Does theory inform practice in health promotion in Australia?

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Abstract

In recent years, there have been numerous papers discussing the importance of improving the link between health promotion researchers and practitioners. Several reviews have been undertaken to determine the extent to which health promotion research is disseminated to, and utilized by, practitioners in the development and implementation of health promotion programs. These studies have generally been limited to reviews of literature rather than directly gathering data from practitioners. This paper reports on a survey of Australian health promotion practitioners undertaken to investigate the extent to which they are aware of, understand and utilize the major health promotion theories and models derived from research in the areas of psychology and communication. We found that none of the theories or models included in this study—the ‘standard’ theories and models taught in health promotion courses, and included in the leading textbooks—were used by more than 50% of practitioners in their work. The only models being used by more than one-third of the practitioners were PRECEDE–PROCEED and the Transtheoretical (Stages of Change) Model. The paper concludes with possible explanations for the low level of utilization of theories and models, and suggestions for increasing their usage based on information sources accessed by these practitioners.

Introduction

The role of the health promotion practitioner is to improve the health of the community by encouraging people to commence or increase health-promoting behaviors and to cease or decrease health-damaging behaviors. One role of the health promotion researcher is to provide clear evidence-based guidelines to assist practitioners in designing and implementing effective health promotion programs.

A major contribution of academic research is in the development and testing of models of attitude and behavior change to guide the development of health promotion programs. It is often said by researchers that practitioners ignore published theory and findings, and thus fail to utilize the most effective and efficacious intervention techniques. For example, Kok and Green cite the Dutch Smoking Prevention Programme for adolescents:

After 4 years of careful and internationally respected research and development, de Vries and co-workers presented their programme to be implemented nationwide. Now, almost 2 years later, absolutely nothing has happened. [(Kok and Green, 1990), p. 305]

On the other hand, it is often said by practitioners that researchers fail to provide clear, concise and understandable explanations of theories and research findings.
There have been numerous papers discussing the importance of improving the link between researchers and practitioners [e.g. (Rootman, 1996)]. Several papers have discussed various strategies for policies and practices to improve linkages [e.g. (Schwartz and Capwell, 1995; Butler-Jones, 1996; Johnson et al., 1996)]. However, as Nutbeam and others have discussed, there are many barriers to such linkages [e.g. (Nutbeam, 1996a,b; Orlandi, 1986)]. Nevertheless, there are some case studies or discussions of successful practitioner–researcher projects which suggest that, in certain circumstances, these can be overcome [e.g. (Burdine and McLeroy, 1992; Cameron et al., 1996)].

In the main, these studies have been limited to reviews of health promotion literature rather than directly gathering data from practitioners. The study conducted by Oldenburg et al. (Oldenburg et al., 1999), for example, reviewed all articles published in 12 public health and health promotion journals in 1994, and found that less than 1% were diffusion research and only 5% institutionalization or policy implementation research.

In 1995, the Australian Health Advancement Standing Committee commissioned the National Centre for Health Promotion to review the existing literature (published and unpublished) on the dissemination and uptake of new information and research relating to health promotion and illness/injury prevention. [(King et al., 1996), p. 4]

The review identified a substantial number of descriptive articles and case studies, which provided descriptions of health promotion projects utilizing the health promotion evidence base and suggestions for improving dissemination. They also found (King et al., 1996) that:

- Health promotion programs of established effectiveness have not been disseminated.
- Programs which have not been proven effective have been disseminated prematurely.
- Little of the research and commentary comes from Australia.

- Whilst there is a substantial body of literature on the theory and selected aspects of the practice of dissemination, there is…no empirical or systematic evidence about the extent to which health promotion programs are implemented or disseminated, in Australia or elsewhere. [(King et al., 1996), p. 11]

The second stage of the Health Advancement Standing Committee project aimed to investigate the dissemination of health promotion research to practitioners in Australia (Oldenburg et al., 1997). These authors undertook an E-mail survey of the two Health Promotion Special Interest Groups of the Public Health Association (Australia wide), and State-Government-employed Health Promotion Coordinators and Public Health Directors in two Australian states (NSW and Queensland). In total, 88 completed surveys were returned. Analysis of the data found that…the majority of respondents reported both accessing and using new information in their practice either ‘a great deal’ (59%) or ‘a fair bit’ (36%). [(Oldenburg et al., 1997), p. 14]

Further, 83% reported frequent access (i.e. once or more per week) to journals and 68% frequent access to books.

Whilst these results are very encouraging, there are some important limitations of this study, including the small sample size (n = 88) and the possible self-selection bias inherent in the low response rate (estimated at 43%); the likelihood of ‘socially desirable responses’ to questions about usage of information sources (particularly given the loading of the scales, e.g. every day; once a week; once a month; once a year; less than once a year); and the lack of definition of ‘new information’ used by these respondents. Most importantly, less than 16% of the sample identified themselves as ‘implementers’ (i.e. practitioners), thus providing a limited picture of the use of such tools in practice (40% of the sample identified themselves as researchers and 26% as researcher/implementers). When the responses of the self-identified ‘researchers’ and ‘practitioners’ were compared,
Oldenburg et al. found some significant differences: there are two very different viewpoints on the value of current research, with far fewer practitioners than researchers seeing current health promotion research as relevant to, and useful in, practice.

At the heart of health promotion research and, ideally, health promotion practice, lies a set of models and theories which have proven efficacious in thinking about and developing strategies for addressing health issues. Theories and models increase our understanding of behavior, anchor and give substance to our actions, and help frame important issues and minimize redundancies. As stated by Nutbeam and Harris:

...there is substantial evidence from the literature on health promotion that the use of theory will significantly improve the chances of success in achieving pre-determined program objectives. [(Nutbeam and Harris, 1999), p. 6]

While we recognize that no one theory is sufficient to fully explain health behavior, practitioners need to know the relevant theories and models, and to critically examine and selectively incorporate them in interventions.

The aim of this study was to undertake a survey of health promotion practitioners in Australia in order to determine the extent to which they are familiar with, understand and utilize these theories and models. Further, in order to address some of the issues raised in relation to the Oldenburg study (Oldenburg et al., 1997), the current project emphasizes, and separately analyses, respondents who identify themselves as health promotion practitioners.

A comprehensive survey of Australian health promotion practitioners was undertaken in February 2001. The study population for this project was members of the Australian Health Promotion Association (approximately 800 health promotion practitioners, researchers and academics).

The overall aim of this project was to assess the extent to which ‘textbook’ models have diffused into the design, planning, implementation and evaluation of health promotion interventions amongst Australian health promotion practitioners. Specifically, the project measures health promotion practitioners’:

- Knowledge of these theories and models.
- Use of these theories and models in their work.
- Attitudes towards the use of theories and models.
- Professional development activities (both as a precursor to knowledge and usage of models, and as a potential avenue for improving the knowledge base).

Method

A comprehensive list of relevant theories and models was compiled by reviewing two textbooks which are used on health promotion courses in Australia (Egger et al., 1999; Nutbeam and Harris, 1999) and the Communication Initiative Website. The list was then reviewed by three Australian health promotion academics and consensus was reached on 13 models to be included (Community Mobilization; Community Organization; Diffusion of Innovation; Health Belief Model; PRECEDE–PROCEED; Protection Motivation Theory; Social Ecology Theory; Social Learning/Social Cognitive Theory; Social Marketing; Organizational Change Theory; Theory of Reasoned Action/Planned Behavior; Theory of Trying; Transtheoretical/Stages of Change Model).

The questionnaire was piloted on a convenience sample of 10 health promotion practitioners from a state Non-Government Organization. The pilot participants reported that the questionnaire was too long, that they found the number of models they did not know confronting and that they felt many people would be reluctant to complete the questionnaire for this reason. Consequently, the number of models was reduced from 13 to eight by excluding those not known to any of the pilot respondents (Community Mobilization; Community Organization; Social Learning/Social Cognitive Theory; Organizational Change Theory; Theory of Trying). An additional question was
added to allow participants to write in models they use which were not included in the list.

The final questionnaire was distributed to members of the Australian Health Promotion Association in February 2001, via their Association. Thus, the respondents were assured of complete anonymity as the researcher did not at any time have access to their contact details. Unfortunately, this also meant that it was not possible to follow-up non-respondents. Of the 800 questionnaires distributed, 200 were returned (a response rate of 25%). However, after excluding the approximately 200 overseas members, corporate and institutional (library) members, this left us with a response rate of 33% (200 responses out of 600 eligible respondents). This is a fairly normal response rate for a postal survey; a meta-analysis of postal survey response rates (Armstrong and Lusk, 1987) found, across 20 studies which mailed questionnaires with business reply paid envelopes, an average response rate of 34%. However, whilst we obtained a ‘normal’ response rate, this is a somewhat disappointing outcome.

For the purposes of this project it was important to clearly establish the current role of the respondents. Respondents self-identified as either ‘practitioner’, ‘researcher’, ‘practitioner/researcher’ or ‘student’. The first category, practitioner, was selected by 59% of respondents, with the remainder identifying as researcher (12.5%), practitioner/researcher (14%) or student (11.5%) and 9.0% no response. (Note that these figures sum to more than 100% as some respondents identified themselves in terms of their work role, e.g. researcher, and also as a student.)

The results are presented primarily for the practitioner-only group (n = 118). Results for the other groups (i.e. researchers, practitioner/researchers and students who are not also practitioners) will be referred to in some sections for comparative purposes and will be identified as ‘non-practitioners’.

### Results

The majority of the practitioners (88%) were female, as were 72% of the non-practitioners (P < 0.01). The average age of the practitioners was 36 years (SD = 9) and was not significantly different from the non-practitioners. The average length of time practitioners had spent working in health promotion was 6.5 years (SD = 5). The non-practitioners had been working in health promotion significantly longer, with an average of just over 10 years (P < 0.001). The majority of the practitioners were employed by State Government agencies.

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### Table I. Practitioners’ usage and knowledge of theories and models

<table>
<thead>
<tr>
<th>Model</th>
<th>Familiar with the model and use it in my work (%)</th>
<th>Familiar with the model but DO NOT use it in my work (%)</th>
<th>Not familiar with the model (%)</th>
<th>No response (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transtheoretical (Stages of Change) Model</td>
<td>47.5 (56)</td>
<td>17.8 (21)</td>
<td>34.7 (41)</td>
<td>0</td>
</tr>
<tr>
<td>PRECEDE–PROCEED</td>
<td>42.4 (50)</td>
<td>35.6 (42)</td>
<td>21.2 (25)</td>
<td>0.8 (1)</td>
</tr>
<tr>
<td>Health Belief Model</td>
<td>33.1 (39)</td>
<td>39.8 (47)</td>
<td>23.7 (28)</td>
<td>3.4 (4)</td>
</tr>
<tr>
<td>Social Marketing</td>
<td>28.8 (34)</td>
<td>33.9 (40)</td>
<td>33.9 (40)</td>
<td>3.4 (4)</td>
</tr>
<tr>
<td>Theory of Reasoned Action/Planned Behavior</td>
<td>17.8 (21)</td>
<td>39.0 (46)</td>
<td>41.5 (49)</td>
<td>1.6 (2)</td>
</tr>
<tr>
<td>Diffusion of Innovation Theory</td>
<td>11.0 (13)</td>
<td>28.0 (33)</td>
<td>59.3 (70)</td>
<td>1.7 (2)</td>
</tr>
<tr>
<td>Social Ecology Theory</td>
<td>8.3 (10)</td>
<td>18.6 (22)</td>
<td>68.6 (81)</td>
<td>4.2 (5)</td>
</tr>
<tr>
<td>Protection Motivation Theory</td>
<td>5.1 (6)</td>
<td>23.7 (28)</td>
<td>68.6 (81)</td>
<td>2.5 (3)</td>
</tr>
<tr>
<td>Health Behavior Gap Analysis</td>
<td>1.7 (2)</td>
<td>10.2 (12)</td>
<td>82.2 (97)</td>
<td>5.9 (7)</td>
</tr>
<tr>
<td>Transmodal Communication Model</td>
<td>0.8 (1)</td>
<td>4.2 (5)</td>
<td>92.4 (109)</td>
<td>2.5 (3)</td>
</tr>
</tbody>
</table>
Others, in order of frequency, were Local Government agencies (8.5%), private companies (7%), hospitals (6%) and Commonwealth Government agencies (3%). Only one practitioner was employed by a university. In comparison, the primary employers of non-practitioners were universities (41%).

Knowledge and use of theories and models
Participants were asked, in relation to each of the eight models selected for the study, whether they were: ‘familiar with the model and use it in my work’, ‘familiar with the model but DO NOT use it in my work’ or ‘not familiar with the model’. For control purposes, two fictitious models were included in the list. The first of these, ‘Health Behavior Gap Analysis’, was claimed to be used by only two practitioners and to be known by only 12 others. The second, the ‘Transmodal Communication Model’, was claimed to be used by only one practitioner and to be known by only five others. These results lend considerable support to the validity of this self-report data.

As shown in Table I, the theories and models practitioners were most familiar with were PRECEDE–PROCEED (78%), Health Belief Model (73%), Transtheoretical Model (65%), Social Marketing (63%) and Theory of Reasoned Action/Planned Behavior (57%).

Three of the models were familiar to less than half of the practitioners: Protection Motivation Theory (29%), Social Ecology Theory (27%) and Diffusion of Innovation (39%).

However, for only two of the models did a majority of those familiar with the model use it in their work: almost three-quarters (72%) of the practitioners who were familiar with the Transtheoretical Model used it in their work and just over half (54%) of those familiar with PRECEDE–PROCEED utilized it. For the Health Belief Model and Social Marketing, the proportions were 45 and 46%, respectively. For all other models, the proportions were considerably less.

As may be expected, the non-practitioners (i.e. self-identified health promotion researchers or students) were more familiar with several of the models, including: Diffusion of Innovation ($P < 0.005$), Health Belief Model ($P < 0.10$), Protection Motivation Theory ($P < 0.05$), Social Ecology Theory ($P < 0.05$) and Theory of Reasoned Action/Planned Behavior ($P < 0.05$). Interestingly, these researchers were not more likely to be familiar with PRECEDE–PROCEED, Social Marketing or Transtheoretical Model.

Participants were also asked to list any other theories and models that they use which were not included in the list. Twenty-nine percent (34) of the practitioners listed one or more additional theories (20% listed two, 6% three, 2.5% three and one person gave five).

The theories nominated by more than one practitioner (it is recognized that some of the following are not, in fact, health promotion theories) and the numbers nominating them were: Capacity Building Framework (7), Empowerment/Community Development (6), Social Learning/Cognitive Theory (5), Ottawa Charter (4), (Hawe’s) Evaluation Model (3), (Acheson’s) Social Model of Health (3), ‘Mandala of Health’ (2), Organizational Change Theories (2), Social Capital (2) and Social Determinants of Health (2).

A similar percentage of the non-practitioner group (27%) listed additional theories in response to this question. However, this group named a greater number of theories and were more likely to name actual theories or models.

Perceived helpfulness of theories and models
Respondents were asked how helpful they found theories and models at each of four phases of a health promotion intervention: conceptual thinking, program planning, program implementation and program evaluation. As can be seen from Figure 1, theories and models are perceived to be more helpful during the ‘cognition’ phases of conceptual thinking and program planning than during the ‘action’ phases of program implementation and evaluation, with approximately twice as
many practitioners finding theories and models ‘very helpful’ in these ‘cognition’ phases.

In the conceptual thinking stage, 69% of practitioners responded that they found theories and models very or quite helpful, 19% a little helpful, 2% useless and 11% were unsure. In the program planning stage, 73% of practitioners responded that they found theories and models very or quite helpful, 17% a little helpful, 2% useless and 8% were unsure.

In the program implementation stage, 51% of practitioners responded that they found theories and models very or quite helpful, 29% a little helpful, 7% useless and 12% were unsure. In the program evaluation stage, 56% of practitioners responded that they found theories and models very or quite helpful, 28% a little helpful, 3% useless and 13% were unsure.

Practitioners who reported finding theories and models helpful for one phase were more likely to report finding them helpful for other stages, i.e. the correlation between reporting theories and models to be helpful at each stage was correlated with reporting them helpful at each other stage (all correlations, $P < 0.001$).

The non-practitioners were more likely than the practitioners to report finding theories and models ‘very’ helpful for conceptual thinking (53 versus 30%, $P = 0.002$) and program evaluation (35 versus 19%, $P = 0.036$), but were equally likely to report finding them ‘very’ helpful for program planning (36 versus 29%, NS) and program implementation (22 versus 18%, NS).

**Use of models by stage of intervention**

In response to the question, ‘which of the theories and models do you find most useful’ (for each of the four stages listed above), 38% of practitioners selected the option ‘none.’ This figure should be interpreted with caution as it could mean either that the practitioners do not find any theories and models useful or that they find them all equally helpful. Nevertheless, these data do reflect the relative perceived usefulness of the various models.

In general, the three most frequently mentioned as most useful at all phases of a health promotion intervention were those models reported earlier to be the most well known and most frequently used, i.e. PRECEDE–PROCEED (73 mentions overall), Transtheoretical Model (62) and Health Belief Model (36). No other model was named more than 15 times across all four phases. The number of practitioners nominating each model as most helpful in each phase is shown in Table II.

Practitioners were most likely to provide a response for ‘program planning’ (75 mentions) and least likely for ‘program evaluation’ (39 mentions), perhaps reflecting the tendency for many health promotion interventions to be insufficiently, if at all, evaluated. These results are consistent with the responses to the previous question, in which practitioners reported finding theories and models more helpful in the earlier phases of an intervention. In total, 36% (43) nominated one or more preferred theories or models for ‘conceptual thinking’, 44% (52) for ‘program planning’, 32% (38) for program implementation and 30% (35) for ‘program evaluation’.

As may be expected, the percentage of non-practitioners (researchers and students) reporting that they found no models or theories to be useful was lower than for practitioners (30 versus 38%).

In terms of the four stages of intervention, the non-practitioners were more likely to nominate one
or more models or theories for conceptual thinking (55% of non-practitioner versus 36% of practitioners), program planning (58 versus 44%) and program implementation (47 versus 32%). However, they were no more likely than practitioners to identify specific models for the evaluation stage (34 versus 30%).

Qualifications and professional development activities of practitioners

We recorded respondents’ qualifications to determine whether low levels of awareness and use of theories and models were related to the sample being inadequately qualified. However, this was not the case. The majority of health promotion practitioners in our sample have tertiary qualifications, either in health promotion or public health generally, or in their specific field. Ninety-eight percent (116) of the practitioners held at least one post-secondary qualification, 55% (65) had two post-secondary qualifications and 25% (30) had three or more.

We also asked participants about their engagement in 11 specific professional development activities, each scored on a three-point scale: ‘rarely’, ‘occasionally’ or ‘regularly.’ These results are presented in detail elsewhere (Jones and Donovan, in preparation). Overall, we found that the most frequently engaged in activities are those which are undertaken individually and can be performed at one’s desk—such as reading print and electronic materials. The three activities most commonly reported to be undertaken regularly were reading professional, non-academic publications (66%), reading organizational newsletters (59%) and looking up areas of interest on the World Wide Web (WWW) (48%). Those least frequently engaged in were those that require leaving one’s office or building or otherwise engaging in direct interpersonal communication (which is one of the fastest ways of disseminating information).

Discussion

The main strength of this study comes from the separate identification and analysis of the knowledge and practice of practitioners, as distinct from researchers. These two groups were combined in previous studies, making it difficult to determine the extent to which the findings—particularly in terms of the use of theory—actually represented health promotion practitioners. All of the analyses reported herein were conducted on the responses from practitioners with, where appropriate, comparisons to the responses of non-practitioners (i.e. researchers and students).

However, it is important to note that a major limitation of this study is that the participants are all members of the Australian Health Promotion Association. Thus, this study cannot identify any differences between health promotion practitioners.

Table II. Usage of theories and models by phase of intervention (in order of number of mentions)

<table>
<thead>
<tr>
<th>Theory/Model</th>
<th>All phases combined</th>
<th>Conceptual thinking</th>
<th>Program planning</th>
<th>Program implementation</th>
<th>Program evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRECEDE–PROCEED</td>
<td>73</td>
<td>13</td>
<td>27</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>Transtheoretical Model</td>
<td>62</td>
<td>18</td>
<td>18</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Health Belief Model</td>
<td>36</td>
<td>9</td>
<td>15</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Social Marketing</td>
<td>15</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>–</td>
</tr>
<tr>
<td>Diffusion of Innovation</td>
<td>12</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Theory of Reasoned Action</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>–</td>
</tr>
<tr>
<td>Social Ecology</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Social Learning/Cognitive Theory</td>
<td>4</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>–</td>
</tr>
<tr>
<td>Ottawa Charter</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>(Hawe’s) Evaluation Model</td>
<td>3</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>3</td>
</tr>
<tr>
<td>Capacity Building Framework</td>
<td>2</td>
<td>2</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>
who are members of that professional association and those who are not.

Other limitations of the study were the low response rate (33%), which results in a possible response bias (see following section), and the questions left unanswered due to limits on the length of the questionnaire, which result in the suggestions for future research discussed later in this section.

The inclusion of two fictitious models enabled us to be considerably more confident that the responses were valid and not apparently inflated by respondents’ desire to appear more knowledgeable.

**Do practitioners use theories and models in practice?**

Given that we received completed questionnaires from only one-third of the surveyed population, we must consider the possibility of response bias. It is likely that our results overestimate (rather than underestimate) the proportion of practitioners in the population who are familiar with, and use, health promotion theories and models. First, we know from previous research [for a review, see (Armstrong and Overton, 1977)] that people are more likely to respond to a knowledge-based questionnaire if they are better educated, more interested in the subject matter and believe their responses will make a favorable impression on the researchers. Second, we know from the respondents’ feedback in our pilot study that practitioners were likely to find the questionnaire confronting in that it made them aware of the gaps in their professional knowledge. Thus, if there is any response bias, it is likely to be associated with the practitioners who are most familiar with theories and models completing and returning their questionnaires, and those least knowledgeable choosing not to respond.

None of the theories or models included in this study—the ‘standard’ theories and models taught in health promotion courses and included in the leading textbooks—were used by more than 50% of practitioners in their work. It is also apparent from the responses to the open-ended questions that this is not because they are using health promotion theories that were not included in the study. We are not suggesting that practitioners do not have their own frameworks or models that they use in their work, but that they make limited use of these, or other, established theories.

Other than for PRECEDE–PROCEED and the Transtheoretical Model, practitioners were more likely to report knowing the models in this study and NOT using them in their work than they were to report knowing and using them. This suggests that perhaps what is missing for many practitioners are the specific skills and knowledge required to operationalize the generic theories and models in their area of health promotion. This proposition could be investigated in a future study, perhaps by developing a questionnaire or test instrument which directly measures practitioners’ ability to apply theory to specific interventions.

The only models which were being used by more than one-third of the practitioners were PRECEDE–PROCEED and the Transtheoretical (Stages of Change) Model. Several of the models, notably Diffusion of Innovation and Protection Motivation Theory, which have been long established theories in the health promotion literature, were unknown to more than half of the practitioners.

**What do practitioners use theories and models for?**

More than half of the practitioners reported finding theories and models ‘very’ or ‘quite’ useful across all four stages of a health promotion intervention. It is of concern, however, that the practitioners reported finding theory to be more helpful in the earlier phases (conceptual thinking and program planning) than in the later stages (program implementation and program evaluation).

Interestingly, when the practitioners were asked which specific theories and models they find most useful for the different phases, more than one-third (38%) selected the option ‘none’. As noted earlier, it is unclear whether, and to what extent, this was due to a belief that none of the models are useful rather than that they are all equally useful. Two models stood out as being the most frequently used...
by practitioners across the four intervention phases: PRECEDE–PROCEED and the Transtheoretical Model. Supporting the previous results regarding the program evaluation phase, only five models were listed by the practitioners as being useful to them in this phase, compared to eight models for conceptual thinking and program planning, and seven for program implementation.

Which theories and models do practitioners find most useful as they plan and develop interventions?

- **Conceptual thinking**—one-third of the practitioners named one or more theory or model that they find particularly helpful in this initial phase. The most frequently named models were the Transtheoretical Model and PRECEDE–PROCEED, and to a lesser extent the Health Belief Model. No other theory or model was named as useful in this stage by more than four practitioners.

- **Program implementation**—one-third of the practitioners named one or more theory or model that they find particularly helpful in the implementation phase. Again, the most frequently mentioned was PRECEDE–PROCEED, followed by the Transtheoretical Model and the Health Belief Model; Social Marketing was named by six practitioners and no other theory or model was named as useful for program implementation by more than four.

- **Program evaluation**—one-third of practitioners named one or more theory or model, although in this evaluation phase they were considerably more likely to name only one. The most frequently, and almost equally, mentioned models were PRECEDE–PROCEED and the Transtheoretical Model. No other theory or model was named as useful in the evaluation phase by more than four practitioners.

The established health promotion theories and models included in this study appear to fall into three main categories. First, there are those that are not familiar to the majority of practitioners (such as Social Ecology Theory). Second, there are those that are fairly well known, but rarely used (such as Diffusion of Innovation and Protection Motivation Theory). Lastly, there are those theories and models that are known by a large proportion of practitioners and used by the majority of those who are familiar with them (such as PRECEDE–PROCEED and the Transtheoretical Model). Further in-depth research with practitioners and researchers is necessary to identify why some models are used more than others.

This raises the obvious question: what is it about PRECEDE–PROCEED and the Transtheoretical Model that differentiates them from other health promotion models? One reason, particularly given the fact that 98% of our sample holds tertiary qualifications, might be that these two models are taught in most health promotion courses and included in many of the textbooks, whereas many others are not.

Additionally, both PRECEDE–PROCEED and the Transtheoretical Model rate highly on the attributes of innovations that, according to Diffusion Theory (Orlandi, 1986; Rogers, 1995), increase the likelihood of uptake:

- **Relative advantage**—is it more beneficial than available alternatives? Both PRECEDE–PROCEED and the Transtheoretical Model are useful for all phases of a health promotion program—from conceptual thinking through to evaluation (as is evidenced by the number of practitioners reporting them most useful across all of the four phases). Both models set out clear guidelines for selecting a target audience, measuring current health behavior status, analyzing results and evaluating improvements (e.g. a program utilizing the Transtheoretical Model can measure participants’ movements across the ‘stages of change’).

- **Complexity**—is it easily communicated? Both PRECEDE–PROCEED and the Transtheoretical Model are simple, ‘box and arrow’ models, which categorize information (e.g. in the former case environmental influences and in the latter potential target audiences or participants). These models provide a clear and uncomplicated
structure for a health promotion program; unlike many of the other models they do not include multiplicative functions or require complex tools for measuring underlying variables.

- **Compatibility**—is it consistent with the environment/setting? Both of the models have been applied in a range of settings and across a variety of health behaviors, including large-scale population programs. The simplicity of these models, and the fact that they do not require extensive (and expensive) measurement or testing, makes them compatible with the time- and resource-limited environments of most practitioners.

- **Flexibility**—can it be modified, or used in part, and still be effective? Both of the models are easy to modify or use in part, and examples of this abound in the literature. PRECEDE–PROCEED can be used as a conceptual thinking and planning tool (‘PRECEDE’) or an implementation and evaluation tool (‘PROCEED’). The Transtheoretical Model is perhaps more often used in part than in full; many programs (and academic papers) use only the ‘Stages of Change’ and exclude the ‘Processes of Change’.

- **Reversibility**—can it be discontinued and replaced if it is not working? As these models are based on a logical analysis of the target audience and the environment, they involve the collection and analysis of information that can be used as inputs to other models if they were found not to be working. The low cost and risk (see below) of using these models also means that, if necessary, they could be replaced with minimal wastage of resources.

- **Risk**—how certain are the results? The fact that both models have been used effectively across a range of behaviors and in a variety of settings, and the intuitive logic of their components, makes using these models a lower-risk option than many of the more complex models.

- **Cost**—do the benefits outweigh the costs? As discussed above, the simplicity of these models and their underlying variables means that they do not require complex measurement tools. For many behaviors and settings, there are already materials available (such as questionnaires for measuring stage of change) which can be adapted to the new program at minimal cost.

- **Revisability**—can it be adapted and changed over time? Both models can be, and have been, adapted and changed over time. PRECEDE–PROCEED was originally ‘PRECEDE’ (a planning model); and the number, and definition, of the Transtheoretical Model’s ‘stages’ has evolved over time. From a practitioners’ perspective, both models are designed to allow adaptation over time. PRECEDE–PROCEED enables the practitioner to set out all the factors influencing a health behavior and thus once a specific factor has been achieved, or ceased to be important, the practitioner is able to move on to another. For example, once the target audience has been fully educated about the need for a specific behavior and given the requisite skills (enabled), the practitioner can turn to ensuring that there are rewards in the participants’ environment for engaging in the behavior (reinforcers). The Transtheoretical Model, similarly, provides guidance as to how to revise the program as the participants move, for example, from ‘preparation’ to ‘action’ (or back to ‘contemplation’).

### Making theory practical

The objectives set out above for the three categories of theories (e.g. increasing awareness and knowledge of practical applications) share the common denominator of ‘dissemination.’ As discussed in detail in the introductory sections of this paper, the practice of dissemination in health promotion (as in many other disciplines) is clearly inadequate.

**What should we disseminate?**

An important limitation of the present study is that we examined only the extent to which practitioners are aware of, and use, health promotion theories and models. What we did not examine was how appropriately they use them. As with any trade, possessing the right tools is only the first part of the process, using them is the second, but using them...
correctly is the essential (and in this case, as yet unmeasured) element.

A necessary next stage in this process would be to thoroughly investigate the way that practitioners use these theories and models in practice, to ensure that they are being used to maximum benefit (and, relatedly, with minimum wastage). For example, there is little value in moving the 18% of practitioners from ‘knowing but not using’ Protection Motivation Theory to ‘knowing and using’ it if Diffusion of Innovation, for example, would provide them with better outcomes.

As was apparent as we progressed with this study, it is not possible to collect sufficient detail about all the usage of all the relevant theories and models from practitioners in one study. It is proposed that the best ‘next step’ would be to select one or two models—PRECEDE–PROCEED and/or the Transtheoretical Model, as they are the most well-known and widely used among the practitioners—and conduct an in-depth study of the way that practitioners understand and use these models. Their understanding is important, as it will enable us to be sure that practitioners have a shared, and accurate, understanding of the elements of the models. Their usage is equally important, as it is by measuring this that we will determine the extent to which the models are being appropriately used. This information could then be used to develop ‘best practice’ guidelines for the specific models, including both a comprehensive explanation of the theory that is understandable to the practitioner audience and a series of ‘case studies’ or ‘applications’ to demonstrate how the models can be applied to different health promotion interventions.

The Intervention Mapping process (Bartholomew et al., 2001) provides a useful tool for health promotion practitioners in the application of health promotion theory to program design. In Intervention Mapping, the practitioner starts by identifying the question to be answered (the health problem) and brainstorming a list of potential determinants of the problem. The next step is to review the literature on the health problem to find empirical support for its proposed determinants and to identify others that may have been overlooked. It is at this stage that the practitioner, armed with the list of determinants and related constructs, returns to the literature to identify relevant theoretical concepts. In this way the practitioner can use the theoretical constructs to answer the question posed and identify additional constructs that may increase the explanatory power of the proposed answers. The Intervention Mapping process recognizes, as mentioned in the Introduction, that a single theory may not provide all the answers and that constructs from other theories may be added to the final explanatory model.

**How should we disseminate?**

One of the objectives of this study was to examine the information sources accessed by health promotion practitioners in Australia. Given that 98% of the practitioners had completed at least one post-secondary qualification, the majority of them would have been exposed to at least some of the theories and models in an educational setting (although it is important to recognize that courses in a specific intervention area, such as physiotherapy or nutrition, may not cover health promotion theories *per se*). However, the exposure to health promotion-related coursework does not appear to have universally carried over into applying this learning in practice. Whilst this may, in some cases, be due to insufficient or inappropriate coverage of the theories and models, it may be that in most cases it is likely to be due to the length of time since course completion and the sheer amount of profession-related information to which practitioners are exposed. Thus, we cannot rely solely on pre-employment education—no matter how good it is—to provide practitioners with all the knowledge and skills necessary to apply theory in practice on an ongoing basis.

Perhaps, a series of ‘Theory in Practice’ booklets could be developed for dissemination to practitioners. These could provide a detailed analysis of the theory, a series of ‘applications’ sections to demonstrate how the theory can be applied to different health promotion interventions (such as
different target behaviors and target groups) and, importantly, to the four phases of intervention, from conceptual thinking to program evaluation. This style of information dissemination has been effectively used in a recent textbook on patient education (Lorig and Associates, 2000) which briefly reviews several major health promotion theories (including PRECEDE–PROCEED and the Transtheoretical Model) and describes their application to specific health promotion issues, such as reducing the transmission of HIV/AIDS and increasing exercise among arthritis sufferers. Undertaking such a task on the required scale, i.e. providing sufficient explication of the theories and demonstration of their use across a range of health promotion programs, would require a considerable amount of funding to cover the production and distribution costs, so a generous sponsor would have to be identified.

The publications most commonly read by practitioners appear to be Association newsletters (such as the National and State newsletters produced by the Australian Health Promotion Association). This is not surprising given that these publications are generally brief, easy to read, and contain important information for members such as professional development opportunities, legislative and policy changes, and the activities of other practitioners. These publications are an important source of contact with practitioners, and would be a valuable tool for the dissemination of theory in a format that is likely to be noticed, and read, by the target audience. However, these publications have two important limitations: (1) the length of the standard ‘article’ is less than 2 pages, which allows only brief discussion of the required information, and (2) these publications tend to have a limited shelf-life, being thrown away after being read once. A more practical use of such publications, were their editors to agree, would be to use them to provide enticing descriptions of the detailed information made available elsewhere, to encourage practitioners to seek out this information.

As was anticipated, and as has been shown in many other disciplines, academic journals are the primary source of information for academics, but far less so for practitioners. Other than the Health Promotion Journal of Australia and the Australian and New Zealand Journal of Public Health (both of which are delivered to the practitioner’s desk free of charge as part of their membership of these associations), we were unable to identify an academic journal which is always, or even usually, read by more than one in 10 practitioners. Unfortunately, the purpose of journals is widely agreed to be the rapid dissemination of new information, particularly new research findings, which limits the opportunity to utilize these as a source of theory application dissemination. However, if the editors of, for example, the Health Promotion Journal of Australia could be persuaded to include a regular section on ‘Health Promotion Theory’ this could be an excellent way of getting theory into practice (we note that the Health Promotion Journal of Australia recently ran a series of papers on ‘Quantitative Evaluation in Health Promotion’ in its ‘Professional Practice’ section). Such a section could feature a different theory each issue, with a concise overview of the theory itself and demonstrations of its application to different health promotion issues. The advantages of using a journal for such a purpose are twofold: (1) the typical journal article is 8–10 pages in length, allowing a reasonable depth of coverage of the material, and (2) journals—like books—have a sense of ‘permanency’, in that they tend to remain on the bookshelf rather than be thrown away as tends to happen with newsletters and flyers.

Another possible dissemination tool is to conduct an ongoing series of seminars, again covering both the theories themselves and their applications. Again, these would require considerable financial resources, to cover the costs of facilities, materials and promotion of the seminars. Also, these would be likely to be less appropriate for practitioners in remote areas and for those with workloads which preclude attending external seminars.

Finally, there is the ubiquitous WWW, which is often recommended as an effective tool for the dissemination of information. The WWW has many advantages, such as the ability to be utilized by large numbers of practitioners, including those
in remote locations. The WWW is widely used by practitioners, and, following the example of other projects, may be an effective tool for the dissemination of case studies and background material. The Toronto Health Unit, for example, includes on its website free-to-use manuals on topics such as ‘implementation’, ‘evaluation’ and ‘advocacy’, and, as discussed above, the British Medical Journal reaches many more practitioners through its free electronic version than the paid subscription to the hard copy of the journal. Naturally, the WWW has many of the same disadvantages as the other methods discussed, such as cost (in this case, for the development and maintenance of site content). There are additional issues related to the sheer volume of other information available to people on the WWW, including the fact that many people print off information ‘to read later’, rather than reading it when it is first accessed (as one tends to do with incoming mail). The WWW clearly has the potential to be used as an effective dissemination strategy. However, as in many other areas, the WWW has generally failed to deliver as the ideal dissemination tool, and is better used as an adjunct to print and face-to-face communication.

It is also important to note, as demonstrated by the NHS CRD, that knowledge alone is insufficient to change behavior, and there is ‘little evidence that passive dissemination alone resulted in behavior change’ [(NHS CRD, 1999), p. 2]. In order to increase the appropriate use of theory in health promotion practice we will need to use many of the same techniques and strategies that we use to change the behavior of participants in our health promotion programs.

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