

Behavioral Change Theories

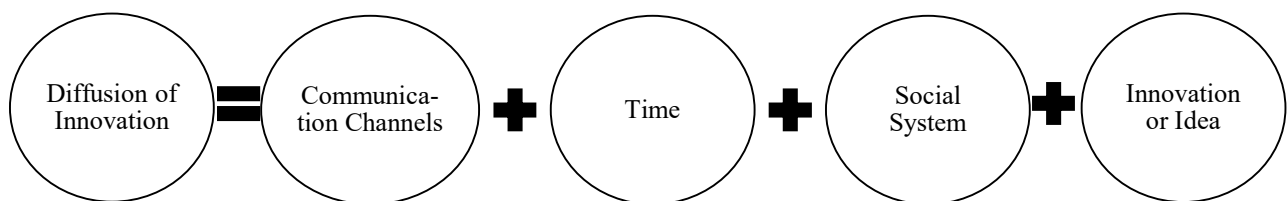
Why should we care about theories of behavioral change? At their most basic, theories describe one view of how something works, in this case, changing behavior. Whether stated explicitly, or only implied, any attempt to change behavior carries with it a view of how behavior works. Examining the common theories of behavioral change provides insight into the underlying logic of programs and actions aimed at changing behavior.

Traffic safety programs are about changing behavior. Unfortunately, few theories of behavioral change directly address traffic safety. However, theories of behavioral change created to address other behaviors and issues are relevant and applicable to traffic safety because they address the fundamental elements of behavioral change. Similarly, few employer-based traffic safety programs are designed based on an explicit theory of behavioral change. The following material provides a brief overview of common behavioral change theories. Examples are provided where available. (Examples include theory-based traffic safety programs or utilize a theory in another way in a study of driver safety.)

Diffusion of Innovation Theory

The diffusion of innovation theory focuses on explaining how an innovation (e.g., idea or behavior) diffuses throughout a population (Rogers, 2010). The theory consists of four components that influence the diffusion of an innovation (see Figure 1):

- The innovation or idea.
- The communication channels used to spread the innovation.
- The time needed for diffusion to occur.
- The social system that influences adoption of the innovation.



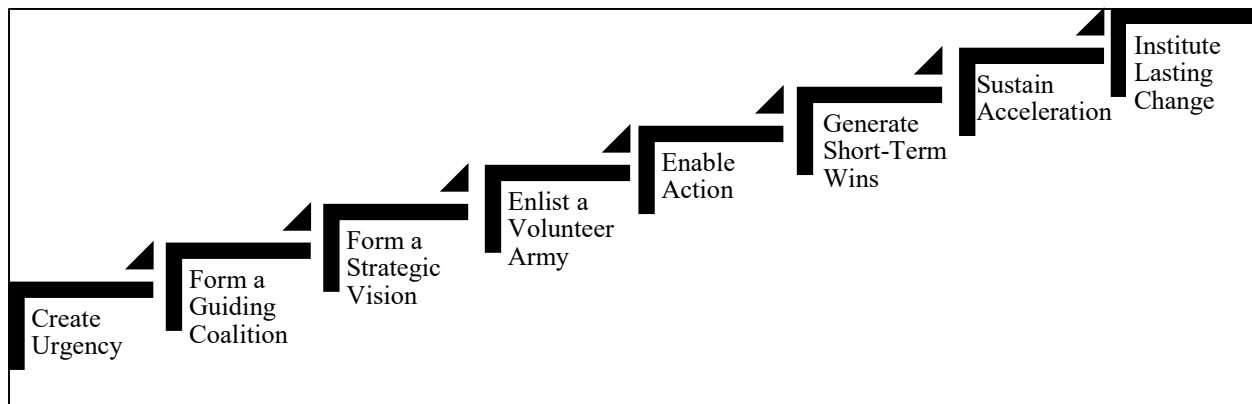
Primary Source: Rogers (2010).

Figure 1. Diffusion of Innovation Theory.

Kotter's 8-Step Change Model

Kotter's 8-step change model is an eight-step organizational change model (Kotter, 1996), the steps of which are shown below (and in Figure 2):

- Create urgency by making employees aware of the existing problem and possible solution.
- Form a powerful coalition with a wide range of skills.
- Form a strategic vision that is easy for all employees to understand.
- Enlist a volunteer army to communicate the vision.
- Enable action by removing obstacles.
- Generate short-term wins through rewards and short-term targets.
- Sustain acceleration by building upon changes.
- Institute lasting change by anchoring changes in organizational culture.



Primary Source: Kotter (1996).

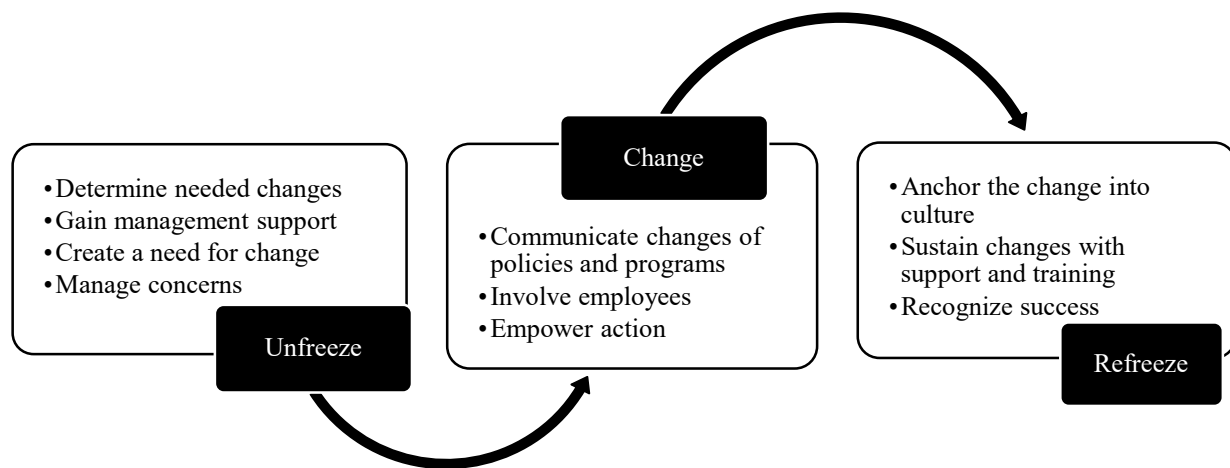
Figure 2. Kotter's 8-Step Change Model.

Example

Sinelnikov, S., & Wells, B. M. (2017). Distracted driving on the job: Application of a modified stages of change model. *Safety Science*, 94, 161–170.

Lewin's Three-Step Change Theory

Lewin's three-step change theory operates on the premise that behavior change is influenced by driving and hindering forces (Lewin, 1951). There are three steps to Lewin's model. The first involves an unfreezing of current behavior and ensuring that individual and group influence promotes change (Schein, 1996). During the second step, behavioral change occurs through programs or policies. Last, there is a refreezing of the new behavior to ensure long-term commitment. Figure 3 shows the stages of Lewin's three-step change theory.



Primary Source: Lewin (1951).

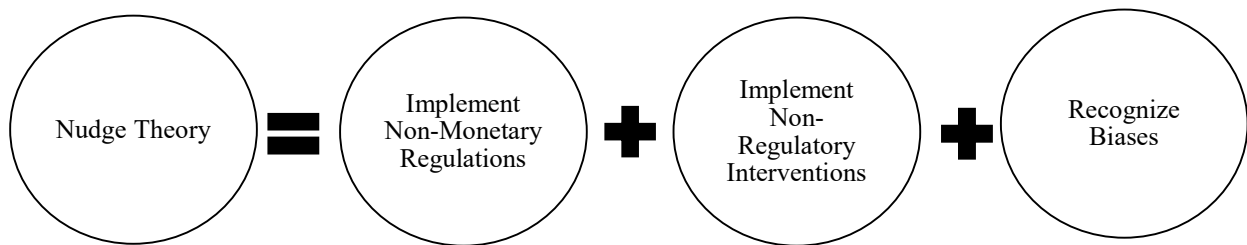
Figure 3. Lewin's Three-Step Change Theory.

Examples

- Geller, E. S., & Hahn, H. A. (1984). Promoting safety belt use at industrial sites: An effective program for blue collar employees. *Professional Psychology: Research and Practice*, 15(4), 553.
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- Salminen, S. (2008). Two interventions for the prevention of work-related road accidents. *Safety Science*, 46(3), 545–550.
- Salminen, S. (2013). *Improving safety during work-related driving among postal van drivers*. Paper presented at the 6th International on Conference Driver Behaviour and Training, Helsinki, Finland.

Nudge Theory

Nudge theory provides a process to influence behavior change without imposing strict regulations (see Figure 4). Recognizing that biases influence a person's likelihood of engaging in behaviors, nudges provide non-monetary and non-regulatory interventions where behavior is gently influenced (Halpern, 2015). This is a cost-effective method that ultimately maintains an individual's freedom to choose his or her behavior.



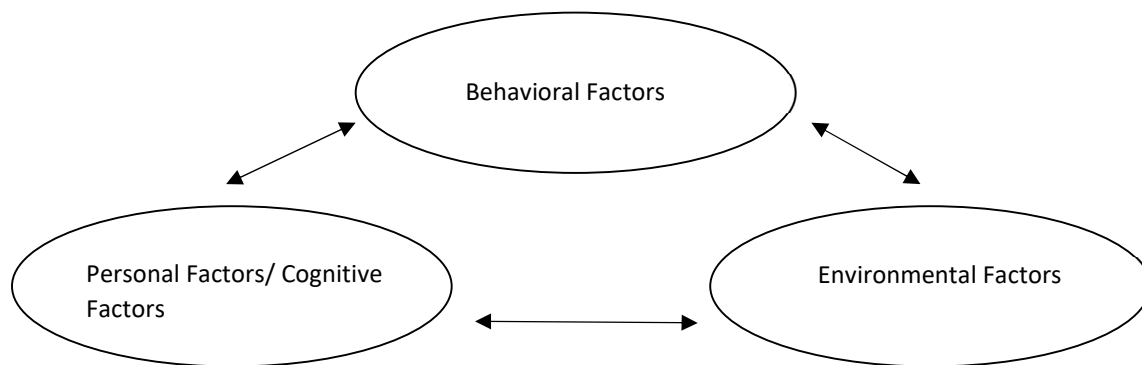
Primary Source: Halpern (2015).

Figure 4. Nudge Theory.

Social Cognitive Theory

Social cognitive theory seeks to explain people's behavior through behavioral, environmental, and personal factors including the regulation of behavior through control and reinforcement in order to achieve goal-directed and long-term behavior change (see Figure 5) (Bandura, 1977, 1991). Additional aspects of the model are:

- Reciprocal determinism.
- Behavioral capability.
- Observational learning.
- Behavioral reinforcement.
- Expectations and consequences of behavior.
- Self-efficacy to perform behavior.



Primary Sources: Bandura (1977, 1991).

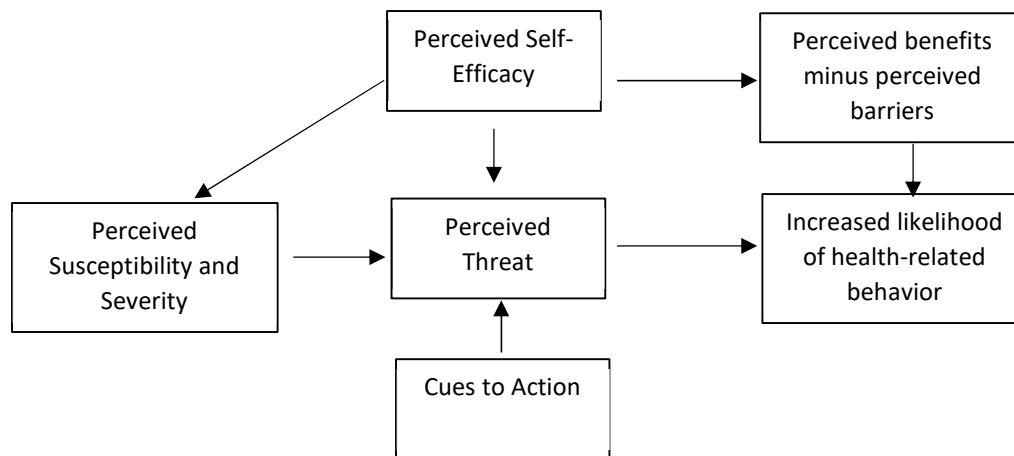
Figure 5. Social Cognitive Theory.

Examples

Anibas, J. (2008). *A study of virtual simulation in a truck driver training program* (Training and development master's). University of Wisconsin-Stout, Stout, WI.

Health Belief Model

The health belief model presents a behavior change framework for understanding why individuals engage in healthy behaviors and how to promote the likelihood of engaging in healthy behaviors (Rosenstock, 1966). This framework comprises a person's perceived susceptibility and severity to health-related problems, perceived self-efficacy, cues to action that influence behavior acceptance, and perceived benefits minus barriers (Janz & Becker, 1984). These variables will influence the likelihood of a person engaging in healthy behaviors. Figure 6 shows the health belief model.



Primary Source: Rosenstock (1966).

Figure 6. The Health Belief Model.

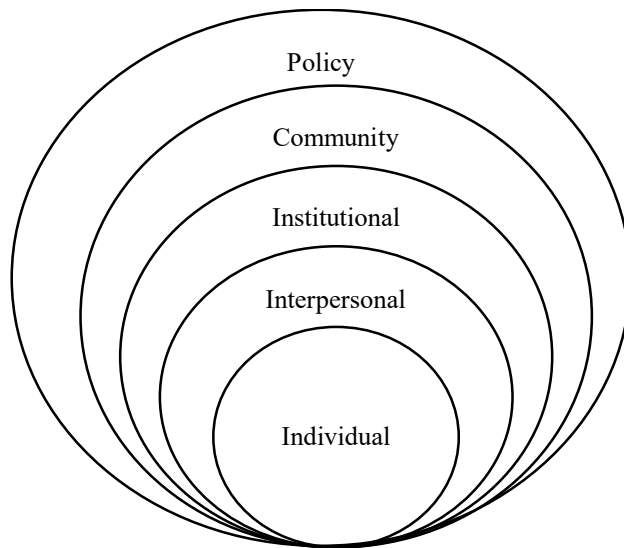
Examples

Adamos, G., Nathanail, E., & Kapetanopoulou, P. (2014). Cluster modeling of driving behavior under fatigue. *Transportation Research Record, 2465*(1), 24–32.

Adamos, G., Nathanail, E. G., & Kapetanopoulou, P. (2013). Do road safety communication campaigns work? How to assess the impact of a national fatigue campaign on driving behavior. *Transportation Research Record, 2364*(1), 62–70.

Social-Ecological Model

The social-ecological model explains an individual's behavior through five personal and environmental factors (McLeroy, Steckler, & Bibeau, 1988). Beginning at the individual level, a person's knowledge, attitudes, and developmental history influence behavior. Each progressing level involves influence from larger domains of people, such as family, institutions, community, and public policy (McLeroy et al., 1988). Figure 7 shows the personal and environmental factor relationships of the social-ecological model.



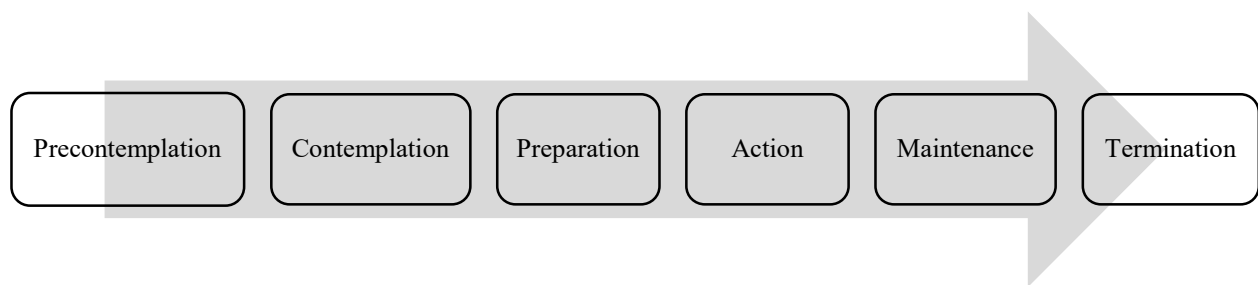
Primary Source: McLeroy, Steckler, & Bibeau (1988).

Figure 7. The Social-Ecological Model.

Transtheoretical Model of Change

The transtheoretical model of change describes a six-step change process to an individual's behavior (Prochaska & DiClemente, 1983). As shown in Figure 8, the six steps are:

- Precontemplation stage, where the individual is not yet ready to change.
- Contemplation stage, where the individual is getting ready to change.
- Preparation stage, where the individual is ready to change.
- Action stage, where behavior change is initiated.
- Maintenance stage, where behavior change is monitored.
- Termination stage, where old behavior is no longer present.



Primary Source: Prochaska & DiClemente (1983).

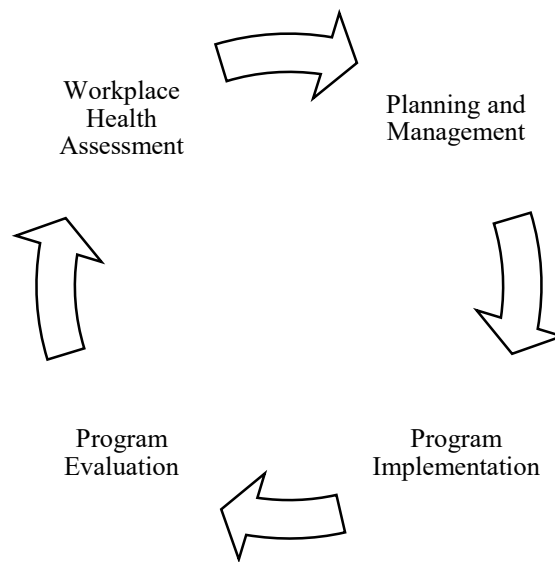
Figure 8. The Transtheoretical Model of Change.

Examples

- Banks, T. D., Davey, J. D., Biggs, H. C., & King, M. J. (2008). *Stages of change in the Australian workplace and its application to driver education*. Paper presented at the 3rd International Driver Behavior and Training Conference, Dublin, Ireland.
- Lang, B., Delmonte, E., & Vandrevalla, T. (2009). *Development and evaluation of the Work-Related Road Safety CD-ROM (PPR346)*. Retrieved from <https://trl.co.uk/sites/default/files/PPR346.pdf>
- Olson, R., Anger, W., Williot, D., Wipfli, B., & Gray, M. (2009a). A new health promotion model for lone workers: Results of the Safety & Health Involvement for Truckers (SHIFT) pilot study. *Journal of Occupational and Environmental Medicine*, 51(11), 1233–1246.
- Olson, R., Kent, W., Elliot, M. D., Diane, L., Schmidt, B. A., & Gray, B. A. (2009b). *Competition, computers, and coaching: Three C's for more effective health and safety promotion with truck drivers*. Paper presented at the Transportation Research Board 88th Annual Meeting, Washington, DC.
- Rowland, B., Davey, J., Freeman, J., & Wishart, D. (2009). *Implementation of a driving diary intervention to reduce aberrant driving behaviours*. Paper presented at the Fifth International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design, Big Sky, Montana.
- Roberts, S., & York, J. (1998). *Design, development and evaluation of driver wellness programs: Technical memorandum number two: Survey analysis and core program design*. Washington, DC: Federal Motor Carrier Safety Administration.

Workplace Health Model

The workplace health model is a four-step process designed to improve employee health and safety in the workplace (Centers for Disease Control and Prevention, 2016). The model begins with a workplace health assessment, followed by program planning and management, and then implementation of the program. After implementation, program evaluation takes place to determine program outcomes (Centers for Disease Control and Prevention, 2016). Figure 9 displays a graphical representation of the process and components of the workplace health model.

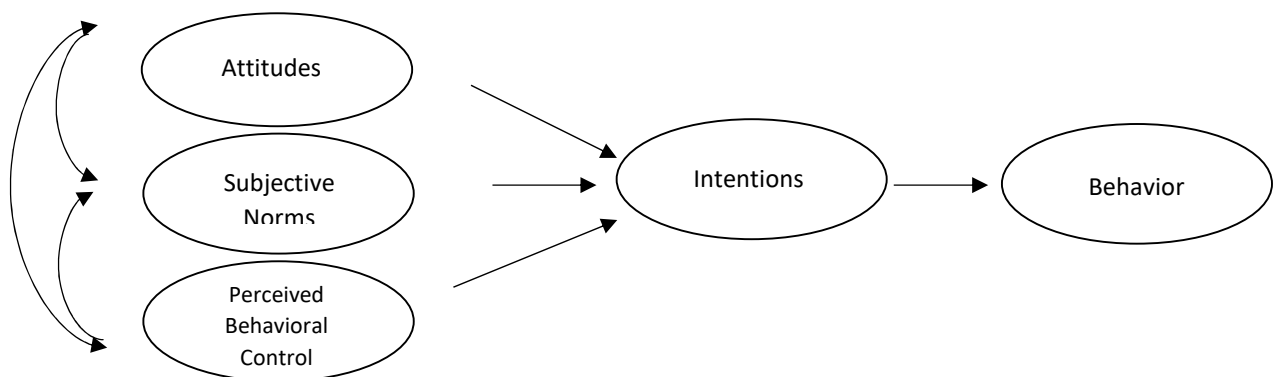


Primary Source: Centers for Disease Control and Prevention (2016).

Figure 9. The Workplace Health Model.

Theory of Planned Behavior

The theory of planned behavior views behavior as a function of one's behavioral intentions to participate in the behavior, which are shaped by attitudes toward the behavior, subjective norms, and perceived behavioral control. Attitudes refer to how favorably or unfavorably an individual perceives the behavior (Ajzen, 1985). Subjective norms refer to the social expectations regarding the behavior that a person perceives from influential others (Ajzen, 1985). Perceived behavioral control refers to someone's perception of factors that limit and facilitate his or her engagement in a certain behavior (Ajzen, 1985). Figure 10 shows the stages of the theory of planned behavior.



Primary Source: Ajzen (1985).

Figure 10. Theory of Planned Behavior.

Examples

- Adamos, G., & Nathanail, E. (2015). How to train safe drivers: Setting up and evaluating a fatigue training program. *Transport and Telecommunication Journal*, 16(1), 9–20.
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- Parker, D., Stradling, S. G., & Manstead, A. S. (1996). Modifying beliefs and attitudes to exceeding the speed limit: An intervention study based on the theory of planned behavior 1. *Journal of Applied Social Psychology*, 26(1), 1–19.
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- Tian, Y., & Robinson, J. D. (2017). Predictors of cell phone use in distracted driving: Extending the theory of planned behavior. *Health Communication*, 32(9), 1066–1075.

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