

## **Models of Health Behaviour-Change Applied to Cycling Promotion in Western Australia**

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### **Summary**

*Issue addressed:* The Western Australian state government has a commitment to encouraging people to cycle in keeping with a multi-faceted strategy to reduce car dependency over the next 30 years. In October 1999 Transport's Bikewest branch commenced a campaign to promote cycling as a means of transport as well as a form of recreation. The promotion's design was based upon models of health behaviour-change. This was one of the few campaigns in Australia to promote cycling in its own right, without reference to safety issues or helmet wearing.

*Methods:* Cycling behaviour was examined in the context of three models of health behaviour-change: Green's PRECEDE framework, Prochaska's stages of behaviour-change and Sheth-Frazier's segmentation model. Pre-campaign focus groups were recruited on the basis of their alignment to Sheth-Frazier's model. Focus group discussions and the pre-campaign survey design were guided by the parameters of the other two models.

Two television advertisements were subsequently developed around the themes of health and fitness, cycling for short trips and family activity. Merchandise and community events were used to support the media component of the campaign.

*Results:* Post campaign evaluation indicated that the majority of people exposed to the campaign correctly interpreted the main messages and for whom they were designed. The pre versus post campaign research revealed significant differences in cycling behaviour, intentions to cycle and intentions to purchase a bike.

*Conclusions:* The application of these models has translated well into the promotion of cycling from their traditional use in public health programs. They have provided a sound basis for the development of a message and strategy to promote this form of transport.

The attitudinal and behavioural reactions from people exposed to the campaign were positive and encouraging. Greater gains can however be anticipated by ensuring more people are exposed to the messages.

*So What?* There is reason to believe that these models have a role beyond their traditional public health application. Their use in developing broader social marketing campaigns should be explored, for example in encouraging water conservation, waste reduction, use of public transport and so on.

## **Introduction**

Cycling participation targets were set by the Department of Transport in Western Australia in 1995.<sup>1</sup> These targets were set to increase cycling rates from the 1991 level of 5.7% of all trips in Perth to 8% by 2010 and 11.5% by 2029.<sup>2</sup> These were part of a broader transport strategy to counter increased motor-vehicle traffic which demands expensive facilities and has concomitant environmental and congestion problems.

Bikewest, a branch within Transport, developed a campaign to promote cycling as a means of transport and recreation.

Limited knowledge existed however about the more influential motivators for encouraging cycling that could, inexpensively, be promoted widely among the community. Less was known about what prevented people from considering cycling or, if having considered it, what may have discouraged them.

As cycling has a range of benefits for the individual and society, it needed to be determined which of these could be used to motivate people to cycle or cycle more often.

It was decided that models of health behaviour-change might offer some guidance given their success in modifying behaviour for public health programs.

Three models of health behaviour-change were selected for their applicability in assisting with the design of this behaviour-change campaign.

Models drawn upon were:

1. Green & Kreuter's<sup>3</sup> PRECEDE model
2. Prochaska's<sup>4</sup> stages of behaviour-change
3. Sheth & Frazier's<sup>5</sup> model of target group segmentation.

Specifically, these models were considered as valuable tools to help determine the attitudes, behaviours and beliefs, as well as the environmental context, that influence people's decisions about cycling.

The aims of the campaign were to encourage people to take up cycling and promote it in a way to suggest that cycling can be an enjoyable mode of transport for anyone, not just children or athletes. That is, a degree of re-positioning the concept of cycling in the minds of the public was also desired.

## **Method**

Research was conducted with various segments of the Perth population prior to the development of the promotion strategy and message.

## **Research Component**

Formative quantitative and qualitative research was undertaken to develop the message and tone of the campaign.

Longer term, strategic research was also undertaken in the form of identical surveys repeated at six monthly intervals on random samples of the metropolitan population.

### **Quantitative**

Baselines were established by conducting a random sample telephone survey of Perth residents aged 18 years or over, six months prior to the campaign (N=502) and again immediately prior to its commencement (N=404).

Prochaska's<sup>4</sup> stages of behaviour-change were used to guide the development of the pre-campaign survey questionnaires. When applied to cycling behaviour, this model would suggest the following stages:

*Figure 1: Prochaska's stages and cycling behaviour*

| <b>Stages</b>     | <b>Cycling Behaviour</b>                                     |
|-------------------|--|
| Pre contemplation | People not thinking about cycling within the next six months |
| Contemplation     | Seriously considering cycling within the next six months     |
| Preparation       | Intending to take action to cycle in the next month          |
| Action            | Started cycling less than six months ago                     |
| Maintenance       | Cycling frequently for at least six months                   |

Respondents were asked, for example, to rate the chances of them taking up cycling in the next six months on a scale of 0-10 where 0 was 'no chance'.

In the planning survey conducted six months prior to the campaign, 36% of respondents had cycled in the previous six months. Over half (69%) of those respondents who had not cycled in the past six months (n=320) indicated there was no chance or almost no chance of them taking up cycling within the next six months (pre contemplative).

Respondents aged 25 to 35 years rated higher their chances of taking up cycling. Those that indicated they were considering taking up cycling within the next six months (contemplative) were asked what might prompt them to begin. The most common responses were 'want to exercise/get fit' (41%), recreation/leisure (12%), purchased a bike (9%), get out and about (6%).

The choice of strategy was suggested by these results, as mass media campaigns are most influential when people are in the pre contemplation and contemplation stages.<sup>6</sup> More information was required however on people's beliefs and attitudes towards cycling.

### Qualitative

Sheth & Frazier's<sup>5</sup> model of target group segmentation was used to guide the recruiting of participants for the formative qualitative research which was conducted using focus groups. This model compares people's attitudes towards a particular behaviour with their actual behaviour. (See Figure 2).

It was considered that irregular or occasional cyclists with a positive attitude towards cycling would constitute a highly persuadable group.

The attitudes and feelings of this group towards cycling were examined along with those of people in four other groups who may be targeted in future campaigns.

Focus groups recruited consisted of

- People who did not own bikes, but had *a positive attitude* towards cycling in general
- People who owned a bicycle, but only used it *occasionally* (ie once or twice in the previous three months)
- People who rode their bikes *irregularly* (ie less often than once every three months)
- *Parents* of children who owned bikes but who did not let their children ride to school
- *Lapsed* cyclists (ie people who used to ride regularly but no longer do).

Figure 2: Sheth-Frazier's segmentation model applied to cycling. (The recommended message type for each group is shown in brackets).

### Attitudes to Cycling

|                          |   | Positive  | Negative  |
|--------------------------|---|---|---|
| <b>Cycling Behaviour</b> | <b>Cycling</b> (various frequency)                      | Cell 1<br>Content cyclist<br>(Reinforcement messages)           | Cell 2<br>Reluctant cyclist<br>(Attitude changes)     |
|                          | <b>Non-regular Cycling</b> (less than once in 3 months) | Cell 4<br>Non cyclists with a positive attitude<br>(Incentives) | Cell 3<br>Anti cyclists<br>(Confrontation of beliefs) |

The PRECEDE educational needs assessment model, developed by Green<sup>3</sup> and his colleagues, was then used to guide the direction of discussions within the focus groups. Factors, which encourage and support decisions to cycle were initially sought from respondents in the quantitative survey and explored in more depth in the focus group discussions. Factors, which impact negatively on those decisions, were also explored. (Figure 3)

This helped to determine the context within which people make decisions about whether or not to cycle and provided further information about what messages to include and exclude when promoting cycling.

*Figure 3: Factors influencing the behaviour of infrequent or non-cyclists.*

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**Predisposing Factors** (motivators to act/not to act)

***Negative***

- Belief that cycling is dangerous
- Perception that great effort is required
- Reaction to compulsory helmet wearing
- Limited secure storage
- Not aware of improved cycleways, facilities
- It's something you do pre-driving licence

***Positive***

- Motivation to be fitter or more healthy
- Social interaction, enjoyment and convenience
- Desire to use less fuel/cut costs
- Low cost of cycling and maintenance
- Desire to help the environment

**Enabling Factors** (facilitate the action)

***Negative***

- Do not own a functioning bike
- Do not own a helmet
- Negative press image of cyclists (athletes/lycra)

***Positive***

- On road facilities being improved
- Incentives to cycle, Bikewest, Bicycle Transportation Alliance
- Provision of end of trip facilities

**Reinforcing Factors** (rewarding feedback)

- Fitness experts
  - Environmentalists
  - Family, peers
  - Media
  - Community
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The prime motivators/factors which affect cycling centered around the individual. The desire to exercise or get fit was mentioned four times more frequently than the next most popular reason for wanting to cycle.

While concern for the environment or social good would appear from regular press articles to be highly important to people, these were barely mentioned as a reason to take up cycling in these surveys. Therefore promoting cycling on the basis of these external benefits appeared to have very little persuasive power.

### ***Cycle Instead* Campaign**

Based on these results the *Cycle Instead* campaign was developed to highlight the health and fitness benefits of cycling and emphasise its suitability for short trips and family interaction.

The target audience was males and females over 25 years of age who did not have negative attitudes towards cycling. While the campaign was promoting cycling as a mode of transport, it was clear that the most persuasive way of doing so was to promote its health and fitness aspects.

Two television commercials were developed to reflect the main motivators of cycling. A female actor promoted cycling as an enjoyable way to 'tone up and get fit'. In the second, a male actor cites the need for a second vehicle for all the short trips he makes. This vehicle is revealed later in the advertisement to be a bicycle which he is riding alongside his two children, also on bikes.

These commercials were shown for four weeks in November/December 1999 with modest exposure levels (average 303 Target Audience Rating Points per week).

Community events were encouraged by making grants available to service clubs, councils, public health units and bike clubs to conduct organised rides on or near the date of the campaign's commencement. These were to provide an opportunity for people to 'trial' cycling. Nine organisations conducted an event.

A range of merchandise, branded with *Cycle Instead*, was produced and offered as giveaways to organisations conducting events.

A brochure was produced to highlight the benefits of cycling, answer many commonly asked questions and refer readers to pamphlets on specific areas of interest (eg cycling to work). This was sent to all Public Health Units, General Practitioners and Dieticians in Western Australia.

In an effort to further extend the reach of the *Cycle Instead* message and collect some information, a colourful bicycle tag was developed. This point of sale tag was distributed to all bicycle retail outlets in Western Australia and included a tear-off questionnaire to be completed and returned to Bikewest. A small prize was offered to encourage the return of completed questionnaires which included questions relating to:

- who the bike was for
- was it their first bike
- the type of bike purchased
- awareness of *Cycle Instead*

- had campaign influenced decision
- type of retail outlet
- why this outlet was chosen.

The results of this survey will be evaluated in March 2000 and reported elsewhere.

In all material, the term 'cyclist' was avoided because of its negative associations with lycra-clad sporting cyclists. The preferred terms contained a human element such as 'children cycling', 'people on bikes', 'families riding' and so on. Again, this was intended to help reposition cycling away from the esoteric and more towards the 'transport for everyone' concept.

## Results

Two random sample telephone surveys were conducted before and after the television component of the campaign.

Each survey had samples of 400 Perth residents. The samples were weighted to reflect the population statistics for age and gender of the Australian Bureau of Statistics.

These surveys were used to assess reach and effect of the advertisements. The effect of attempts to reposition cycling continue to be assessed in repeated surveys, the results of which will only become apparent in about a year's time.

The post campaign survey revealed that 45% (n=180) of the sample recall seeing at least one television advertisement. Unprompted recall of the advertisements was 8% (female advertisement), 6% (male advertisement) and 5% for both. The message take-out and reach results are detailed in Figure 4.

*Figure 4: Perceptions of the purpose and target of the television advertisements*

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### **Female advertisement (n=116)**

|                              |     |
|------------------------------|-----|
| Fitness benefits             | 67% |
| Cost effectiveness           | 29% |
| Health/exercise benefits     | 24% |
| Legitimate form of transport | 16% |
| Environmental benefits       | 9%  |
| Other                        | 15% |

### **Male advertisement (n=119)**

|                              |     |
|------------------------------|-----|
| Fitness benefits             | 38% |
| Family activity              | 33% |
| Legitimate form of transport | 17% |
| Cost effectiveness           | 16% |
| Environmental benefits       | 11% |
| Buy a bike/try cycling       | 10% |
| Other                        | 5%  |

**Perceived targets of the advertisements were (n=53)**

|                         |     |
|-------------------------|-----|
| Everyone                | 41% |
| People under 40         | 26% |
| Middle aged people      | 9%  |
| Working people          | 7%  |
| Health conscious people | 5%  |
| Families                | 2%  |
| Other                   | 17% |

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**Note:** Totals exceed 100% due to multiple responses.

A high proportion of respondents who saw these advertisements correctly reported their intended purpose, ie fitness benefits, (female advertisement) family activity (male advertisement) and legitimate form of transport (both).

More women than men mentioned the message ‘cycling has health or exercise benefits’ (16% versus 4% respectively) in response to the female advertisement.

In response to the male advertisement, more men than women (40% versus 18%) mentioned that the message was ‘cycling is a family activity’.

Respondents who did not own a bicycle (n=228) were more likely than bike owners to recall both the male and female advertisements (35% versus 24%).

Perceptions of the target audience were congruent with the campaign’s requirements, ie people over 25 years of age.

Respondents who recalled at least one advertisement (n=180) were asked about their reactions to them in relation to cycling.

Almost a quarter (24%) indicated the advertisements had made them think about taking up cycling. One third (33%) had thought about cycling more often and 16% specified the advertisement made them think about buying a bicycle.

A comparison of the results of the pre and post campaign surveys is shown in Table 1.



Table 1: Comparison of pre and post television campaign survey results

| Item (abbreviated)  |          | Pre | Post     |
|---|----------|-----|----------|
| Cycled in previous six months (n=400)                           | Yes      | 28% | 36% *    |
| Own a bike (n=400)  | Yes      | 51% | 57% ns   |
| Number of bikes in the house (n=400)                            | None     | 28% | 23% ns   |
|   | One      | 19% | 18% .    |
|   | Two      | 25% | 25% .    |
|   | More     | 28% | 34% .    |
| Cycling in next six months compared to previous six months      | Increase | 49% | 43% *    |
|   | Same     | 39% | 49% .    |
|   | Decrease | 10% | 08% .    |
| Non-owners who intend to purchase a bike (next six months)      |          | 7%  | 12% *    |
| Neither own a bike nor intend to purchase one (next six months) |          | 44% | 37% ns . |

ns = not significant

\* = significant, chi-square  $p < 0.05$

## Discussion

The proportion of the sample that recalled the *Cycle Instead* campaign is an encouraging result given that it was only recently conceived and had modest levels of television exposure.

It is also evident that the majority of people who recalled the television advertisements correctly interpreted both the intended message and identified the target audience. There is clear evidence that the campaign was well received by irregular cyclists, with people who did not own a bicycle more likely than bike owners to recall both advertisements.

A promising proportion of respondents who saw the advertisements reported that they thought about buying a bicycle or taking up cycling.

While this is an encouraging result, it is also important to note that a third of the respondents who saw the advertisements considered cycling more often.

The importance of this result cannot be understated as it is more likely that greater gains can be made from encouraging people to cycle more often than from increasing the number of people who cycle at all.

Both gains are obviously important to the promotion of cycling. However, as approximately 50% of the population already own a bike, it would be easier, for example, to double the number of

trips made by bicycle if each owner cycled more, than by trying to double the number of people who own a bike. The fact that these advertisements encouraged both responses, as there was also a significant increase in the proportion of respondents who intended to buy a bike, is a positive and crucial result for this campaign. This was a consistent and positive shift across the results.

It is difficult to interpret the results on respondents' estimations of cycling trips they will make in the next six months compared to the previous six-month period. The data support the possibility that a portion of those who intended to increase the number of trips they make, as reported in October, had done so by December and were content with the number of trips they were making.

The fall in the number of people who neither own a bicycle nor intend to buy one was also important, though not significant. This may represent the start of a shift in these respondents from a pre contemplative to contemplative stage in the behaviour-change continuum. Follow up evaluation, currently being planned, will show how much of these good intentions are translated into behaviour.

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