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# MECHANISMS OF LEGAL EFFECT: THE THEORY OF TRIADIC INFLUENCE


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## Summary

Social psychology plays an important role in explicating mechanisms of legal effect. Social psychological theories offer theoretical constructs that help explain the web of psychological and social causes and mediators of intentions and behaviors that legal processes seek to modify. Social psychology pertains primarily to the "changes in behavior" mediator in the model of public health law research (see Figure 1.1), positing a number of possible causal pathways by which legal systems and rules may influence behavior. From a social psychological perspective, laws and regulations can be classified according to the type of causal pathway by which behaviors are modified, for example, through changing attitudes, normative beliefs, or self-efficacy concerning a specific behavior. We outline plausible pathways for many types of laws and regulations, including prevention and safety laws; environmental exposure regulations; laws regulating availability of health-enhancing and health inhibiting products and resources; and "soft" laws that prompt or inform rather than command the ultimate actor (for example, labeling laws).

Given the large number of social psychological theories and the need to structure disparate theories in relation to each other, the theory of triadic influence (TTI) is a comprehensive and integrative model that we use for describing relationships among various theoretical constructs. The TTI posits that laws and regulations influence behavior through multiple causal pathways, from ultimate causes, through distal influences and proximal predictors, all mediated by the proximal influences of attitudes toward, social normative beliefs about, and self-efficacy regarding a particular behavior. Reliable measures for these and other constructs are readily available.

## Learning Objectives

- Identify and describe diverse behavioral mechanisms by which laws and regulations influence population health behavior.
- Illustrate, using the theory of triadic influence, how a specific public health law may influence institutional, social, and personal behavior.
- Illustrate effects of law-related social media dissemination in altering health related behavior.
- Apply measures of social psychological and sociological constructs in evaluations of public health laws.

Social psychology has played a central role in both describing and predicting health behaviors, and those behaviors are related to a range of important health outcomes (Flay, Snyder, & Petraitis, 2009; Glass & McAtee, 2006; Jolls, Sunstein, & Thaler, 1998; Petraitis, Flay, & Miller, 1995). Public health increasingly has acknowledged the important effects of laws and regulations in improving population health (Burris, Wagenaar, Swanson, et al., 2010; Wagenaar & Burris, 2013). Laws and regulations affecting sanitation infrastructure, food safety, and immunizations historically have had dramatic positive effects on reducing communicable diseases (Cutler & Miller, 2004; Gostin, Burris, & Lazzarini, 1999; Sperling, 2010; Stern & Markel, 2005). With the rise of chronic diseases as major public health issues (Anderson & Horvath, 2004), population behavior and sociocultural environmental exposures became crucial targets for prevention efforts (Brownson & Bright, 2004; DiClemente et al., 2009). The behavioral sciences have made enormous contributions in guiding public health efforts to address these modern-day issues, and social psychology is likely to play an increasingly important function in understanding the mechanisms by which legal systems influence health behaviors and outcomes.

This chapter first classifies laws and regulations according to the specific types of causal mechanisms by which they are believed to effect behavior change. We present relevant theories from the field of social psychology to illustrate how various behavioral and social mechanisms might facilitate, for good or worse, specific health-related behavioral changes. We offer the Theory of Triadic Influence (TTI) (Flay & Petraitis, 1994; Flay et al., 2009) as a comprehensive and integrative model for understanding the inter-connections between many social psychological and sociological theories. Finally, we discuss measurement of relevant constructs.

## Health-Behavior Laws and Regulations from a Social Psychological Perspective

From a social psychological perspective, laws and regulations that influence health behaviors can be differentiated by the distinctive mechanisms involved in changing specific behaviors. While the specific targets of laws and regulations may differ, the behavioral mechanisms are often similar.

## PREVENTION AND SAFETY LAWS

Prevention and safety laws are some of the most common "interventional" public health laws. For example, immunization laws are aimed at preventing the spread of communicable diseases. Driver safety regulations aim to reduce death and disability among motorists and pedestrians. Safety regulations are also an important component of occupational health, intended to reduce harmful exposures and injuries in work settings. From a social psychological perspective, the most likely mechanism of action of safety laws is that they provide people with the information they need to understand the benefits (reduced chances of injury or death) of complying with a particular law and the costs (penalties or possibility of litigation or tort) if they choose to not comply. A recent example of such safety laws by governments is mandatory mask wearing to reduce transmission of the SARS CoV-2 virus.

## ENVIRONMENTAL EXPOSURE REGULATIONS

Historically, environmental exposure regulation has been one of the legal foundations for preventing public health problems. For example, sanitation laws ensured a standard for clean water and proper disposal of waste products. Such feats were accomplished by substantial funding for proper urban infrastructure (Perdue, Gostin, & Stone, 2003). In modern times, the revelation that lead, which was formerly used in many household and industrial objects, was harmful to health drove authorities to set regulations to ensure that lead would no longer be utilized in the manufacturing of most products (Lewis, 1985). Laws that prohibit smoking in public buildings have reduced toxic exposures and altered specific behaviors of those affected (Frazer et al., 2016).

Intuitively, most environmental regulations would seem to influence social and individual behavior through the same informational and motivational mechanisms described above for prevention and safety laws. For example, motivations to comply with regulatory standards are conditioned on the desire to avoid penalties or litigation. As information and awareness of environmental toxins increases, causal pathways are also likely to occur through changing social norms, thereby affecting the behavioral patterns of whole populations. For example, notable shifts in adults' attitudes and practices regarding childhood exposure to tobacco smoke have occurred with increased awareness of the harmful effects of second-hand smoke (Frazer et al., 2016; McMillen, Winickoff, Klein, & Weitzman, 2003).

## ACCESS AND AVAILABILITY LAWS

Laws and regulations affect access to and the availability of health-enhancing and health-inhibiting products and resources in multiple ways. For example, Wagenaar and Perry (1994) demonstrated how legal availability laws (age limits), economic availability laws (alcohol tax), and physical availability regulations (zoning for liquor businesses) altogether affected youth's access to and consumption of alcohol. Laws influence access to health care (e.g. health insurance parity laws), food choices (e.g. school and workplace vending rules), and exercise opportunities (e.g. land use

laws. Laws against possession of tobacco, alcohol or other drugs also come with penalties intended to deter the behavior itself.

From a social psychological perspective, access, availability, and possession laws have their effects through two mechanisms. First, they change people's perceptions of the availability of, and expectancies about, the *personal* costs and benefits of using a product or service. Second, they influence people's motivation to comply or cooperate and one's expectancies about the *social* costs and benefits of adopting the behavior or not. Although personal versus social costs and benefits are considered as two separate causal pathways in social psychological theories (Fishbein & Ajzen, 1975), they are considered as one pathway by other social scientists such as economists, as components of subjective expected utility theories (Bauman & Fisher, 1985; Savage, 1954; Starmer, 2000; Stigler, 1950). According to Tyler (1999), perception processes also involve evaluations that reflect pride and respect within the organizational or cultural system, and those evaluations become strong influences on motivation to cooperate.

### "SOFT" LAWS (INFORMATION AND LABELING)

"Soft" regulatory strategies rely on choice architecture, education, and the provision of information without legal penalty to the ultimate targets of individual behavior change (although they are typically mandatory and penalty-based with respect to the parties providing the product or service). These laws are used in many areas, including food nutrition and calorie labeling, alcohol and tobacco warning labeling, and other product contents labeling. Laws and regulations are often linked to or require the dissemination of messages encouraging individuals to adopt a healthier behavior or to comply with a particular law. From a social psychological perspective, the causal pathway from regulation to behaviors passes through attitudes and norms. The ideas of "libertarian paternalism" (Jolls et al., 1998; Rebonato, 2014) and soft regulatory strategies "nudging" people to make the "right" decisions (Thaler & Sunstein, 2008) are interesting perspectives on this.

## Social Psychological Causal Mechanisms

We focus on the "changes in behavior" mediator in the Burris and colleagues (2010) model of public health law research (see Figure 1.1). Some effects of laws and legal practices on behavior are mediated by changes in the physical and social environment. We also describe theory-based mediators (of which there are many) for the effects of laws and environmental changes on behavior. To this point, we have suggested only two primary causal pathways by which laws related to prevention and safety, environmental exposure, access and availability, and possession may have their effects. First, information about required behaviors and the costs of non-compliance informs attitudes toward a behavior, and second, compliance requires consideration of social norms (even those with a legal basis) and the motivation to comply or cooperate with them. We now introduce two more. To the extent that laws change the behavior of specific individuals, we may also observe a secondary effect on the behavior of others that arises from people learning by observing others

(Akers, 1977; Bandura, 1977b). A final causal pathway involves self-efficacy, which is the confidence one has of being able to successfully engage in any specific behavior (Bandura, 1977a).

## EVALUATIVE THEORIES

Consideration of the costs and benefits of a behavior is common to multiple social psychological theories, including expectancy-value, subjective utility, and decision-making theories. Expectancy-value theories posit that people's choices are influenced by their beliefs and values regarding a specific behavior or activity (Feather, 1982; Wigfield, 1994; Wigfield & Eccles, 2000). For example, applied to alcohol consumption behavior, the positive expectations of feeling good and enhanced social interactions act as behavioral motivators, and the negative expectations of acting inappropriately or "nursing" a hangover the next day act as behavioral restraints (Jones, Corbin, & Fromme, 2001, Peter & Ekeanyanwu, 2010). The value placed on the positive or negative expectations determines the strength of the motivating or restraining factor. If one anticipates negative consequences, such as being fined for underage drinking, as a serious repercussion, then that anticipation (expectation or expectancy) will play a key role in deciding whether to engage in that behavior.

Subjective-expected utility theory is a particular version of expectancy-value theory, developed to test probabilities of risky economic decision making (Fishburn, 1981; Savage, 1954). *Utility*, which refers to one's satisfaction (or evaluation), is combined with one's knowledge or belief in the likelihood (in statistical terms, probability) that an expected event will occur. Much like expectancy-value theories, decisions regarding a behavior ultimately depend on the relative evaluations and expectancies of the perceived consequences of a behavior (Bauman & Fisher, 1985).

Decision-making theories formalize the use of utilities and their evaluations in reaching decisions (Simon, 1959). Heuristics theory is a relevant approach to understand how problem-solving and decision-making processes occur with experience-based information. In terms of behavioral mechanisms, this approach helps in explaining the role of previous experiences in enforcing other determinants of health behavior. In everyday human contexts, trial-and-error experiences help to inform future behavioral choices. Heuristics theory posits that hardwired or learned heuristic "rules" guide individual judgments, regardless of available relevant information or certainty (Kahnemann, Slovic, & Tversky, 1982; Tversky & Kahneman, 1974).

Perhaps the most well-known social psychological theories that have applied expectancy-value concepts to health behaviors are the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and its derivative, the Theory of Planned Behavior (Ajzen, 1985). In these theories, *information* influences one's *beliefs* about the consequences of a behavior (*expectancies* or expectations) together with one's *evaluation* (or valuing) of that behavior. Thus, expectancies and evaluations are derived from information and values, respectively. Information can be provided through laws and regulations (or, more accurately, by promoting them). Values may derive from one's religious background, the educational system, one's family and childhood socialization, and other broader sociocultural

factors (politics, laws, mass media, and so on). However, laws and regulations may or may not be consistent with one's values – and this judgment of their fairness or legitimacy has some effect on the resulting motivation to comply with them (Tyler & Fagan, 2010; Tyler, 2006) In these two theories, expectancies and evaluations combine to become *attitudes* toward the behavior (Fishbein & Ajzen, 1975). Aside from the costs or penalties of non-compliance, people's motivation to comply with authority or peer expectations (here a component of social normative beliefs) also plays a role in their choices.

## INTERPERSONAL THEORIES OF SOCIAL CONTROL

Theories of compliance with law derived from social psychology also help explain the effects of prevention and safety laws (Bilz & Nadler, 2009; Tyler, 1999). Compliance theories assume that people comply with laws because of the risk and fear of punishment. Recent research, however, suggests that perceived legitimacy of laws is a more important determinant of whether people obey laws (see Chapter 6). Studies reviewed by Tyler support the argument that people's motivation to cooperate with legal authorities is rooted in social relationships and ethical judgments, and not merely with the desire to avoid punishments or gain rewards.

As an example for how social relationships may drive behavior, social attachment theory suggests that individuals have an inherent need for close relations with others, whether it is a child-parent relationship or an intimate or romantic relationship (Ainsworth & Bowlby, 1991; Ein-Dor & Hirschberger, 2016). These close relationships almost always rely on a varying set of expectations and motivations for each other. Ryan and Deci's (2000) work on intrinsic and extrinsic motivational factors is also relevant for understanding compliance. For example, a person may be rewarded for good behavior or punished for bad behavior, or a person may wish to please others by performing a desirable behavior. Indeed, research has demonstrated that prosocial attachment and commitment is a strong predictor of behavior (Hirschi, 2002). Compliance motivations are directly affected by the degree and quality of attachment (interpersonal bonding) – people who are attached to conventional societal norms are more likely to be motivated to comply with laws and regulations that limit their behavioral choices (Gottfredson & Hirschi, 1990). Police and other authorities benefit from the more active cooperation of such people in the community (Sampson, Raudenbush, & Earles, 1997; Sunshine & Tyler, 2003a; Tyler & Huo, 2002). Moreover, evidence of integrity, legitimate evaluation and fairness while dealing with authorities are key precursors of compliance, cooperation, or consent with laws (Tyler, 2006).

To the extent that laws change the behavior of some people, the behavior of others might follow. Social learning theories from both psychology (Bandura, 1977b) and sociology (Akers, 1977) describe this process. According to these theories, social learning is seen to take place in the context of social structures, whereby individuals learn through interactions with different people in multiple social contexts. Application of social learning theories for understanding deviant behavior (criminal or unhealthy) emphasizes how social influences serve as either protective or risk factors (Akers, 1998; Akers & Jensen, 2007). Social situations provide the contexts for social interactions,

whereby perceived norms and compliance motivations mediate legal effects. This interaction is more likely to be impactful when the individual who changes their behavior is within the close social circle or family and retains influence on others.

An extension of social learning and other theories, social cognitive theory (Bandura, 1986b) describes how learning from social role models has multiple results. First, it can influence one's beliefs (expectancies) about the consequences of a behavior together with one's evaluation of the value of that behavior. As noted earlier, expectancies and evaluations combine to become attitudes (Fishbein & Ajzen, 1975). A second result is that role models may help one to learn new skills, thereby increasing self-efficacy. Third, to the extent that role models are important to you, you will be motivated to please them (or comply with them). Motivation to comply, combined with normative beliefs (perception of others on how you behave), produces social normative beliefs (Fishbein & Ajzen, 1975), which in turn influence intentions (one's decision on whether to engage in the behavior).

Social relationships and networks clearly play an important role in determining people's behaviors, including their reactions to the law. Social network theories constitute a broad set of theories describing structural characteristics, functions, and types of social support that exist in an individual's social network (Borgatti, Mehra, Brass, & Labianca, 2009). Peer cluster theory demonstrates how small groups of peers share similar beliefs, values, and behaviors (Oetting & Beauvais, 1986). Similarly, from sociology, differential association theory (Heimer & Matsueda, 1994; Matsueda, 1988; Sutherland, 1942) proposes that individuals learn values, attitudes, and motivations for behavior within small groups. Therefore, any behavior is more probable for those with intimate exposure to others performing that behavior. Observational learning illustrates how the adoption of a new behavior is facilitated through seeing others performing that behavior reinforced by reward systems within one's social system (Bandura, 1986a; Unger, Cruz, Baezconde-Garbanati, et al., 2003).

## SOCIAL IMPACT THEORY AND SOCIAL MEDIA INFLUENCE

According to the Social Impact Theory, the effects of any information source on individuals' attitudes and behaviors is a function of three dimensions: 1) strength (importance or social position of the source), 2) immediacy (time or closeness between source and target), and 3) number (quantity of sources) (Talukder & Quazi, 2011). This theory suggests the more important the source of information is the closer a group of individuals becomes and the more likely they will follow the normative beliefs of the group. Social media platforms capitalize on each of the theory's three dimensions by enhancing their impact on individuals, for good or bad, through normative informational social influence. Social media platforms may be used to promote health services, health related information and behavior and exert pressure on policymakers shaping surrounding policies. Social media offers a ready, participatory, and cost-effective platform (Korda & Itani,

2013). It may provide a sense of social connectedness among individuals and reaches a large audience to promote or deter a health behavior in an inexpensive way across geographic distance (Ventola, 2014). While there is great potential for improving public health understanding through machine learning and natural language processing tools (Dredze, 2012), there is also growing documentation of the extent of health misinformation spread through social media platforms (Wang, McKee, Torbica, & Stuckler, 2019). For example, the role of misinformation spread through social media is evident when examining vaccine hesitancy and varying levels of COVID-19 vaccine uptake (Al-Tammemi & Tarhini, 2021; Tasnim, Hossain, & Mazumder, 2020). In another example, the deleterious effects of social media on self-esteem and broader indicators of mental health are gaining increased attention (Milmo & Paul, 2021).

According to Social Impact Theory, "when other people are the source of impact and the individual is the target, impact should be a multiplicative function of the strength, immediacy, and number of other people" (Latané, 1981). It can be assumed that as the number of people reached through social media increases, the impact on the target individual's attitude and behavior proportionally enhances. As the number of users increases who share their experiences, information, and expectations on the same issues, the impact on target users who are looking for information and recommendations on social media may increase simultaneously, either in a positive direction or negative (Mir & Zaheer, 2012). In the context of social media, all activities that actors participate in have an impact on knowledge transfer because social media interaction provides channels for information exchange and facilitates motivating actions (Wang & Chiang, 2009). Following Social Impact Theory, a wide range of changes in psychological states and subjective feelings, motives and emotions, cognitive beliefs, values and behavior occur as a result of the actual, implied, or imagined presence of other individuals' actions (in this context, interaction is through social media) (Latané, 1981). Supporting this argument, Nowak, Szamrej and Latané (1990) illustrate how a simple model of individual interactions, extended across individuals and across time, leads to plausible predictions of public opinion and action (Williams & Williams, 1989). Interaction, participatory dialogs, messages that are seen and heard frequently through stories, cultural practice, and audio-visual platforms (Cohen, Scribner, & Farley, 2000) all impart significance, grasping a person's attention and intensifying their values and behavior associated with the product or topic of concern (Dusseldorp et al., 2014). Naturally, these social-media-mediated social influence processes can be beneficial or deleterious to health and well-being. It is well-known that social media often facilitate the spread of unverified messages, including those that are later found to be false (Li & Sakamoto, 2014).

Moreover, effective public engagement through social media has the potential for synergistically enhancing the effects of public health laws. As far back as 2010, 74% adults were online and 80% of them reported searching for health information (Agostino & Arnaboldi, 2016; Fox, 2011). Social media are important tools for disaster management, disease tracking, and risk communication. For example, keyword content from Twitter, Facebook, and other social networks, in combination with location-tracking technologies, can be used to locate source of contamination, infections or disease

cases, and to monitor the health and welfare of populations (George, Rovniak, & Kraschnewski, 2013; Househ, 2013). While social media have considerable potential as tools for health promotion, these media, like traditional health promotion media, require careful theory-based application and may not always achieve their desired outcomes (Lipschultz, 2020). In summary, social media appear to play an increasingly important role in understanding and improving the effects of public health laws, since they can accelerate the social influence processes illuminated by the social psychological theories reviewed here.

## INTRAPERSONAL THEORIES

Individual predispositions and personality traits guide one's self-determination (will), skill development, and decision making regarding a specific behavior. Important concepts within the intrapersonal dimension include self-regulation or control, social skills, and self-efficacy. One causal pathway suggested earlier involves self-efficacy, the confidence one has to engage in a specific behavior successfully. According to self-efficacy theory (Bandura, 1977a, 1986a), compliance with a law or regulation about a specific behavior will improve to the extent the rule is accompanied with specific information about how to accomplish that behavior or, better still, training and experience in how to do the new behavior. As people's skill to do the behavior (and, therefore, their confidence or self-efficacy about doing it) improves, they will be more likely to successfully perform that specific behavior.

According to the Theory of Planned Behavior, self-efficacy is the third leg directly affecting one's decision making or intentions toward performing a behavior. Those with low self-efficacy are easily discouraged and less likely to trust their ability to perform a behavior, and therefore are less likely to actually perform that behavior. In contrast, those with high self-efficacy regarding a specific behavior will likely expend the effort necessary to ensure that they achieve their expected behavioral outcomes. Theoretically, self-efficacy facilitates or buffers against compliance with laws and regulations. Self-efficacy could represent either confidence in one's ability to obey the law or one's ability to disregard or elude the law.

According to Bandura (1986a, 1986b), self-regulation is achieved by acquiring self-management skills, and can be manifested in a number of ways, including goal setting, seeking social support, and self-rewards (to name a few). Self-control theory (Akers, 1991) posits that one's relative self-control forms during childhood and tends to remain stable throughout adulthood. The degree of socialization during childhood plays an important role in forming levels of self-control in individuals. Those with low self-control are more likely to engage in delinquent behaviors, including health-related behaviors such as drug use (Gottfredson & Hirschi, 1990; Miller, Barnes, & Beaver, 2011). In contrast, people with high levels of self-control are more likely to comply with legal restrictions. Therefore, one's level of self-control may mediate the effects of public health laws.

Self-esteem has been thought of as a core component of self-concept by which individuals evaluate their competence, skill, and worth in their social environment (Cast & Burke, 2002). In

general, research has shown proportional associations of higher self-esteem with more positive outcomes, and of lower self-esteem with negative outcomes. Self-esteem has been conceptualized as self-motivating and as a buffer from negative experiences. Cast and Burke (2002) attempted to integrate these three conceptualizations within the context of identity theory. DuBois, Flay, and Fagen (2009) presented the self-esteem enhancement theory to help guide interventions related to self-esteem, in which self-esteem formation and maintenance processes are depicted as moderators of well-being. In the context of legal effects, self-esteem likely plays a mediating role, whereby improved self-esteem strengthens one's capacity for appropriately handling negative pressures in a manner compliant with laws and regulations.

The self-motivation conceptualization of self-esteem is related to Deci and Ryan's (1985) self-determination theory, by which intrinsic and extrinsic motivations vary in degrees according to one's goals or reasons. Intrinsic motivation is enhanced when three psychological needs – competence, autonomy, and relatedness – are met (Ryan & Deci, 2000). Levels of self-determination likely both moderate and mediate effects of laws. Those with higher levels of self-determination are more likely to comply with laws and regulations – unless such laws and regulations are regarded as illegitimate, in which case, self-determination may act as a buffer to compliance. As an act of compliance, those with higher levels of self-determination contributes to leading a feedback effect on the development of laws and regulations and their perceived legitimacy through engaging in voting or other community-based activities.

## SUMMARY COMMENTS ON SOCIAL PSYCHOLOGICAL THEORIES

We have described numerous theories explaining various dimensions and derivations of behavior (see Table 8.1). These accounts of behavior can be organized within a *social ecological model* (Bronfrenbrenner, 2005). In this model, behavior is influenced at three main levels: within people themselves (Intrapersonal: individual's personality and predispositions), with respect to the social relationships surrounding the individual (Interpersonal), and in the broad sociocultural environment (Evaluative). Laws and regulations, of course, are part of the sociocultural environment, along with economic and political systems, the mass media, religions, and other cultural systems.

| Evaluative Theories | Interpersonal Theories | Intrapersonal Theories |
|---|---|---|

| | | |
|---|---|---|
| Value-expectancy theories:<br>Subjective-expected utility theory<br>Theory of reasoned action<br>Theory of planned behavior<br><br>Theories of decision making:<br>Heuristics theory | Compliance theories:<br>Deterrence<br>Procedural justice<br>Social attachment theory<br>Intrinsic and extrinsic motivation<br>Social Impact theory<br>Social learning theories<br>Social cognitive theory<br>Social network theories<br>Peer cluster theory<br>Differential association theory | Self-efficacy theory<br>Self-control theory<br>Self-esteem theory<br>Self-esteem enhancement theory Self-determination theory<br>Bounded rationality |

**Table 8.1.** Social Psychological Theories Informing Mechanisms of Legal Effect.

We have described four major pathways through which laws and regulations can affect behavior and summarized social psychological theories that elaborate those pathways. The first is that laws and regulations provide information that, in turn, informs expectancies or expectations about consequences that together form attitudes toward the behavior targeted by the law or regulation.

Pathway 1: laws and regulations → information → expectancies and evaluations → attitudes

A second causal path suggests that laws and regulations have their effects through the interpersonal pathway of influencing attachment to conventional norms leading to motivation to comply.

Pathway 2: laws and regulations → attachment to conventional norms → motivation to comply

Third, we described pathways through changes in the behavior of initial compliers, thereby changing social norms.

Pathway 3: laws and regulations → change behavioral norms → normative beliefs

Finally, a pathway is made through people learning new behaviors from others.

Pathway 4: laws and regulations → modeling or training → self-efficacy

Note how each of these pathways moved from the ultimate (or root) cause of behavior, here laws and regulations, to a cause closer to behavior but still somewhat distal (for example, information, attachment to conventional norms, social norms, behavioral models), to causes even closer to or very proximal to behavior (that is, attitudes, compliance, social normative beliefs, and

self-efficacy). It is immediately obvious that the proximal predictors of behavior are consistent with Social Cognitive Theory (Bandura, 1986b) and the Theories of Reasoned Action (Fishbein & Ajzen, 1975) and Planned Behavior (Ajzen, 1985) – each of these pathways are mediated by intentions or decisions to do the behavior. As intentions are a good predictor of actually doing (or at least initiating) the specific behavior, changes in any one or all of attitudes (the result of expectancies and their value), social normative beliefs (the result of motivation to comply and normative beliefs) and self-efficacy (the result of will or opportunity and skill) related to a specific behavior are likely to lead to changes in one's intentions or decisions to perform that behavior. In the Theory of Planned Behavior, behavioral control (one's perceived control over a specific behavior) replaces self-efficacy (one's actual or perceived ability to perform a specific behavior). Finally, note that using intentions to predict action/behavior has a practical benefit in legal epidemiology studies. In circumstances when direct observation of actual behavior is impossible, survey methods can be used to accurately assess intentions.

Each of these pathways sound rational, but there is wide recognition that rationality is limited. People exhibit bounded rationality, bounded self-interest, and bounded willpower (Rebonato, 2014; Jolls et al., 1998). Bounded rationality refers to cognitive limitations, such that information may have been forgotten or habits formed that limit the acceptance of new information. Bounded self-interest refers to the fact that people care about others and what those others think about them, so they may act to please others or avoid negative judgments from others, rather than act in their own self-interest. Bounded willpower refers to the limited self-control or self-determination that we all experience with some behaviors such as smoking or eating. Note the parallel of these three types of bounded rationality with the social-ecological levels in which the causes of behavior operate.

Many theories rely on intrapersonal concepts for understanding behavior, while social psychological theories posit that social contexts (interpersonal relationships) are just as important. Furthermore, social-ecological models suggest that behaviors must be understood in the broader sociocultural contexts in which they occur (Bronfrenbrenner, 2005). Clearly, none of the proposed causal pathways toward behavior operate in a vacuum – all three are strongly affected by individual (intrapersonal), social (interpersonal) and environmental (evaluative) factors. Each of these types of theories has offered important insights regarding the emergence of specific health behaviors. However, their contributions are limited to the extent that the scope of any specific single theory accounts for a limited set of influences on behavior. The Theory of Triadic Influence was developed to integrate many of the theories above and others, and to provide a comprehensive explanation of the many causes of behavior. As will be seen, each of the major pathways just described, and other related ones, can be unified in this integrated, comprehensive theory (Flay & Petraitis, 1994; Flay et al., 2009).

## The Theory of Triadic Influence

The Theory of Triadic Influence (TTI) represents an integration of many of the theories discussed in the previous section, as well as others. It organizes them in a coherent way that explains health-related behaviors and guides interventions for health-behavior change. We find the framework useful for explaining the effects of laws and regulations on people's health-related behaviors and population-level public health issues. As a broad ecological model, the TTI provides a metatheoretical approach both to explaining health-related behaviors and for guiding health behavior change. The TTI posits that theories and variables can be organized along two dimensions: social-ecological streams of influence and levels of causation (Petraitis, Flay, & Miller, 1995).

## THE BASIC ELEMENTS OF THE TTI

The TTI proposes that causes of behavior operate through multiple pathways from ultimate to distal to proximal levels of causation; that these pathways flow through three ecological streams, each of which has two substreams; and that experience with a behavior feeds back to change the initial causes (Figure 8.1). We discuss each of these elements in turn.

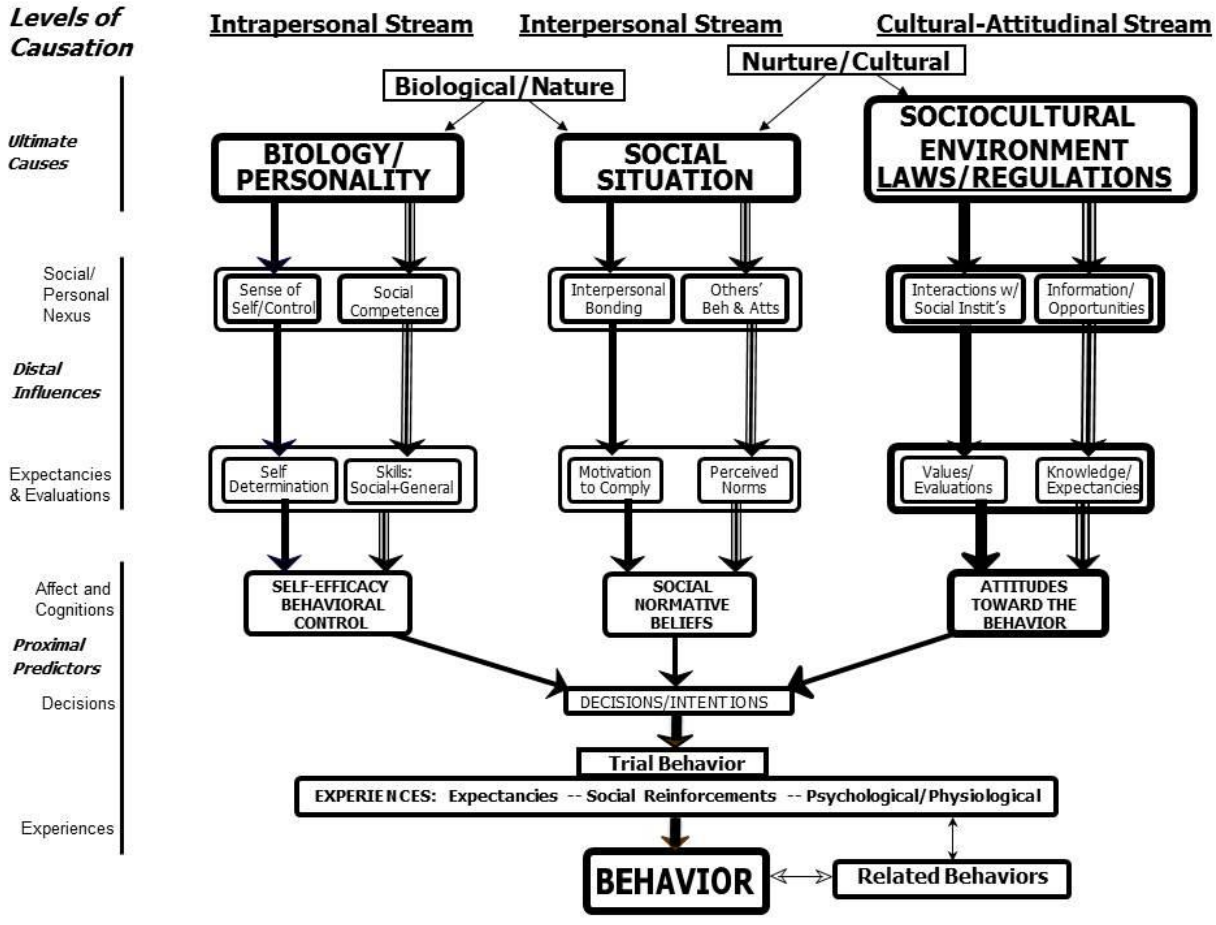


**Figure 8.1.** The Theory of Triadic Influence.

*Streams of Influence*

The TTI proposes that causes emanate from and flow through three streams of influence. The intrapersonal stream flows from genetic predispositions and personality through self-determination (will) and skills to self-efficacy. The interpersonal, or social-normative, stream flows from one's social contexts and relationships (community, peer networks, family) through others' behaviors and one's level of attachment to those others, to social normative beliefs. It includes perceived norms about others' behaviors and one's motivation to comply with or please those others. The cultural-attitudinal, or sociocultural, stream flows from broad sociocultural factors (politics, economics, the law, mass media, religion) through one's interactions with these social systems and how those interactions determine one's attitudes toward a specific behavior. It includes how the social systems influence one's values and evaluations of consequences. It also considers how the information provided by these institutions influences one's expectations (i.e. expectancies) about the consequences of a behavior. All three streams end at one's intentions (or decisions), which ideally provide a reliable prediction of actual behavior.

As shown in Figure 8.1, within each of the three main streams, two substreams represent distinct processes leading to decisions, one that is more cognitive and rational (the right-hand, or multiline, substream within each stream) and one that is more affective or emotional (the left-hand or solid substream within each stream). Psychologists tend to emphasize the affective or emotional aspect of the second substream; sociologists are more likely to emphasize the self- or social-control aspect (Gottfredson & Hirschi, 1990).

*Levels of Causation*

The TTI arranges these variables affecting behavior along multiple levels of causation – from ultimate causes to distal influences to proximal predictors (Flay et al., 2009). Some variables, such as attitudes toward the behavior, social normative beliefs about the behavior, and self-efficacy or behavioral control (confidence in doing a specific behavior), can have direct effects on intentions about that specific behavior and therefore are proximal causes of that behavior. Other variables are causally more distal, influencing factors that can be mediated by other variables. These include the individual's social competence, attitudes and behaviors of others, and the individual's interactions with social institutions. Finally, many variables – such as law, poverty, neighborhood characteristics, and personality – represent underlying or ultimate causes of behavior over which individuals generally have little control.

The TTI proposes that causal mechanisms generally flow from ultimate to proximal causes within each of the three streams of influence. Yet while the general flow of causation occurs predominantly within each stream, variables may also interact across streams. Thus, multiple ultimate and distal moderating and mediating factors may work together to increase or decrease the probability of a behavior occurring. For example, one's personality may moderate the effects of a law on one's values.

*Feedback and Reciprocal Determinism*

Experience with a behavior may produce physiological, social, or psychological reinforcements that feed back into many of the upstream variables that originally led to the behavior. Systems theories (Leischow, Best, Trochim, et al., 2008; Sterman, 2006; Wiese, Vallacher, & Strawinska, 2010) describe this as forming feedback loops, while social cognitive theory (Bandura, 1986b) describes it as reciprocal determinism. The key concept of reciprocal determinism suggests that any type of environmental influence may affect the behavior of individuals and groups, *and* that the behavior of individuals and groups may, in turn, affect the environment.

## APPLICATION TO PUBLIC HEALTH LAWS

The TTI cultural-attitudinal stream illustrates how public policies and laws affect individual health behaviors primarily by shaping social and institutional practices and structures. Institutional structures and practices influence one's opportunities and access to products and information and affects capacities for interacting with that institution. Drawing on theories reviewed earlier, the TTI proposes that attitudes toward a specific behavior are one of the key proximal predictors of intentions or adoption and is determined by expectancies and evaluations about that specific behavior. The TTI makes it clear that specific distal and ultimate causes influence many behaviors. The TTI also incorporates a developmental perspective in which all causal routes may be modified at different developmental stages (ages), and behavioral changes may affect developmental trajectories.

Interpersonal concepts are important for understanding the effects of laws and regulations on behavior. Social psychologists recognize the important role of interactions that occur within one's social context. Core concepts in the interpersonal stream of the TTI include bonding with or attachment to important others (Ainsworth & Bowlby, 1991), other's behaviors (role modeling) (Bandura, 1977a, 1986a), motivation to comply (desire to please), and social normative beliefs (Fishbein & Ajzen, 1975). The TTI suggests that family structures and dynamics and peer relations are ultimate causes within social contexts that lead to one's social normative beliefs. Laws and policies influence individual perceptions and decisions about behavioral adoption or restraint by affecting one's beliefs about social norms.

Intrapersonal dimensions, such as social skills, self-control or regulation and self-efficacy are important to consider when evaluating laws and policies. In the intrapersonal stream of the TTI, one's personality determines one's levels of self-control or regulation, which, in turn, moderate the influence of policies or laws. One's levels of self-esteem and self-determination not only moderate effects of existing policies and laws but also may help in the development of new policies and laws.

The TTI takes a step beyond other integrative theories, such as social cognitive theory, where it integrates a wider range of psychological and sociological theories of behavioral development and change. It conveys key concepts from many specific theories in a coherent way to explain health-related behaviors and guide behavior-moderating interventions for health behavior change. Furthermore, the TTI provides a systems perspective that includes development, feedback, control

systems, and a systematic view of how multiple causes influence multiple behaviors either directly, through mediated pathways, by moderating other causes, or through feedback systems. Feedback systems may be embedded at any causal level – proximal, distal, or ultimate.

*Pathways of Influence*

We propose that public health laws have their primary causal action through the cultural-attitudinal stream. Laws primarily alter access to or availability of goods and information related to knowledge or expectancies of consequences. Laws also give rise to and structure interactions with government institutions; these experiences in turn influence one's view of the legitimacy of authorities or one's evaluations of the expected consequences of a specific behavior. These paths influence attitudes toward the behavior, which, in turn, influences decisions and trial behavior. A positive experience with the behavior will feed back to influence expectancies and evaluations (and information and relationships with social institutions, including the legal system) to determine future behavior. Ultimately, trial behavior that is repeatedly reinforced will lead to regular (habitual) behavior.

The paths through the cultural-attitudinal stream are similar to many rational theories of decision making and utility theories in economics (Starmer, 2000; Stigler, 1950) and to procedural justice and deterrence theories of compliance (see Chapters 5 and 6). Public health laws may also have their effects through less rational pathways that involve social relationships and emotions. For example, laws may have mediating influences on social and intrapersonal factors thereby leading oneself to change their behavior or attitudes (interpersonal stream) and ultimately in perceived norms. Then, to the extent that one is bonded with and desires to please (comply or cooperate with) others, one's social normative beliefs are altered, leading to changed intentions and behavior. Laws may also have a direct influence on one's sense of control or social competence in the intrapersonal stream. Disability discrimination law, for example, may validate a person with a disability in their efforts to get accommodations at work (Bagenstos, 2009; Engel & Munger, 2003), which will lead to changes through the intrapersonal stream down to self-efficacy and from there to intentions.

Aspects of the other streams may affect (moderate) how one responds to laws. Poor self-regulation or impulsiveness (sense of self or self-control), for example, may reduce the effects of a law on one's behavior by moderating the pathway from information to attitudes, or the path to values. Or, if everyone in one's immediate social context is not following a new rule, then one's perceived norm and normative belief will be against the new regulation and the intention behind the regulation until an enforcement is imposed which changes a behavioral norm.

Tyler (1999, 2006) suggests that innate human desire to cooperate is the product of an array of inter- and intrapersonal components, including trust, legitimacy, emotions, attitudes, and norms. De Cremer and Tyler (2005) have posited the importance of the "sense of social self" to the production of cooperative behavior. These views combine aspects from all three streams of the TTI: self-esteem

and sense of self-control from the intrapersonal stream; social bonding (attachment) and motivation to comply from the interpersonal stream; and interactions with or involvement in social institutions and attitudes from the cultural-attitudinal stream. If compliance with law is seen as a form of social cooperation, sense of social self will largely determine one's degree of compliance with a new law or regulation. If the law is seen as having legitimate and trustworthy authorities, then compliance will be high among those with a strong sense of social self. In contrast, for individuals with a strong social self, compliance will be low if the law lacks legitimacy in the eyes of the public.

## Practical Measures

The TTI identifies key measurable constructs that explain variance in behavior informing how laws change health-related behavior. We discuss measures of eleven variables that are central to understanding how legal institutions and practices affect behavior. Many resources exist for measurement development besides those we reference here (Dillman, 1991, 2007; General Accounting Office, 1993; Houston, 1997). We provide brief considerations for measurement development and identify some examples of measures of constructs from the TTI and other theories that have demonstrated good reliability and validity.

### THE CULTURAL-ATTITUDINAL OR SOCIOCULTURAL STREAM

In this section, we discuss measures of knowledge and beliefs, values, and attitudes toward behavior.

#### *Knowledge and Beliefs About Expected Consequences*

Knowledge of laws and beliefs about expected consequences is a distal factor in the cognitive substream of the cultural-attitudinal stream of the TTI. Knowledge about laws includes the important issue of comprehension of those laws and their intent. Opinion polls often contain items to assess such knowledge or beliefs. Tidwell and Doyle (1995) developed a survey to assess driver and pedestrian comprehension of pedestrian law and traffic control devices. Another example of a survey assessing beliefs is a sixteen-item measure of beliefs regarding physical activity that has shown good internal consistency (Saunders, Pate, Felton, et al., 1997). Leading from an item stem of, "If I were to be physically active most days it would . . .", sample items include "Get or keep me in shape," "Make me tired," "Be fun," and "Be boring."

#### *Values*

Values are a distal component of the TTI's cultural-attitudinal stream flowing toward one's attitudes about a behavior. A popular measure of general values is the Rokeach Value Survey (Rokeach, 1973; Rokeach & Ball-Rokeach, 1989). This self-administered value inventory is divided into two parts, with each part measuring different but complementary types of personal values. The first part consists of 18 terminal value items, which are designed to measure the relative

importance of end states of existence (that is, personal goals such as freedom, equality, health, national security, a world at peace). The second part consists of 18 instrumental value items, which measure basic characteristics an individual might see as helpful to reaching end-state values (for example, ambitious, responsible, honest, obedient). The scale has been used widely with Likert scales (e.g., a five-point agreement scale), generating frequency distributions amenable to conventional statistical analyses (Rokeach, 1973; Rokeach & Ball-Rokeach, 1989). Many other measures of specialized values are available (Gibbins & Walker, 1993). For example, The Culture and Media Institute conducts the National Cultural Values Survey (Fitzpatrick, 2007), which assesses cultural values such as morality, thrift, charity, and honesty or integrity (including willingness to break the law, cheat on unemployment benefits, or tolerate illegal drug use).

*Attitudes Toward the Behavior*

This is the proximal predictor of behavior within TTI's cultural-attitudinal stream of influence. Ajzen (2003) provides guidance on the construction of attitude scale items specific to any particular behavior. The simplest attitude items are of the form "It would be bad for me to drive after drinking" answered on a scale of "completely agree" to "completely disagree." Fishbein and colleagues (2001) also suggest utilizing an expectancy-value index to indirectly measure attitudes. For example, two questions would be asked regarding a specific consequence of a particular behavior: one about one's beliefs about the probability of the consequence (expectancy), the other about one's values about (evaluation of) the consequence. The product of those two items could be summed with other paired items to create the attitude index.

Examples of valid and reliable attitude scales include Brand and Anastasio's (2006) 50-item Violence-Related Attitudes and Beliefs Scale (V-RABS) and Polaschek and colleagues' (2004) 20-item Criminal Attitudes to Violence Scale (CAVS). Using a seven-point agreement scale, sample items from the V-RABS include "Trying to prevent violent behavior is a waste of time and money;" "People become violent because of their family environment;" and "The majority of violent crimes are committed by people who have mental illness."

## THE INTERPERSONAL OR SOCIAL-NORMATIVE STREAM

In this section, we discuss measures of social attachment (bonding), observed (modeled) behaviors, and social normative beliefs.

*Social Attachment (Bonding) with Family, Friends, and School*

The interpersonal bonding component of the TTI's interpersonal stream is similar to Hirschi's (2002) theoretical constructs of attachment, commitment, and belief. Libbey (2004) provides a review of school attachment, bonding, and connectedness measures and items used to assess student attachment. Another example of a somewhat reliable measure of bonding (Jenkins, 1997) includes items such as, "Do you care a lot about what your teachers think of you?" "Do most of your teachers like you?" and, "Most teachers are not interested in anything I say or do."

*Observed (Modeled) Behavior And Attitudes*

Others' behavior and attitudes is also a distal component of TTI's interpersonal stream, directly influencing perceived norms. An eight-item measure that has shown good reliability was tested by Saunders and colleagues (1997), measuring social modeling for physical activity. Using the item stem, "A friend or someone in the family . . .", sample items include, "Thinks I should be physically active;" "Encourages me to be physically active;" and "Has been physically active with me."

*Social Normative Beliefs*

As a proximal predictor of behavior, social normative beliefs concern one's perception of the social influences on one's behavior. Consensus among theorists suggests that, because this measure is concerned with judging the degree to which one is motivated to comply with a particular person or social group, specific behaviors should be measured in paired items assessing both perceptions of norms (what others expect of one) and motivation to comply with those others. Ajzen (2003) provides guidelines for constructing such scales.

We could not identify any developed and tested scales for social normative beliefs using the paired-item format. However, Huesmann & Guerra (1997) provide an example of a reliable 20-item scale measuring normative beliefs about aggression. An eight-item version of this scale (Huesmann & Guerra, 1997) was found to have high reliability with elementary and middle school students (Schure, Lewis, Bavarian, et al., 2011). Using a four-point response scale, example items include, "It is wrong to hit other people;" "If you're angry, it is OK to say mean things to other people;" and "It is wrong to get into physical fights with others." Another example concerns normative beliefs about water conservation laws (Corral-Verdugo & Frías-Armenta, 2006). Items include, "The government should pass laws banning the settlement of industries around dams, rivers, lakes, and aquifers" and "The state should impose fines on people who waste water."

## THE INTRAPERSONAL STREAM

In this section, we discuss measures of self-control or regulation, social competence and skills, and self-efficacy.

*Self-Control or Regulation*

In the TTI framework, self-control or regulation is seen as a distal-level variable within the intrapersonal stream. Two measures demonstrating good reliability assessing self-control are the 36-item Self-Control Schedule (Facione & Facione, 1992) and the Total and Brief Self-Control Scales (Rosenbaum, 1980), with 36 and 13 items, respectively. Sample items from the Self-Control Schedule include, "When I have to do something that is anxiety arousing for me, I try to visualize how I will overcome my anxieties while doing it;" "When I am depressed, I try to keep myself busy

with things that I like;" and "When I plan to work, I remove all the things that are not relevant to my work." Response items are on a six-point scale indicating the degree to which each statement is characteristic of the respondent.

*Social Competence and Skills*

In the framework of the TTI, skills are the distal cognitive component that flows directly into self-efficacy. This variable is important to assess, as the development of general and behavior-specific skills can be instrumental in determining one's likelihood of adopting a behavior. The 131-item Conners Teacher Rating Scale (CTRS-R), measuring six behavioral domains (Conners, Sitarenios, Parker, & Epstein, 1998), is a reliable social skills scale. Teachers rate specific behavioral items related to cognition (forgets things, avoids mental effort), perfectionism (neat, over-focused), and impulsivity (restless, excitable).

Critical thinking is an important skill domain that can affect many types of behavior. The 80-item Watson-Glaser Critical Thinking Appraisal (Watson & Glaser, 1980) and the 40-item California Critical Thinking Skills Test (Facione & Facione, 1992) have both shown good internal reliability. Subscale items measure five specific constructs: the ability to make inferences, recognize assumptions, make deductions, evaluate arguments, and make interpretations (Gadzella, Stacks, Stephens, & Masten, 2005).

*Self-Efficacy*

Self-efficacy derives from self-control or regulation (through self-determination or will) and social competence (through skills) in the intrapersonal stream. Fishbein and colleagues (2001) recommend that items measuring self-efficacy should be behavior-specific, be phrased in the present tense, and utilize wording from identified internal or external demands that may impose difficulty on one's ability to perform the behavior. For example, Resnick and Jenkin's Self-Efficacy for Exercise (SEE) Scale is a nine-item scale, developed for adults, and measures perceived confidence that one could continue to exercise despite various barriers. Items were prefaced with, "How confident are you right now that you could exercise three times per week for 20 minutes if . . .", followed by items such as "the weather was bothering you;" "you were bored by the program or activity;" and "you felt pain when exercising." Usually, these measures use a 0 to 100 scale, suggesting the degree to which a person feels confident enough to perform that behavior. Bandura (2006) offers a clear guide on how to construct domain-specific self-efficacy scales depending on the context of research.

## DECISIONS, INTENTIONS, AND FEEDBACK FROM EXPERIENCES WITH THE BEHAVIOR

In this section, we discuss measures of intentions and responses to feedback from experiences with the behavior.

*Decisions and Intentions*

As the key proximal mediating variable of the TTI, behavioral decisions and intentions provides the most strongly correlated predictor of a future behavior and can be assessed with measures of likelihood or probability of occurrence. For the development of a fixed measure, it is recommended that it be treated as a continuous variable along a response scale of likely to unlikely (Polaschek, Collie, & Walkey, 2004), although there have been issues raised as to how many points should be included (Davis & Warshaw, 1992). It is recommended that if respondents' answers are more reliable with a shorter response scale that they then be offered a two-part question (Fishbein et al., 2001). Thus, as should be noted for all measures, it is important to take into consideration the specific population for which the measure is being developed. The 19-item Scale for Suicide Ideation (SSI) designed to measure suicidal intention has shown high internal consistency and construct validity (Beck, Kovacs, & Weissman, 1979). A developed and tested intention measure for physical activity (Godin & Shephard, 1986) was used by Saunders and colleagues (1997) and includes a selection of five response items indicating a range of intention to be physically active during one's free time. Such statements range from "I am sure I will *not* be physically active" to "I am sure I *will* be physically active."

*Trial Behavior Produces Feedback*

Feedback from experience with a behavior is mostly captured through emotional reactions to the behavior. Hedonic theory focuses on affective responses to behavior as determinants of future behavior (Kahneman, 1999; Williams, 2019). Hedonic responses or emotional reactions (that is, good or pleasure versus bad or displeasure) can provide an index of the usefulness of behavior and its immediate consequences that may influence decisions regarding whether or not to repeat the behavior (Cabanac, 1992; Kahneman, Frederickson, Schreiber, & Redelmeier, 1993). This tendency for humans to maximize pleasure and minimize displeasure has been examined extensively as a mechanism for various behaviors. It is a basic underlying mechanism of learning (Bandura, 1986a, 1986b).

Emotional reactions could be related to any stream of influence: in the cultural-attitudinal stream it would feed back to attitudes, particularly evaluation of consequences and values; in the interpersonal stream it would feed back to normative beliefs, particularly motivation to comply or social bonding or attachment; and in the intrapersonal stream, it would feed back to self-efficacy, particularly self-control or regulation and competence or skills. Fishbein and colleagues (2001) suggest that while no standardized measures have yet been developed, one could explore potential semantic differential terms that elicit more gut-like emotional reactions. Another approach would be to assess changes in attitudes, social normative beliefs, and self-efficacy after experiencing a behavior. For example, after first trying an illegal substance, an adolescent might have more positive or negative attitudes about drug use, depending on their physiological responses and their cognitive interpretations of those physical responses. The adolescent's relationship with peers, parents, and the law or authority is likely to change after initiating the behavior, as is, in turn, his or

her motivation to comply with (or please) them; and the adolescent's sense of self-efficacy to do the behavior (or to resist it) will have changed.

## Conclusion

Many social psychological theories inform our understanding of the effects of public health laws and regulations on behavior. In this chapter, we provided a review of many of these theories that contribute to understanding the effects of public health laws. We also provided an integrative theoretical framework, the theory of triadic influence, to help guide future research on the health effects of law. These theoretical perspectives make clear that laws have their effects on behavior through many pathways. The most obvious path is knowledge and values → expectancies and how they are evaluated → attitudes toward the behavior. However, many other pathways through social contexts or interpersonal relationships are also possible, involving role models (social learning) and perceived norms → attachment to or bonding with conventional values or others and motivation to comply with them → social normative beliefs. Yet other pathways occur through intrapersonal constructs, including social competence and sense of self control → skill plus will (self-determination) → self-efficacy. Attitudes, social normative beliefs, and self-efficacy each have cognitive and affective (control) components, and each contributes to the prediction of intentions to try or to adopt a particular behavior. Once a behavior is tried, the experience with that behavior feeds back in the personal, social, and cultural domains and changes the original causes or predictors. All of this occurs during life-long human development over time. Clearly, the prediction of behavior is complex, and any new law or regulation should be evaluated rigorously to assess both expected and unexpected effects.

## Further Reading

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