Theories and Models of Behaviour Change

The following review explores and considers some of the major theories of behaviour and behaviour change that may be pertinent to the development of effective interventions in travel behaviour, including theories and concepts from mainstream psychology, and the associated sub-disciplines of health, leisure, recreation, physical activity and exercise psychology.

For many years conceptual models of behaviour change, such as Bandura's Social Cognitive Learning Theory (1986), Becker's Health Belief Model (1974), Azjen and Fishbein's Theory of Reasoned Action (1975); have been applied across a wide variety of disciplines, including travel and road user behaviour.

Considerable attention has been given in the literature to models of individual behaviour change per se – but much less attention has been given to models or theories that attempt to understand behaviour change within groups, organisations and whole communities. The design of programs to reach populations requires an understanding of how those communities work, their barriers and enablers to change, and what influences their behaviours in general.

Stage Theories of Behaviour Change

Mounting evidence suggests that behaviour change occurs in stages or steps and that movement through these stages is neither unitary or linear, but rather, cyclical, involving a pattern of adoption, maintenance, relapse, and readoption over time.

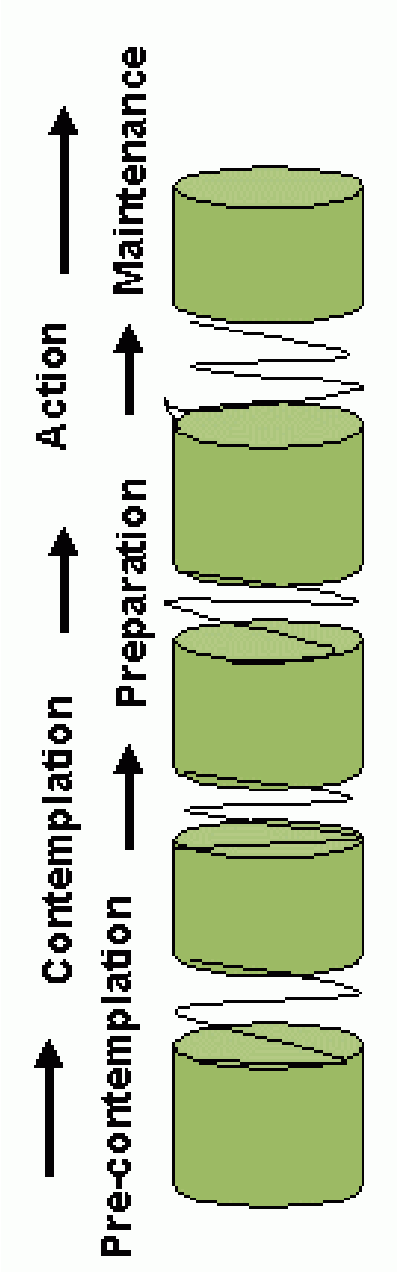
The work of Prochaska and DiClemente (1986) and their colleagues have formally identified the dynamics and structure of staged behaviour change. In attempting to explain these patterns of behaviour, Prochaska and DiClemente developed a transtheoretical model of behavioural change, which proposes that behaviour change occurs in five distinct stages through which people move in a cyclical or spiral pattern.

The first of these stages is termed precontemplation. In this stage, there is no intent on the part of the individual to change his or her behaviour in the foreseeable future. The second stage is called contemplation, where people are aware that a problem exists and are seriously considering taking some action to address the problem.

However, at this stage, they have not made a commitment to undertake action. The third stage is described as preparation, and involves both intention to change and some behaviour, usually minor, and often meeting with limited success.

Action is the fourth stage where individuals actually modify their behaviour, experiences, or environment in order to overcome their problems or to meet their goals. The fifth and final stage, maintenance, is where people work to prevent relapse

and consolidate the gains attained in the action stage. The stabilization of behaviour change and the avoidance of relapse are characteristic of the maintenance stage.



MAINTENANCE: practice required for the new behaviour to be consistently maintained, incorporated into the repertoire of behaviours available to a person at any one time.

ACTION: people make changes, acting on previous decisions, experience, information, new skills, and motivations for making the change.

PREPARATION: person prepares to undertake the desired change - requires gathering information, finding out how to achieve the change, ascertaining skills necessary, deciding when change should take place - may include talking with others to see how they feel about the likely change, considering impact change will have and who will be affected.

CONTEMPLATION: something happens to prompt the person to start thinking about change - perhaps hearing that someone has made changes - or something else has changed - resulting in the need for further change.

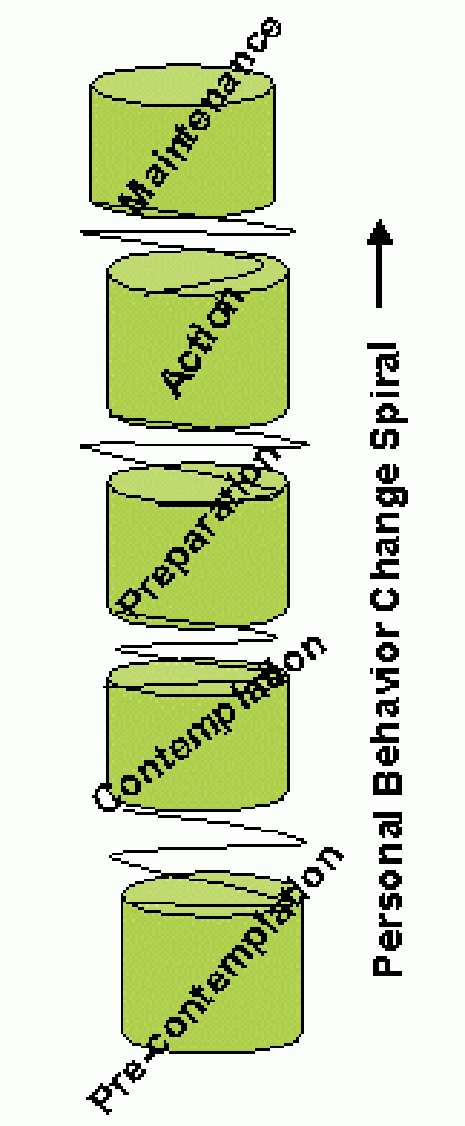
PRECONTEMPLATION: changing a behaviour has not been considered; person might not realise that change is possible or that it might be of interest to them.

Source: The Behavior Change spiral from "What do they want us to do now?" AFAO 1996

Prochaska and DiClemente further suggest that behavioural change occurs in a cyclical process that involves both progress and periodic relapse. That is, even with successful behaviour change, people likely will move back and forth between the five stages for some time, experiencing one or more periods of relapse to earlier stages, before moving once again through the stages of contemplation, preparation, action and eventually, maintenance. In successful behavioural change, while relapses to earlier stages inevitably occur, individuals never remain within the earlier stage to

which they have regressed, but rather, spiral upwards, until eventually they reach a state where most of their time is spent in the maintenance stage.

Further work undertaken and reported by Prochaska et el (1992) suggests that behaviour change can only take place in the context of an enabling or supportive environment.



SOCIAL FEATURES
- nature of personal relationships; expectations of class, position, age, gender; access to knowledge, information.

CULTURAL FEATURES
- the behaviours and attitudes considered acceptable in given contexts - eg. relating to sex, gender, drugs, leisure, participation.

ETHICAL & SPIRITUAL FEATURES
- influence of personal and shared values and discussion about moral systems from which those are derived - can include rituals, religion and rights of passage.

LEGAL FEATURES
- laws determining what people can do and activities to encourage observance of those laws .

POLITICAL FEATURES
- systems of governance in which change will have to take place - can, for example, limit access to information and involvement in social action.

RESOURCE FEATURES
- affect what is required to make things happen - covers human, financial and material resources; community knowledge and skills; and items for exchange

Source: The Behavior Change spiral from "What do they want us to do now?" AFAO 1996

Prochaska's and DiClemente's model has received considerable support in the research literature. Their model has also been shown to have relevance for understanding, among other things, patterns of physical activity participation and adherence and would have relevance in bringing about change in travel behaviours.

Consistent with the above perspective, Sallis and Nader (1988) also have suggested a stage approach to explaining movement behaviour, particularly in family groups, with research aimed at understanding better the cyclical patterns of movement activity

involvement, including adoption, maintenance, and relapse, and interventions aimed at minimizing the amount of time individuals spend in the relapse stage as well as maximizing time spent in action or maintenance.

This stage approach is contrasted to the "all or none" approach to physical activity participation that often characterized early research on exercise adherence.

Such a staged approach sits well with any school based program that is focussed on travel behaviour change – given that the context in which the program is to be applied would see fluctuations in the positive and negative influences according to such things as work and time demands of family members, weather, events or incidents in the local neighbourhood that may influence perceptions of safety.

Parallel with the work of Prochaska and DiClemente, Rogers, (1983) also developed a stage-based theory to explain how new ideas or innovations are disseminated and adopted at the community and population levels. Rogers identified five distinct stages in the process of diffusion of any new initiative or innovation. These are knowledge, persuasion, decision, implementation, and confirmation. Rogers argued that the diffusion of an innovation is enhanced when the perceived superiority of an innovation is high compared to existing practice (i.e. the relative advantage), and when the compatibility of the innovation with the existing social system is perceived to be high (i.e. compatibility).

Other important influences on the diffusion process are said to be complexity, triability, and observability, with innovations which are of low complexity, easily observed, and that are able to be adopted on a trial basis, being associated with greater adoption and swifter diffusion. Building success and comfort during the early stages of the implementation of the TravelSMART Schools program will be paramount to its success.

Rogers classifies individuals as innovators, early adopters, early majority, late majority, late adopters, and laggards, dependent upon when during the overall diffusion process they adopt a new idea or behaviour. While this model has not been tested empirically to date, it has been adapted and applied in health promotion settings usually in conjunction with social learning theory and/or self-efficacy theory, with some success. It certainly warrants attention in the development of the TravelSMART Schools program.

In summarizing the various stage models of behaviour change that have been proposed over the past two decades, Owen and Lee (1984) highlighted a number of commonalties they share.

These authors propose an integrated stage-based model in which behaviour change is viewed as a cyclical process that involves five stages of:

1. awareness of the problem and a need to change
2. motivation to make a change
3. skill development to prepare for the change
4. initial adoption of the new activity or behaviour, and
5. maintenance of the new activity and integration into the lifestyle.

In terms of a TravelSMART program this may mean:

Five stages of behaviour change	Examples of content and processes
• Awareness of the problem and a need to change	Provision of, or ways to seek information on the dependence on motorised travel; evidence of the greenhouse effect; issues relation to building relationships and fitness
• Motivation to make a change	Benefits of increased personal fitness; benefits of leaving the car at home – eg. environmental and social
• Skill development to prepare for the change	Mapping of the local area to identify alternative forms of travel, ways to negotiate with reluctant family members or peers to manage the need to carry; strategies for trip chaining and travel blending
• Initial adoption of the new activity or behaviour	Self monitoring of newly adopted behaviours to, opportunities for reflections and comparisons
• Maintenance of the new activity and integration into the lifestyle	Provision of feedback on how the change is going, and an injection of new ideas or strategy

An important aspect of both Prochaska's and DiClemente's approach and that suggested by Owen and Lee is that each of the five stages of behaviour change is said to involve different cognitive processes and require different treatments or intervention strategies for the overall change process to be successful. Prochaska and DiClemente (1992) outlined a number of cognitive change processes that have been found to be associated with each stage.

Other researchers also propose that different stages in the change process require different intervention strategies, and generally recommend a multifaceted, community-based approach to intervention in which all stages are addressed so that individuals at all stages of "readiness for change" can potentially be influenced. This sits well with the overall TravelSMART programs – TravelSMART Communities, TravelSMART Workplaces and TravelSMART Schools.

A major insight offered by stage theories of behaviour change, then, is the emphasis they place on matching interventions to the stage of readiness of the individual. This kind of approach provides an excellent framework for understanding and examining individual differences in motivation for, and involvement in, change in travel behaviours over time, including patterns of initiation, maintenance, relapse, and resumption.

In summary, theories that conceptualise behaviour change in terms of a cyclical process through which individuals move in stages, have received empirical support in the research, and appear to offer much promise for understanding travel behaviours and curricula to bring about changes in travel behaviour.

A major strength of the Stages of Change model is that it has also been used in conjunction with a variety of other theories and models that are relevant to different levels of influence at an intrapersonal, interpersonal, institutional, community or public policy level. (Glanz and Rimer (1995) as reported by Oldenberg et al (1999))

Social Cognitive-Behavioural Theories and Similar Theories

Social Cognitive Theory explains human behaviour in terms of a triadic, dynamic and reciprocal model in which behaviour, personal factors, and environmental influences interact. It addresses both the psychological dynamics underlying behaviour and their methods for promoting behaviour change. It is a very complex theory and includes many key constructs. Self-efficacy is one of the key concepts.

Self-efficacy refers to one's confidence in the ability to take action and persist in action. It is seen by Bandura (1986) as perhaps the single most important factor in promoting changes in behaviour. Measures of self-efficacy and some of the other key concepts from Social Cognitive Theory have also been identified as key determinants of movement through the stages of change, (Oldenburg, 1999).

Self-efficacy expectations have been found repeatedly to be important determinants of:

a. the choice of activities in which people engage
b. how much energy they will expend on such activities and
c. the degree of persistence they demonstrate in the face of failure and/or adversity.

In general, higher levels of self-efficacy for a given activity are associated with higher participation in that activity.

Similarly, and closely aligned to Social Cognitive Theory, Attribution Theory proposes that individuals generally view their performance (and thus, their successes and failures) as dependent upon ability, effort, task difficulty, and luck. In addition, causal influences are seen as either internal to the individual (e.g. personal ability), or external (e.g. barriers to community safety, lack of convenient and attractive travel alternatives).

The distinction between internal and external attributions is an important one, in that how we attribute our personal successes and failures has been shown to be related to not only our behaviour, but our self-esteem, our perceptions of personal control, our self-efficacy for different tasks and/or performance situations, and our ongoing involvement in different activities.

For example, a person who attributes their failure to change their dependence on motorised travel to their inherent lack of ability to identify and use alternatives will be less likely to continue with the alternative modes of travel after the educational program has ceased.

A person's attributions for personal success and failure in a given situation, then, determines how that person feels about the task, as well as the amount of effort he or she is likely to invest in the task the next time around. When failure is attributed to low personal ability and a difficult task, individuals are more likely to give up sooner, select easier alternatives, such as using personal motorised travel, and lower their goals. Conversely, when failure is attributed to external factors such as bad luck, individuals are likely to have higher motivations to continue and to try again for success.

Attitudes and their potential relationship to behaviour also have been studied extensively. In general, attitudes have not generally been found to be consistently related to behaviour. This failure to demonstrate a consistent relationship between attitudes and behaviour may be because situational factors also exert a powerful influence on behaviour. In addition, how attitudes have been defined and measured in different studies varies considerably.

Research has demonstrated consistently that an attitude is likely to predict behaviour when:

- the attitude includes a specific behavioural intention
- when both the attitude and the intention are very specific and
- when the attitude is based on first-hand experience .

These aspects of the behaviour-attitude relationship have been addressed in the Theory of Reasoned Action, which focuses on the role of context-specific attitudes in defining behaviour. In this model, behaviour is seen as a function of a person's intention, which in turn is comprised of the individual's attitudes towards performing the behaviour and the influence of perceived social norms concerning the performance of the behaviour. Attitudes are affected by the person's beliefs about the perceived consequences of performing a given action, and his or her subjective evaluation of each of the consequences.

Drawing this together, any published individually focused and community based health behaviour change and health promotion programs have generally been based on Social Cognitive theories utilising techniques that emphasise the cognitive and social mediators of behaviour. Interventions based on cognitive learning theory emphasize self-management principles and strategies.

Other Theories to Consider

Personality Theories

Personality theories explain behaviour largely in terms of stable traits or patterns of behaviour which are viewed as resistant to change and inalterable. Rogers', (1985), classification of individuals into the five categories of innovators, early adopters, early majority, late majority, late adopters, and laggards is an example of this kind of approach to understanding behaviour.

A major limitation of personality theories is that they do not take account of important aspects of the physical, social and economic environments, or the previous experiences of the individual, which also are known to strongly influence behaviour. For this reason, personality theories alone now are generally considered inadequate to explain behaviour change.

Learning and Behaviour Theories

Learning theorists have demonstrated that behaviour can be changed by providing appropriate rewards, incentives, and/or disincentives. In learning or behaviourist approaches, these rewards and incentives are typically incorporated into structured reinforcement schedules, and the process of behaviour changes is often termed behaviour modification.

While effective in bringing about behaviour change, such approaches require a high level of external control over both the physical and social environment, and the incentives (or disincentives) used to reinforce certain behaviours and discourage others. This kind of control is hard to maintain in real life settings, and thus, strict behaviourist approaches are subject to a number of limitations.

Social Learning Theory

Social learning theory is similar to learning and behaviour theories in that it focuses on specific, measurable aspects of behaviour. Learning theories, however, view behaviour as being shaped primarily by events within the environment, whereas social learning theory views the individual as an active participant in his or her behaviour, interpreting events and selecting courses of action based on past experience.

Again, one important theory deriving from social learning theory which has had a major impact on many current models of behaviour change is that of self-efficacy. As stated earlier, self-efficacy expectations have to do with a person's beliefs in his or her

abilities to successfully execute the actions necessary to meet specific situational demands. Such expectations have been found to be consistently related to behaviour across a wide range of situations and populations sub-groups.

Social Psychological Theories

Social psychological theories are concerned with understanding how events and experiences external to a person (i.e. aspects of the social situation and physical environment) influence his or her behaviour.

Emphasis is placed on aspects of the social context in which behaviour occurs, including social norms and expectations, cultural mores, social stereotypes, group dynamics, cohesion, attitudes and beliefs. A number of useful concepts have emerged from social psychological theories, including attribution, locus of control, and cognitive dissonance, to name a few.

Social Cognitive Approaches

Social cognitive approaches combine aspects of social psychological theories with components of both social learning theory and cognitive behavioural approaches. Social-cognitive approaches emphasize the person's subjective perceptions and interpretations of a given situation or set of events, and argue that these need to be taken into account if we are to understand adequately both behaviour and the processes of behaviour change.

A number of social psychological concepts have been found to be consistently related to behaviour change across a wide range of situations. For example, the social reality of a the group (e.g. peer group, school group, family group etc.) will affect an individual's behaviour. All groups are characterized by certain group norms, beliefs and ways of behaving, and these can strongly affect the behaviour of the group members.

Expectations of significant or respected others can also have a strong influence on a person's behaviour. This phenomenon has been most consistently demonstrated in the early research on self-fulfilling prophecies, which showed that teachers' expectations of their students were consistently related to the students' subsequent performance, even when these expectations were based on falsified information. Thus, support and encouragement, or conversely, low expectations from significant or respected others, can affect and bring about, (or not), changes in individual behaviour.

Health Belief Model

The Health Belief Model attempts to explain health-behaviour in terms of individual decision-making, and proposes that the likelihood of a person adopting a given health-related behaviour is a function of that individual's perception of a threat to their personal health, and their belief that the recommended behaviour will reduce this threat.

Thus, a person would be more likely to adopt a given behaviour (e.g. walk or cycle regularly) if non-adoption of that behaviour (e.g. unclean air or confused traffic situations) is perceived as a health threat and adoption is seen as reducing that threat. To date, the Health Belief Model has not received consistent or strong support in explaining behaviour change. When the concept of self-efficacy is added to the model, however, prediction of behaviour increases.

Social Marketing

Another approach that has been used to bring about behaviour change is that of social marketing. The concept of social marketing is based on marketing principles and focuses on four key elements, including:

1. development of a product
2. the promotion of the product
3. the place
4. the price.

As such, this approach is not so much a theory of behaviour change but a proposed framework, which situates people as "consumer" who will potentially "buy into" a certain idea or argument, given the appropriate selling techniques are applied. It is then assumed that the "buying in" to that idea by individuals will result in behaviour change.

Theory of Interpersonal Behaviour

Habit strength is another concept that has been found to be important in predicting or changing behaviour. Habit is an important element of the theory of interpersonal behaviour, which proposes that the likelihood of engaging in a given behaviour is a function of:

a. the habit of performing the behaviour
b. the intention to perform the behaviour
c. conditions which act to facilitate or inhibit performance of the behaviour.

In turn, intentions are said to be shaped by a cognitive component, an affective component, a social component, and a personal normative belief. The theory of interpersonal behaviour argues that as behaviours are repeated, they become increasingly automated, and occur with little conscious control. That is, while individuals must first intend to participate in a given behaviour or activity, as the

behaviour or activity is repeated over many occasions, participation becomes habitual and requires little conscious intervention. Driving a car along a familiar street is cited as an example.

To date, this model has not been tested as extensively as have the theory of reasoned action or the theory of planned behaviour. However, major components of the model appear to be consistent with the processes Prochaska and DiClemente to underlie the five stages of behaviour change - i.e. precontemplation, contemplation, and preparation, action and maintenance - and described earlier. In Summary

In addition to stage theories, in the research literature a number of other psychological theories have been proposed for explaining various aspects of human behaviour and behaviour change. While a number of different psycho-social theories and models have been developed over the past decades, these are by no means incompatible with a stage-based approach to understanding behavioural change.

Neither are the major theories used in considering behaviour change incompatible with each other. While each theory tends to offer unique concepts and insights, differences seem to be more a matter of emphasis, focusing on different aspects of behaviour, rather than complete contradictions.

No one theory is right or wrong. Rather, it is a matter of deciding:

(a) which theories and/or concepts have most relevance and usefulness with respect to a given issue or question
(b) at which stage of the overall stage process will the various theories and concepts have most meaning and application.

Other Considerations Relevant to Behaviour Change

In 1991 a Theorists Workshop was held in Washington to identify common elements between the most widely accepted models that are necessary for understanding, predicting and modifying human behaviour (eg. Azjen, Fishbein, Bandura, Becker).

The result of this collaboration was the identification of eight key variables that accounted for most of the variance in any given behaviour. These eight key factors were identified as potential determinants of behaviour. These eight key factors were identified as potential determinants of behaviour and intervention points for behavioural change and included:

- an individual's behavioural intention
- environmental constraints
- skill or ability
- attitude or anticipated outcomes of a given behaviour
- norms
- self standards
- emotional reaction
- self-efficacy.

The theorists concluded that, generally speaking, for a given behaviour to occur, at least one of these eight factors must be true:

1. The person has formed a strong positive intention (or made a commitment) to perform the behaviour
2. There are no environmental constraints that make it impossible for the behaviour to occur
3. The person has the skills necessary to perform the behaviour
4. The person believes that the advantage (benefits, anticipate positive outcomes) outweigh the disadvantages (costs, anticipated negative outcomes) of performing a behaviour
5. The person perceives more social (normative) pressure to perform the behaviour than to not perform the behaviour
6. The person perceives that performance of behaviour is more consistent with his/her self image than inconsistent, or that its performance does not violate personal standards that activate negative self-sanctions
7. The person's emotional reaction to performing the behaviour is more positive than negative
8. The person perceives that her or she has the capabilities to perform the behaviour under a number of different circumstances. That is, they have the perceived self-efficacy to execute the behaviour in question.

The first three factors are viewed as factors "necessary and sufficient" for generating behaviour. That is for a given behaviour to occur, an individual must (a) have strong intentions to perform the behaviour, (b) have the necessary skills to do so and (c) not be restricted by environmental constraints.

The remaining factors are viewed as factors that can actively influence the strength and direction of behavioural intention. That is, these dimensions generate a degree of influence on changes in behaviour. In fact, the theorists argued that an individual will not form strong intentions to perform behaviour unless they perceive the positive outcome of performing the behaviour as greater than the negative or that they have the ability necessary to carry out the behaviour.

Conclusion

In considering the findings from the Theorists Workshop and the research around stage theories, particularly that of Prochaska and DiClemente, the TravelSMART team has a useful framework for:

- positioning the various theories and concepts within those stages within an overall change process
- matching intervention strategies with the stage of "readiness" of the individual.

Additionally, attention will be given to aspects of the physical, economic and social environments that act to constrain or facilitate behaviour.

When developing TravelSMART programs we need to be mindful to:

- Emphasize the positive personal consequences of adopting the new activity or changing the behaviour (rather than general consequences)
- Describe how to minimize any perceived negative personal consequences of the new activity (e.g. time debt, tiredness, lack of personal safety)
- Emphasize the negative effects of not changing the present (travel) behaviour
- Create social pressure to change ways to travel
- Increase people's belief that they have control over their travel-related behaviour
- Provide simple guidelines and information about how to bring about changes in their travel.

The messages and key concepts will be reinforced through a variety of media and transmitted through a range of sources.

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