons with the questionnaire-only and control conditions did (questionnaire-only condition 4.2 (1) (n=325), $p < 0.05$; control condition 4.0 (1) (n=321), $p < 0.05$). The group's Time 1 control beliefs were weaker than those of women whose beliefs were not strengthened by the intervention (means 21.7 and 24.4 ($t(116) = 5.1, p < 0.001$); and, the weaker the control beliefs at the outset, the greater the likelihood of planning ($r(121) = 0.39, p < 0.001$). Thus, women whose control beliefs were weak at the outset were more likely to plan, left the intervention with stronger control beliefs than when they entered, and were more likely to attend.

Figure 3: Study 2 Attendance for intervention women whose control beliefs were strengthened and for all women in the questionnaire-only and control conditions



Intervention versus questionnaire-only condition: likelihood ratio 4.2 (1) (n=325), $p < 0.05$
 Intervention versus control condition: likelihood ratio 4.0 (1) (n=321), $p < 0.05$

Conclusions and Recommendations

1. Changing behaviour

The first analyses in both studies were full 'intention to treat' analyses, which means that all women who were assigned to every condition were included (Hollis & Campbell, 1999). Attendance averaged 80% to 85%, which is noticeably higher than the current figure of 75% for both the nation as a whole and our own part of the country (NHS Breast Screening Programme, 2006). Attendance is known to be higher in women who respond to questionnaires than those who do not (Rutter, 2000; Vaile, Calnan, Rutter, & Wall, 1993), but that is not sufficient to explain our results since even women in the control conditions, who were not approached to plan or complete any materials, showed attendance rates as high as the others. Moreover, the districts we chose have a history of lower uptake than some others in the area, but that was not the case on this occasion. Attendance was close to the 'ceiling', even before we intervened, and there was thus little room for change.

2. The role of belief change in behaviour change

Beyond 'intention to treat', there was the possibility that a subgroup of women *had* been influenced by one or other of the interventions, but that they were obscured by the majority who had not. Previously, as noted, we had found that an implementation intentions intervention had some success with women whose intentions were strong but whose perceptions of control were not (Rutter, Steadman, & Quine, 2006). To succeed in their goal of attendance, they 'needed' to write out a plan for overcoming likely obstacles to attendance, and the intervention gave them the stimulus. What emerged from the present investigation was that once again there was a small group that was helped to attend, made up of women whose control beliefs were weak at the outset. By the end of the intervention, their beliefs had strengthened, they had made a plan for overcoming the obstacles they foresaw, and the result was that all of them attended for screening. A similar pattern has emerged from our work with adherence to hypertension medication (Quine, Steadman, Thompson, & Rutter, 2007 submitted), and we hope that we can be reasonably confident that the effect is general across medical adherence.

At the end of the paper by Rutter, Steadman, & Quine (2006), we discussed whether the process through which the intervention affected behaviour had been volitional (as is normally thought to be the case for implementation intentions interventions) or motivational. What we did not have then was a measure of intentions and beliefs *after* implementation intentions had been

formed. Our findings in that paper, we suggested, were consistent with the assertion that, because implementation intentions pass control of goal-directed activities from the self to the environment, individuals low in internal resources, such as perceptions of self-efficacy or control, benefit most. The evidence seemed to point to volition. From the second study in the present investigation we now have the post-decisional measures we lacked then, and a different interpretation emerges. Since the women whose attendance benefited were those whose initially weak control beliefs were strengthened by the intervention and who were spurred on to plan, the effect appears to have been not volitional but *motivational*. Though Milne, Orbell, & Sheeran (2002), Orbell, Hodgkins, & Sheeran (1997) and Sheeran & Orbell (1999) have all measured goal intentions after participants have formed implementation intentions, and like us have found them to be uninfluenced by their interventions, we know of no other work on perceived control. We conclude from this new post-decisional evidence that the motivational effects of implementation intentions interventions may sometimes be stronger than the volitional effects.

3. Evaluating interventions with clinical populations

Early research on implementation intentions interventions suggested that they were generally successful in helping people to carry out their goal intentions to behave healthily. As we pointed out at the start of this report, however, much of that work was done with students and rather less with clinical populations, and it was often aimed at discrete, single behaviours, which were easy to achieve. As we have seen, more recent evidence suggests that the approach is less successful with clinical populations, whose adherence behaviours are often more salient, more complex, and harder to plan. Moreover, the conclusions we have drawn about the importance of control beliefs depend on analyses of *process*, which go beyond what intention-to-treat analyses of the *outcome* of randomised controlled trials with clinical populations can achieve. What those analyses of process indicate is a mixture of volitional and motivational factors. We know that, once people get into a routine of attendance, they are likely to continue (Rutter, 2000); and we also know from Rutter & Quine (2002) and the present investigation that their intentions to attend can be supported by strengthening their beliefs. The key group to aim for, we suggest, is those whose intentions are strong, but who believe that they will find it difficult to carry out those intentions. It is for this group that interventions based on implementation intentions will be at their most effective.

4. Recommendations

- (a) An intervention based on implementation intentions was found to increase uptake among a particular group of women – those whose perceptions of control over potential obstacles to attendance were strengthened.
- (b) Since it is not possible to identify the group in advance, we recommend that the intervention should be administered routinely, as part of the invitation letter, to all women invited to breast screening. Its effectiveness is likely to be greatest in areas of poor uptake.
- (c) Since obstacles to attendance differ from individual to individual, we recommend the ‘open’ format we have used here, so that women plan for their own particular circumstances.
- (d) We recommend that consideration should be given to extending the use of the procedure to other forms of screening, particularly those for which uptake is poor.

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