CHAPTER 24

MANAGING AND MOTIVATING
SUSTAINABLE TRAVEL BEHAVIOUR CHANGE

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'Behaviour is highly complex with many external and internal influences on perceptions, attitude and action.' (Hartwell, 2014, p. 2)

INTRODUCTION

This chapter focusses on voluntary behaviour change and how such change may be effected in relation to travel behaviour. The chapter presents a short summary of urban planning designed to achieve sustainable transport systems. This is followed by information about three behaviour change models and theoretical issues that affect behaviour change. There is an extensive body of research on changing travel behaviour (not all of which is theory based), however, this chapter focusses on general theories for behaviour change that can be contextually adapted to address change in the domain of travel behaviour. The chapter closes with information from interviews and focus groups with community members about how and why they make travel choices and how this information might be used to develop suitable interventions to increase the use of public transport and active transport.

Individual travel behaviour in Australia is a major contributor to the congestion suffered in most cities. Personal vehicle use in Perth has remained steady and in 2006, 62.3 per cent of travel to work was by personal vehicle. That dropped slightly in 2011 to 61.5 per cent (Australian Bureau of Statistics, 2012). Throughout

Australia the most commonly used form of transport is the private car and the number of vehicles is increasing at a rate higher than that of population growth (Taylor, 2007).

One of the many roles of urban planners is to create a sustainable transport system (Department of Transport, 2011). Part of that role is to consider how people can be persuaded to use their private vehicles less (Davies, 2005). There are a range of benefits to changing people's travel behaviour from private vehicle use to the use of public transport or active transport such as walking and cycling. From an environmental perspective, reducing private vehicle use decreases traffic congestion which simultaneously decreases multiple forms of pollution (Bureau of Transport and Regional Economics, 2007). Increasing the use of public transport or active transport can have a positive effect on health by increasing physical activity and alleviating the stress experienced by some people whilst driving in congested traffic (Douglas & Wallis, 2013; Kemperman & Timmermans, 2014; Petrunoff, Xu, Rissel, Wen & van der Ploeg, 2013). Additionally, business costs increase and efficiencies are lost when congestion increases travel times (Royal Automobile Club of Western Australia (RACWA) & Chamber of Commerce and Industries (WA) Inc. (CCI), 2015; Somuyiwa, Fadare & Ayantoyinbo, 2015). More than one third of the 250 businesses that responded to the RACWA and CCI survey indicated that they had encouraged staff to carpool or use public or active transport to travel to and from work. Whether or not businesses provided rewards for behaviour change was not indicated, nor was the effect of the encouragement.

Respondents also indicated that the use of toll roads was not a popular initiative to address congestion, with only 21 per cent indicating support for that strategy and 30 per cent supporting a congestion charge for travel through the Perth Central Business District during peak hours. An informal survey in 2011 reported that 59 per cent of respondents indicated that they did not want tolls in Perth (WAtoday, 2011). Congestion pricing needs to be considered carefully and have both public and political support (Harsman & Quigley, 2010). However, the introduction

of congestion pricing has been successful in Stockholm, Sweden, most likely as the result of its introduction as a trial before a referendum was held (Harsman & Quigley, 2010), which allowed people to become familiar with the effects and to understand the structure. For more on congestion pricing as a tool, see chapter 28.

Managing travel behaviour requires more effort on the part of urban planners (Hidas & Ram, 2006) and should involve those with understanding, knowledge and experience of behaviour change (Stopher, Moutou & Liu, 2013). The complexity of managing travel behaviour change is evident across the many varieties of interventions that may be applied (as presented in chapter 25). Structural changes to the environment may play a role (Dolan, Elliott, Metcalfe & Vlaev, 2012), as may road pricing (Grillo & Laperrouze, 2013) or changed personal circumstances (Behrens & Mistro, 2010). Marketing strategies aimed at individuals and particular groups are also relevant for changing behaviour (Ker, 2004), but are not always successful (Cheung & Ardolino, 2011). A combination of structural and social marketing approaches may be useful in some contexts (Langford & Panter-Brick, 2013).

SUSTAINABLE TRANSPORT SYSTEMS

There are several ways in which urban planners may undertake and achieve a sustainable transport operation. Strategies may include soft initiatives (incentives) and hard initiatives (disincentives; Hidas & Ram, 2006), with both playing a role in altering behaviour. Several strategies may be combined to achieve the desired outcomes; a concept adopted in Bromely's Walking School Bus Project (Davies, 2005). Additional investment in more functional public transport and opportunities for active transport (walking and cycling) may be required (Davies, 2005). The effects of structure on active transport is evident in Giles-Corti et al. (2011) in which the locations of schools in environments that were easily walked with good street connectivity and low traffic exposure resulted in significantly higher numbers of children walking to school.

Much of the work on travel behaviour has been undertaken in relation to structural and environmental changes, including road pricing, which represent external influences for behaviour change (Department of Transport, 2011). Environmental or contextual alterations can alter human behaviour across a range of domains (Cheung & Ardolino, 2011; Dolan, et al., 2012; Langford & Panter-Brick, 2013; Madgic, 1979). Such alterations form only part of the opportunities to change behaviour. Psychology provides other options for encouraging voluntary behaviour change (Ampt, 2004; Bamberg, Ajzen & Schmidt, 2003; Hannes et al., 2012), although individual motivation to change is required (Taylor, 2007). The temptation for planners and policymakers is to rely on structural change as it can produce an immediate impact upon behaviour. Psychological intervention to encourage behaviour change is often slower and more difficult to achieve; but as a benefit may transfer to other situations or locations, rather than only at the place of structural change.

THE CURRENT STATE OF VOLUNTARY TRAVEL BEHAVIOUR AND BEHAVIOUR CHANGE THEORIES

Voluntary behaviour change is defined as 'change that occurs when individuals make choices for personal reward without a top-down mechanism, regulation of any sort, or a feeling of external compulsion' (Ampt, 2004, p. 53). It is recognised that voluntary behaviour change in the domain of travel is effected through small changes at the individual level. These small individual changes combine to benefit the community (Pramberg, 2004).

Interest in monitoring and managing travel behaviour is evident across the past three decades. Early research investigated within an atheoretical framework endeavoured to identify patterns in travel behaviour and to identify determinants that would bring about change (Pas, 1988). Hidas and Ram (2006, p. 2) stated 'there has been a lack of behavioural and social sciences input in the formation of most transport policies' and this needs to be

remedied. It is generally acknowledged by those who work with behaviour change that theories facilitate an understanding of what drives behaviour and behaviour change (Lippke & Ziegelmann, 2008a) and that the application of a theory provides better outcomes for interventions and evaluation (Fishbein & Ajzen, 2005; Fishbein, von Haeften & Appleyeard, 2001; Fishbein & Yzer, 2003). The use of behaviour change theories is only one part in the process of changing behaviour with communication theories also playing an important role (Fishbein & Cappella, 2006).

The complexity of behaviour has resulted in the development of a number of different theories that focus on behaviour change at the individual and societal level and what may affect or achieve behaviour change (Halpern et al., 2004). Behaviour at its most basic level is affected and effected by an interaction between the individual, the environment (both physical and social) and the situation (Langford & Panter-Brick, 2013; Montano & Kasprzyk, 2008). Behaviour change may occur when one of these aspects is altered (Behrens & Mistro, 2010). This means that although an individual may have certain beliefs, attitudes, intentions or previous behaviours that motivate them to act in a certain way, their behaviour may change with changing circumstances (Montano & Kasprzyk, 2008). As examples, Ker (2004) indicated that moving house or changing employment may be catalysts for changing travel behaviour. The complexity and individuality of behaviour change is recognised by Langford and Panter-Brick (2013, p. 133) who indicated that 'to what extent behaviour change interventions work, for whom, in what contexts, and why' is key for their success.

Of particular importance to understanding travel behaviour are the decisions that are made and how these decisions are arrived at, with the term 'mental map' being applied to both the spatial knowledge required and the decision-making process (Hannes et al., 2012). There is considerable literature around cognition and decision-making, however, not all actions are driven by cognition and more recent research has indicated that in many instances behaviour may be driven by emotion rather than cognition (Keer, Conner, van

den Putte & Neijens, 2014) with indications that liking or disliking of a particular travel type can be important for travel behaviour (Ory, Mokhtarian, & Collantes, 2007). There is also considerable research that indicates much behaviour is habitual and carried out without little thought (Jackson, 2005). How an individual perceives their environment may affect travel choices. Van Acker, Derudder and Witlox (2013) discuss the 'mismatch' between residents' travel behaviours and the expectations of planners. As an example, it is expected that people who live in a high–density location with good public transport and nearby facilities will use public transport, walk or cycle. In some areas this match between residents' travel behaviour and the planners' expectations is congruent. However, this is not always found with people living in suburban areas still using their vehicle for various personal reasons based on a range of perceptions about their locality and the services provided. Understanding perceptions is important for the facilitation of behaviour change and has been reported to affect both walking (Gebel, Bauman, Sugiyama & Owen, 2011; Koohsari et al., 2015) and cycling behaviour (Ma, Dill & Mohr, 2014).

A common feature of a number of behaviour change theories is that they are based on the beliefs held that underpin the behaviour (Ajzen & Albarracin, 2007). One of the most commonly applied theories (Glanz & Bishop, 2010) is the Theory of Planned Behaviour (TPB; Ajzen, 1991) and its predecessor the Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1975). The TRA and TPB are based on an intention to undertake a behaviour being the predictor of that behaviour.[1] Underpinning intention are attitudes towards the behaviour, normative aspects of the behaviour and in the TPB (but not the TRA) control over the behaviour. These constructs are all underpinned again by the beliefs of the individual. The TPB has been used in a variety of investigations of travel behaviour and interventions to alter behaviour (Bamberg, Hunecke & Blobaum, 2007; Bamberg & Schmidt, 1998; Bamberg, Ajzen & Schmidt, 2003; Bamberg, Hunecke & Blobaum, 2007). The TPB is parsimonious (Fishbein, 2000), which makes it easy to use for both the prediction

and understanding of behaviour. Other theories often used in behaviour change are the Health Belief Model (HBM), which can apply to travel behaviour change, specifically through the sub-variables of perceived benefits, perceived barriers, cues to action and self-efficacy; and the Stages of Change Model (SCM), which can be used when attempting to change travel behaviours.[2] The SCM includes stages from pre-contemplation (for example, only use the car) through to maintenance (regular public transport use) whilst acknowledging that behaviour change can be a continuous cycle that also allows for regression back to the pre-contemplation stage (Department of Health, 2004). Efforts to place travel behaviour change into behaviour change theories have been made by Van Acker, Van Wee and Witlox (2010), who developed a conceptual model partly based on the TRA and TPB. Such efforts link the contextual aspect of travel behaviour to general behaviour change models. The Van Acker et al. model requires further research to establish its usefulness against the general behaviour models such as the TPB. Although this chapter focusses on the mainstream behaviour change theories, there are new theories being developed that may be useful in future transport behaviour research. One of these theories is the Unified Theory of Acceptance and Use of Technology (UTAUT). As technology plays an increasing role in daily life, it is relevant to consider such new theories. The UTAUT is based on the TRA and TPB and the technology acceptance model, TAM (Tan, 2013; see Venkatesh, Morris, Davis & Davis (2003) and Williams, Rana, & Dwivedi (2015) for reviews of this model). Like all new theories, the UTAUT needs to be tested across a number of contexts with a view to better explaining its usefulness. Often these tests include additional variables and recently Venkatesh, Thong and Xu (2012) added three new constructs into UTAUT: hedonic motivation, price value and habit.

MOVING PEOPLE TOWARDS TRAVEL BEHAVIOUR CHANGE

One key to moving people towards travel behaviour change is that the change must be relevant for the individual. Ampt (2004)

presented a view that instead of focussing on policy-makers' goals, voluntary behaviour change needs to focus on the values of the people whose behaviour they would like to change. Information and money do not always motivate behaviour change (Halpern et al., 2004). Monetary savings may or may not be important to some individuals. Similarly using public or active transport may result in protecting the environment or getting more exercise, however, for some people these aspects may not be important and individual relevance is important for successful behaviour change. Travel behaviour can be habitual (Bamberg, Ajzen & Schmidt, 2003) and habitual behaviours are difficult to change even when there is an intention to do something different (de Vries, Aarts & Midden, 2011). Habits may be more easily changed when circumstances change (Ker, 2004). When motivating people to change their behaviour, knowledge of the Stages of Change model is useful for designing interventions that are likely to be more successful.

Managing behaviour change has an extensive literature base across a large number of contexts and several features regularly appear regarding advice on managing and changing behaviours. Decisions about what is to change need to be made, followed by how acceptance of the change can be facilitated (Kirkpatrick, 2005). People are often resistant to change and need knowledge, skills, and attitudes that enable the new behaviour (Kirkpatrick, 2005). Self-efficacy, the belief that one can make the change, is important (Lippke, Wiedemann, Ziegelmann, Reuter & Schwarzer, 2009). Placing this into the context of travel behaviour, information about travel options needs to be accompanied by a motivating factor for change and this motivation may not be the same for all community members. Information accompanied by 'how to change' and 'why one should change' is more effective than information alone.

A range of choices may assist in the development of behaviour change that can be facilitated by some key principles summarised in Ampt (2004). These principles include the effects of lifestyle and core values, personal gain, perceived ease of the change and

an ability to see the effects of the change. Additionally, recognition from others for making the change and seeing that others are also making the same change play a role. The targeting of households rather than individuals may also be useful (Stopher, Moutou & Liu, 2013). This suggestion is based on the interconnectedness of the individuals within the household and the ability of each to influence and support others. Effective communication between individuals can promote behaviour change in others. Such communications are the most sustainable way in which to spread the message of behaviour change. The framing of the behaviour may also affect how it is perceived. Messages can be framed in positive or negative terms and, although the expected outcome may be the same, people can interpret the messages differently and react differently to them (Gallagher & Updegraff, 2012). Communication between individuals has two effects: it reinforces the behaviour of the messenger and informs the receiver of the message of alternative behavioural options.

In summary, interventions are often based on some, but not all, aspects of a particular theory. In some instances the theory is complex and contains some elements that may be incompatible; for example, in the TPB habit and intention are not compatible. Each behaviour change intervention needs to be understood and the drivers of different behaviours applied in the appropriate circumstances. This makes behaviour change complex and often idiographic in terms of time, place and population targeted. Choosing the most appropriate theory for a set of circumstances is no easy task with a number of theories containing similar elements (Lippke & Ziegelmann, 2008b).[3]

INTERNET, SMART DEVICES AND BEHAVIOUR CHANGE

A modern text on any subject matter needs to consider the effects of the internet and smart devices, which have become popular and are now used extensively. The use of the internet has expanded since its inception (Haythornthwaite & Kendall, 2010) with it

being used for a variety of purposes, including tourism and travel (Buhalis & Law, 2008; Eriksson, 2014). The expansion of smart phones and other devices has also increased the personal use of internet searches with users using the search functions on these phones more often than search functions on personal computers (Ghose, Goldfarb & Han, 2013). In such an environment it is important that public transport provides information easily accessible through mobile devices. The Public Transport Authority in Perth has a range of information on its website (www.transperth.wa.gov.au) including journey planning, live updates on services, planned service alterations and a range of services that ensure that any traveller wishing to use the public transport service in Perth can plan ahead and know what to expect. There is also a Twitter facility to enable immediate communication. These services are available from personal computers, tablets with internet connection and smart phones. The provision of such information enhances the opportunity for individuals to change their behaviour to use public transport. Additionally, there are plans to trial Wi-Fi on Perth transport (Public Transport Authority, 2015), with a view to increasing the use of public transport by younger travellers. A range of applications available for use on smart devices can support and enhance public transport and active transport use.

The remainder of this chapter reports on interviews and focus groups conducted with community members in relation to their beliefs about public transport and their actual travel behaviour; that is, their use of active transport, public transport and driving their private vehicle. Participants also provided their thoughts or intentions on moving to active transport or public transport. The rationale for the research is based in understanding what might facilitate greater use of public or active transport. Both the TRA/TPB and HBM are based on the beliefs of those whose behaviour it is desired to change. Hornik and Woolf (1999) indicated that three key questions need to be asked. These are: Are there many people with the 'wrong' views or beliefs about the subject matter?

Does the belief link to the behaviour? Can the belief be altered through an educational campaign?

METHODOLOGY OF THE RESEARCH

Recruitment of Participants and General Information About the Conduct of the Interviews

A flyer was posted on various notice boards in a variety of locations, such as local libraries and shopping centres. Flyers were also emailed to community groups known to the researchers. Individuals and groups were asked to contact the researchers if they were interested in participating. Participants were invited to ask friends and others known to them if they would like to participate (a snowballing technique that was also utilised to attract participants). The flyer sought participation in either an individual interview or focus group. The initial responses were for an interview with the researchers using personal contacts to develop focus group participation, which followed a similar snowballing effect with contacts bringing friends and colleagues to the group sessions.[4] No incentive was provided to participants for their attendance.

Twelve people accepted the invitation to participate in an individual interview regarding their travel behaviour and fifteen people participated in two focus groups. The participants formed a convenience sample, that is, there were no specific criteria for participation, except that the individual was aged 18 years or older. Participants differed in age (ranging from twenty to seventy-four years), gender, suburb in which they lived and in the nature of their employment (stay at home carers, trades people and professionals), providing for a wide range of beliefs and transport use. Of the twenty-seven participants all had used public transport at some time, however, only two were regular (daily) public transport users and another three were regular active transport users.

A semi-structured interview schedule was developed to guide the interviews and focus groups, however, the participants

were encouraged to provide their own perspective, experience and responses to the subject. Four key areas were included in the interviews: general beliefs about public transport; current public transport behaviour and barriers to public transport use; participants' current driving behaviour; and potential transport behaviour changes. Interviews were digitally recorded with the participants' permission to aid analysis.

DATA ANALYSIS

Thematic analysis was used to understand the beliefs of the interviewees and focus group participants. This interpretative approach to qualitative data analysis is often used to explore interview data and other forms of data that does not involve numbers (Guest, MacQueen & Namey, 2012). Although four key areas had been established for investigation, the trends, themes and ideas in the data were developed through careful analysis of the words of the interviewees and participants (Guest et al., 2012). Space constraints preclude the inclusion of direct quotes from participants, which can be a feature of, and substantiation for, the themes developed.

FINDINGS FROM THE FOCUS GROUP

General Beliefs About Public Transport

A prime belief was that public transport is a good option if travelling to the central business district (CBD) for work or to a special event, such as a sporting match or concert. There were clear differences in the beliefs of those who used public transport and those who did not. Those who did use it reported that Perth's public transport system was clean, cost effective, efficient, easy to use and reliable, unless there was an unusual incident (breakdown). Conversely, those who did not regularly use public transport believed it to be time consuming, expensive, dirty, unsafe, inconvenient, unreliable and that services were infrequent. This fits with Hornik and Woolf's (1999) first two questions of people

having the 'wrong' belief about public transport and the belief linking to the behaviour. Eliciting such beliefs enables aspects of the TPB to be used in further research on this topic.

Participants' Current Public Transport Behaviour and Barriers to Public Transport Use

A small number of interviewees regularly used public transport and others indicated that they would consider using it depending upon the circumstances. Barriers to use included having to use multiple modes or transfer from one mode to another, for example, taking a bus to get a train and then another bus. Those who lived close to the train line were more inclined to use public transport than others, despite feeder buses from many suburbs to the train station. This may indicate that frequency of service is as important as coverage.

Walking to the train station was not considered useful and the weather (winter or summer) provided additional reasons for this (too wet or too hot). Professionals carrying laptops and work files also resisted the idea of using public transport as the items they carried were often heavy or unwieldy. Parking at train stations is often limited and difficult. Using public transport was also considered 'too hard' if the person needed to go to more than one place; that is, to make multiple visits for a number of purposes. One mother indicated that public transport would be used for a trip or fun day out for her children, but was not convenient for everyday use. A further barrier to use was exposure to the elements in both summer and winter. The openness of many train and bus stations and lack of shelters at bus stops was raised. Winter weather in particular was mentioned, most likely due to the timing of the research during the winter months, however, lack of shade in the summer at some bus stops may also inhibit usage.

Beliefs about personal safety whilst waiting for public transport, travelling on public transport and walking to a destination from public transport (especially on trips home when there are few other people around) provided a further barrier. Several

participants indicated that specific stations and routes were known to be unsafe and suggested increased policing to ensure public safety and increase public transport use. Again, the beliefs expressed here can be related to the Health Belief Model, in particular perceived barriers to change, enabling future research to consider application of the HBM to potential interventions.

Participants' Current Driving Behaviour

The majority of participants drove a vehicle on at least some occasions, even those who regularly used public transport. Despite 90 per cent of participants admitting they got angry or stressed whilst driving, this was not a disincentive to drive rather than take public transport. Participants who lived further away from the city resigned themselves to traffic congestion more so than those who lived within 10 kilometres of the city. Participants reported that their private vehicle provided them with a freedom that they believed they would not have if they relied on public transport.

Potential Transport Behaviour Changes

For a number of participants, there were no intentions to amend their travel behaviour in the short term, revealing pre-contemplation in the Stages of Change Model. The majority of participants acknowledged that there may be benefits of using public or active transport, but for a variety of reasons, it was not feasible right now. This partly relates to the life cycle of some participants and a variety of contextual needs, such as escorting children to a variety of locations (day care, primary school, secondary school) and then to a variety of after-school activities. It was interesting that a number of participants had lived in Sydney, and whilst in Sydney they used public transport, travelling for over one hour to work. These people, however, were adamant that they would not use public transport to travel to work in Perth as the suburb in which they lived was about a fifteen-minute drive, but took over an hour on public transport and would require multiple modes of transport, for example, bus, train, bus. This reveals multiple barriers to the

use of public transport by certain segments of the community. The difference between using public transport in Sydney compared to Perth appeared to be based on the time differences and one mode of transport. In Sydney the drive to work would have taken at least the same time as using public transport, if not slightly longer, whereas in Perth, the participants could drive to work in fifteen minutes (and without parking hassles). Furthermore, transferring between bus, train, bus was an additional problem.

DISCUSSION

This chapter has focussed on voluntary behaviour change, which requires individuals to see a need for change and to be motivated to make changes. The chapter presented several general behaviour change theories (TPB, HMB, SCM and UTAUT) used in domains, including travel, as they may be contextualised for travel behaviour and interventions underpinned by theory are generally more successful than those interventions that are atheoretical. The majority of these behaviour change theories are based on the beliefs of individuals and to this end the chapter included recent research data from both individual interviews and focus groups that revealed the beliefs of Perth residents about public transport in Perth. The findings of this research revealed that individuals have a range of beliefs about public transport and those with negative beliefs were less likely to have recently used public transport. The findings are underpinned by the TPB and HBM theories in relation to beliefs and the Stages of Change theory in relation to readiness to change travel behaviour. There appear to be a number of people who have incorrect beliefs about public transport and these individuals do not use public transport, linking their beliefs to their behaviour. Hornik and Woolf (1999) asked researchers to consider if incorrect beliefs could be altered through an educational campaign. The response to this question is both yes and no; an education campaign can provide knowledge but not experience of the

public transport system. Additionally, participants indicated that lifestyle and the context in which they were travelling made a difference to their decisions. For example, professionals were more reluctant to change from driving to work as a result of the effort required to carry laptops and work files. Mothers with a number of children considered it too difficult to use any other form of transport apart from their vehicle. In one case active transport (walking) was the regular mode of transport. However, some but not all individuals who mostly drove their vehicle did indicate that under different circumstances they would consider using public or active transport, an issue raised by Taylor (2007). There were several participants who were adamant that they would not use public transport, mostly because they considered it to be inconvenient to their current lifestyle. These are the circumstances in which knowledge of the Stages of Change model are useful for those designing interventions.

To reduce private vehicle use in Perth may take some time as some of the beliefs expressed by participants in this small sample appeared to be quite entrenched against changing their preferred mode of transport to anything other than their own vehicle.

Recommendations from the research for those seeking to increase public transport and active transport usage include:

1. Providing further public education and knowledge. The Public Transport Authority in Perth needs to educate the public about the positives of public transport and encourage those who use public transport to positively influence others by relaying their positive experiences.

   Extend social media and access to information through the website and availability on a range of electronic devices to enhance dissemination of information. The proposed provision of Wi-Fi on public transport may support increased patronage.

2. Reviewing connections between modes of transport and conveying this information to the public. Convey the ease of travelling around the area using different modes to address the negative perception of a lack of connections, which was an inhibitor for public transport use.
3. Using lifestyle and stage of life in marketing. Ensure marketing includes different lifestyles, beliefs and stages of life to make public transport use relevant and important to more individuals/groups.
4. Integrating public transport with active transport. Develop a focus on integrating public transport with active transport to encourage further use.

ACKNOWLEDGEMENTS

Appendix

This appendix is designed to summarise some concepts and variables that require consideration when endeavouring to change behaviour using the theories cited in this chapter. A behaviour is the result of individual differences (for example, belief, perceptions, attitude), the environment (both social and structural) and the context in which the behaviour is to be enacted.

Variables in the Theory of Planned Behaviour (TPB)
- Attitude towards the behaviour
- Norms regarding the behaviour
- Perceived Behavioural Control about the behaviour

These are underpinned by the individual's beliefs and lead to the intention to complete or avoid a particular behaviour.

Variables in the Health Belief Model (HBM; some are less relevant to travel behaviour)
- Perceived susceptibility to negative consequences
- Perceived severity of the consequences

These variables lead to a perceived threat to wellbeing:
- Perceived benefits of changing behaviour;
- Perceived barriers to changing behaviour;
- Cues to action; and
- Self-efficacy.

Like the TPB, the HBM is based on beliefs or perceptions.

Six Stages of the Stages of Change Model (SCM)
- Precontemplation
- Contemplation
- Determination
- Action
- Maintenance of the behaviour
- Relapse

This model is often displayed as a cyclical model and individuals who do relapse may re-enter the process at any stage.

Unified Theory of Acceptance and Use of Technology (UTAUT)

This theory includes four key variables that are very similar to those within the TPB with more recent research adding another three:
- Performance expectancy – degree to which using a technology provides benefits to users;
- Effort expectancy – degree of ease in using the technology
- Social influence – extent to which users are influenced by important others in the use of technology
- Facilitating conditions (specificity) – perceptions of the support and resources available.

The three new constructs for UTAUT:
- Hedonic motivation
- Price value
- Habit

Other aspects that may affect the potential for behaviour change:
- Habitual behaviours, which are more difficult to change.
- Whether the behaviour is affected by knowledge (cognition) or by emotion?

Habitual behaviours may require intense and long-lasting interventions to support behaviour change. Knowing whether behaviour is affected only by knowledge or by both knowledge and emotion can assist in the development of appropriate interventions.

All these behaviour change models benefit from an initial investigation of the beliefs and knowledge that underpin the potential attitudes, social norms, and self-efficacy (or perceived behavioural control). These constructs lead to the intention to undertake a particular behaviour which is considered to be the precursor to actual behaviour. A useful methodology for undertaking research to access such beliefs is the conduct of focus groups as this allows the researchers to explore the topic under investigation with a small group (or groups) of individuals.

NOTES

1 A summary of concepts and variables is included in the Appendix.
2 The reader seeking more information on behaviour change models is referred to a number of useful references for a range of models not addressed in this chapter, such as Abraham & Sheeran (2005), Ajzen (1991), Halpern et al. (2004) and Sutton (2005).
3 Brief details of each of the three models presented above are included in the Appendix at the end of the chapter.
4 Ethics approval was granted by the Human Research Ethics Committee of Edith Cowan University.

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