

THE THEORY OF TRIADIC INFLUENCE: A NEW THEORY OF HEALTH BEHAVIOR WITH IMPLICATIONS FOR PREVENTIVE INTERVENTIONS

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ABSTRACT

Some theories of health behavior focus on proximal cognitive predictors of behavior, some focus on expectancy-value formulations, some focus on social support and bonding processes, some focus on social learning processes, and some point toward personality and intrapersonal processes. Very few extant theories of health behavior incorporate several of these viewpoints, and those that do are limited in various ways. We propose a new comprehensive theory that integrates constructs from all previous theories. Triadic influence theory includes seven "tiers" of "causes" of behavior that range from very proximal to distal to ultimate, and three "streams of influence" that flow through the seven "tiers": (1) **cultural-environmental** influences on knowledge and values, influencing attitudes, (2) social situation-context influences on social bonding and social learning, influencing social normative beliefs, and (3) intrapersonal influences on self determination/control and social skills, leading to self-efficacy. In addition to the direct influences of these streams, there are important inter-stream effects and influences that flow between tiers. The theory is intended to account for

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factors that have direct effects as well as indirect effects on behavior. It is also intended to account for both new behaviors and regular behavior. Experiences with related behaviors and early experiences with a new behavior lead to feedback loops through all three streams adding to the prior influences of these streams. Our integration of existing theories leads to a meta-theoretical view that suggests higher order descriptions and explanations of health behavior, leads to a new and comprehensive view of health behavior change, and suggests new approaches for health promotion and disease prevention.

In the battle to improve health-related behaviors (**HRBs**), the footsoldiers are in command, the captains rarely communicate with each other, and there are no generals to organize the attack. For those who study and try to improve **HRBs**, the footsoldiers are numerous and often unrelated hypotheses that command health promotion efforts; the captains are relatively microlevel theories, each of which address a limited set of variables that might affect **HRBs**; and the missing generals are comprehensive macrolevel theories that **marshall** together numerous micro-theories into one coherent framework.

To date, even the best and most comprehensive efforts to improve **HRBs** seem guided more by a potpourri of hypotheses and micro-theories than by one unified, integrated and comprehensive macro-theory. For instance, in the battle to deter cigarette smoking among adolescents, interventions are hypothesized to be more successful if they teach adolescents about (a) the adverse consequences of smoking, (b) distorted perceptions regarding the prevalence of smoking among their peers, (c) subtle pressures to smoke from the mass media, and (d) peer pressures to smoke. They are also hypothesized to be more successful if they help students (e) become more involved in school, (f) develop stronger self-esteems, (g) hone their social or interpersonal skills, and (h) practice their refusal skills. Although all of these hypotheses are well-founded, they are not based on any one macrolevel theory. Rather, they are based on a wide assortment of microlevel theories which individually focus on different root causes of **HRBs** and different cognitive, attitudinal, social learning, and intrapersonal processes.

There are several strong theories of **HRBs**, and many of them share common predictions. For instance, the health beliefs model (Becker 1974; Janz and Becker 1984) and Roger's (1983) protection motivation theory both emphasize the role of beliefs in shaping health-related attitudes and **HRBs**. However, theories of **HRBs** more frequently differ from each other in two important ways. First, theories differ in the type of factors they emphasize as causes of **HRBs**. Some, like the health beliefs model and protection motivation theory, focus on health-related beliefs and attitudes. Others, like Hirschi's (1969) social control theory of deviance and Bandura's (1977, 1986) social learning theory, emphasize social influences on **HRBs** and point out how these behaviors can be acquired through (a) one's relationships with

others and (b) observation and imitation, and (c) maintained through social reinforcement. Still others emphasize intrapersonal causes of **HRBs**. For instance, Kaplan and colleagues (Kaplan 1975; Kaplan, Martin, and Robbins 1982, 1984) have argued that low self-esteem is a root cause of substance use, and Friedman (1991; Friedman and Booth-Kewley 1987; Friedman and DiMatteo 1989) has argued that personality characteristics make some people prone to illness and health compromising habits. A recent theory of deviance (Gottfredson and Hirschi 1990) emphasizes lack of self-control as the primary cause of deviance.

Theories of **HRBs** also differ in the proximity of the variables they emphasize. Some theories focus on highly distal or background factors which are probably several steps removed from **HRBs**. For instance, Johnston (1991) has argued that the general social climate during the Vietnam War contributed to substance use during that era. Similarly, McKinlay (1992) has argued persuasively that sociopolitical interventions, such as stringent tobacco regulations and steep cigarette taxes, can dramatically affect **HRBs**. By contrast, other theories focus on variables which are highly proximal to and immediate causes of **HRBs**. Most notably, Ajzen's (1985, 1988) theory of planned behavior argues that any HRB is determined exclusively by reasoned intentions or decisions to engage in that HRB, and that people's intentions or decisions are shaped by their (a) attitudes toward that behavior, (b) perception of normative pressure to engage in that behavior, and (c) perceptions of their health-related self-efficacy or belief in their ability to successfully complete that particular HRB. Ajzen's model suggests that **HRBs** can be improved if interventions foster positive attitudes toward health-promoting behaviors (or foster negative attitudes toward health-compromising behaviors), convince people that **HRBs** are not normative, and nurture people's beliefs that they are personally capable of improving their own behaviors.

Despite the wealth of microlevel theories, no one theory has attempted to **marshall** together attitudinal, social, and intrapersonal influences on **HRBs**. Moreover, no one theory has attempted to describe the mechanisms by which highly distal or background factors (such as the general sociocultural climates stressed by Johnson [1991]) and highly proximal factors (such as the health-related intentions stressed by Ajzen [1985, 1988]) work together to influence **HRBs**. The absence of an integrative, macrolevel theory is unfortunate because such a theory could provide a strong heuristic model and battle plan. That is, an integrative macrotheory could provide a way of understanding seemingly disorganized and unrelated phenomena, and shaping the ideas upon which interventions are based. Consequently, this paper introduces the Theory of Triadic Influence (TTI) as an integration of several influential microlevel theories of **HRBs**. Although the TTI was originally formulated in the context of adolescent substance use (Flay and Petraitis 1993), it is directly applicable to other **HRBs**. When applied to the promotion of **HRBs**, we will argue that

the **TTI** goes beyond all previous theories and adds new insights into what causes and how to improve people's health.

THE THEORY OF TRIADIC INFLUENCE

Some theorists (e.g., Bandura 1986; Frankenhaeuser 1991; Magnusson 1981; Sada 1987) have argued persuasively that a comprehensive understanding of any behavior **must** begin with an integrative analysis of (a) environmental factors, including the broad **sociocultural**- or macroenvironment in which the behavior occurs, (b) situational factors that concern more immediate social situations, contexts, or microenvironments surrounding the behavior, (c) person factors, including characteristics of the person performing the behavior, (d) the behavior itself and closely related behaviors, and (e) interactions among all of these. Figure 1, in a very general sense, applies these suggestions to **HRBs** and points out that these behaviors have roots in a person's general cultural environment, current social situation, and personal characteristics. These may be considered as the three "ultimate causes" of behavior. Admittedly, however, Figure 1 is short on specifics and does not identify which environmental, situational, and personal characteristics contribute to **HRBs**, nor does it help researchers identify ways of improving **HRBs**.

The TTI was designed to provide the specifics which are missing from Figure 1. Like Ajzen's (1985, 1988) theory of planned behavior, the TTI includes the assumption that **HRBs** are most immediately controlled by decisions or intentions, and that decisions to perform health-promoting or health-compromising behaviors are a function of one's (a) attitude toward performing **HRBs**, (b) social normative pressures to perform **HRBs**, and (c) perceptions of self-efficacy in performing **HRBs**.

Unlike Ajzen's (1985, 1988) model, however, another assumption of the TTI is that health-related attitudes, social norms, and self-efficacy represent three "streams of influence" that have different origins and flow through different variables (Figure 2). The **first** stream (center of Figure 2) represents attitudinal influences. Attitudinal influences are thought to originate in the broad **cultural**- or macroenvironment, and flow through factors which affect health-related values, knowledge, expectations, and evaluations regarding the personal, financial, and social consequences of **HRBs**. The second stream (bottom of Figure 2) represents social influences. Social influences are thought to originate in one's current social situation or immediate microenvironment, and flow through factors that affect social normative beliefs regarding **HRBs**. The final stream (top of Figure 2), intrapersonal influences, is thought to originate in inherited dispositions and personality characteristics of the actor, and flow through health-related self-efficacy. In general, the TTI contends that attitudinal, social, and intrapersonal influences independently and in unison affect health-related decisions.

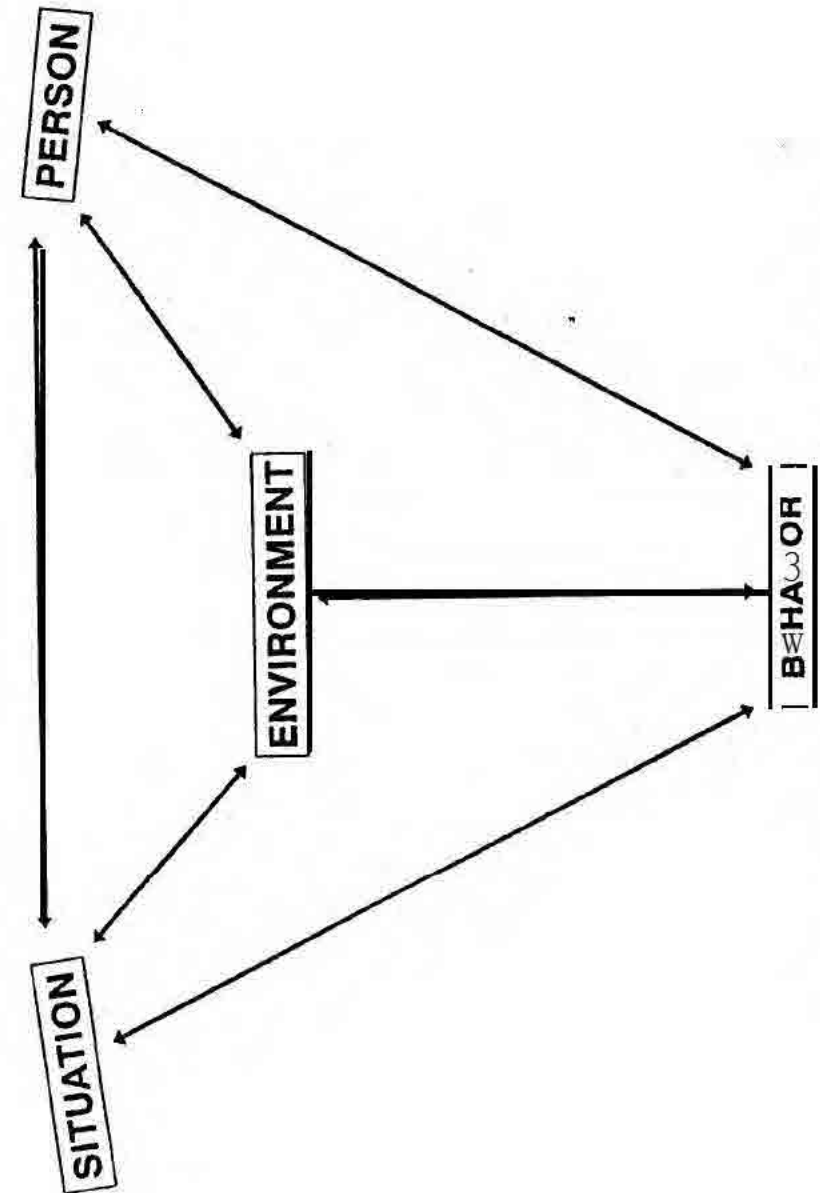


Figure 1. A General Interactional Model of Health-related Behavior

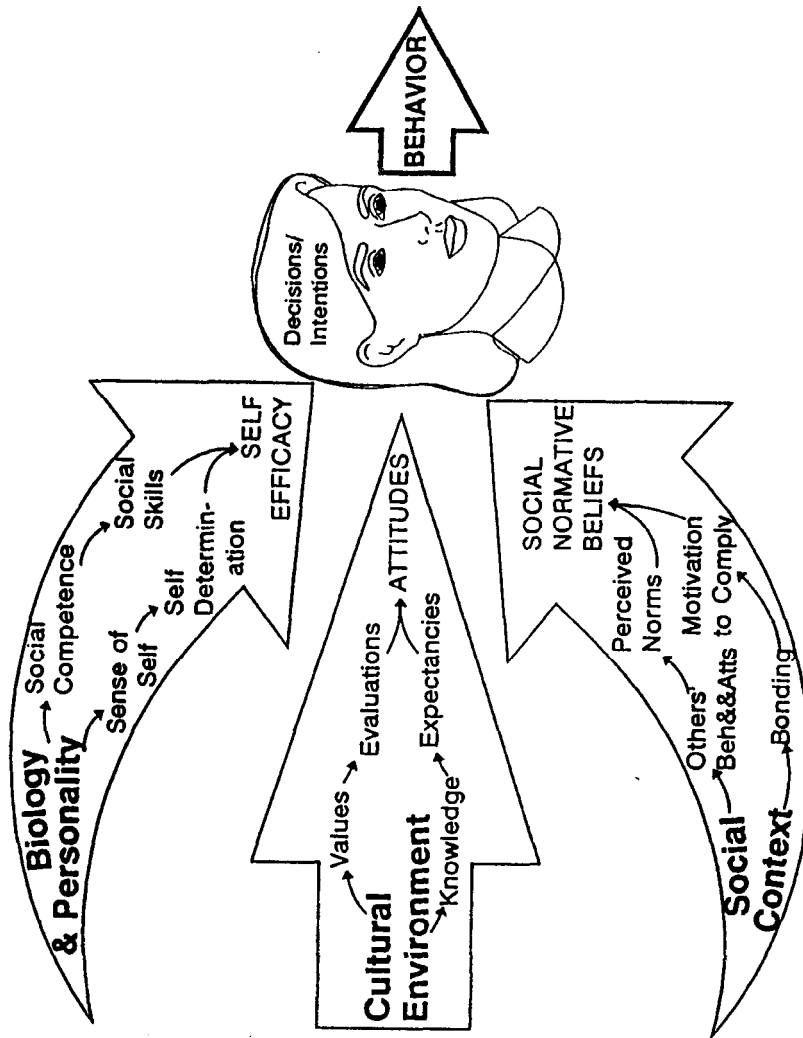


Figure 2. Three Streams of Influence on Health-related Behavior

Moreover, the TTI includes five “tiers” or levels of influence and contends that each stream of **influence** flows through each of these tiers. The tiers are bounded by the ultimate causes of **HRBs** (which lie in the sociocultural environment, more immediate social situations, and basic intrapersonal characteristics) and the most proximal predictors of any **HRB** (which, theoretically, are health-related decisions). Between these bounds lie more intermediate levels of influence that include (a) what individuals extract from, their environments, situations, and basic traits; (b) individuals’ expectations regarding **HRBs** and their evaluation of those expectations; and (c) their **health-related cognitions**.

In general, the **TTI** contends that attitudinal, social, and intrapersonal influences independently and interactively affect decisions to act or not act in a certain way, for example to use or refuse a substance. The theory is intended to account for factors that have direct effects as well as indirect effects on behavior. In addition to the direct influences through the streams described above, there are important interstream effects and influences that flow between tiers. The **TTI** is also intended to account for both new behaviors and regular behavior. Experiences with related behaviors and early experiences with a new behavior lead to feedback loops through all three streams adding to the prior influences of these streams.

Our integration of existing theories leads to a **meta-theoretical** view that suggests higher order descriptions and explanations of health behavior, that in turn leads to a new view of health behavior change, and suggests new approaches for health promotion and disease prevention. We will now offer a more detailed description of the theory, including specific predictions concerning how these three streams affect **HRBs**.

Attitudinal Influences on **HRBs**

The health beliefs model (Becker 1974; **Janz** and Becker 1984), protection motivation theory (Rogers 1983), the theory of reasoned action (Fishbein and Ajzen 1975), and the theory of planned behavior (Ajzen 1985, 1988) all assert that **HRBs** are largely determined by health-related beliefs and attitudes. For instance, the health beliefs model argues that to improve **HRBs**, interventions should increase perceptions that (a) current behaviors pose severe health threats, (b) people are personally susceptible to these threats, and (c) alternative behaviors can **significantly** reduce the likelihood of health threats. However, these theories say little about how health-related beliefs and attitudes originate. Consequently, these theories leave health educators relatively unarmed in the battle to improve **HRBs**. According to the **TTI**, however, broad sociocultural or environmental factors contribute indirectly to health-related beliefs and attitudes, by contributing more directly to health-related knowledge, values, expectations, and evaluations. These influences are detailed in Figure 3.

Sociocultural Environment, Health-Related Knowledge and Health-Related Values

The broad sociocultural- or macroenvironment provides a world of information about health. Schools teach children about the dangers of smoking and drug use; billboards warn adults about unsafe sex; nightly newscasts have regular segments on the causes and prevention of health threats. The TTI recognizes that schools, the mass media, and other people with whom individuals have little personal contact provide much of what people know about health and HRBs. For instance, until the link between sun tanning and skin cancer was covered widely in the media, the dangers of tanning were not well known and, consequently, sun screen was not used widely.

Information provided by the sociocultural environment, however, is not likely to affect HRBs directly in a stimulus-response manner and interventions which rely primarily on disseminating health-related information are unlikely to have sizable effects on HRBs. Rather, the TTI asserts that such information merely contributes to one's base of knowledge about the causes of health threats and ways to avoid these threats (see Path 1). For instance, public health campaigns can inform people that smoking causes cancer, that high sodium diets promote hypertension, and that exposure to the sun increases the risk of skin cancer. In turn, knowledge about health threats can contribute to one's expectations regarding the possible consequences of HRBs (see Path 2). Thus, knowledge about smoking, high sodium diets and sun exposure can, at best, contribute to expectations that smoking cessation, reduced sodium diets, and sun screen will reduce health threats. They cannot, however, affect HRBs directly.

In addition to shaping health-related knowledge, the broad sociocultural environment is also hypothesized to shape health-related values. Johnston (1991) has argued that a sociocultural environment can directly affect personal values and indirectly shape personal behaviors, many of which concern health. For example, he has argued that the political turbulence during the Vietnam War helped shape feelings of social alienation, that in turn contributed to the popularity of substance use in that era.

Johnston's (1991) ideas need not be limited to substance use and can be extended to HRBs in general. The TTI recognizes that many cultural values can be transmitted by government, schools, news media, entertainers, advertisers, and other people with whom individuals have little personal contact. In recent years, healthier lifestyles have been prominently displayed in American society. Going to health clubs has become fashionable, safe sex has become a more common topic, and even fast food restaurants now offer reduced-fat and cholesterol-free fare. Over time, widespread sociocultural values are thought to shape health-related values (see Path 3), such that personal health will take on more salience when government, schools, the media, and society in general emphasize health. In turn, the TTI hypothesizes

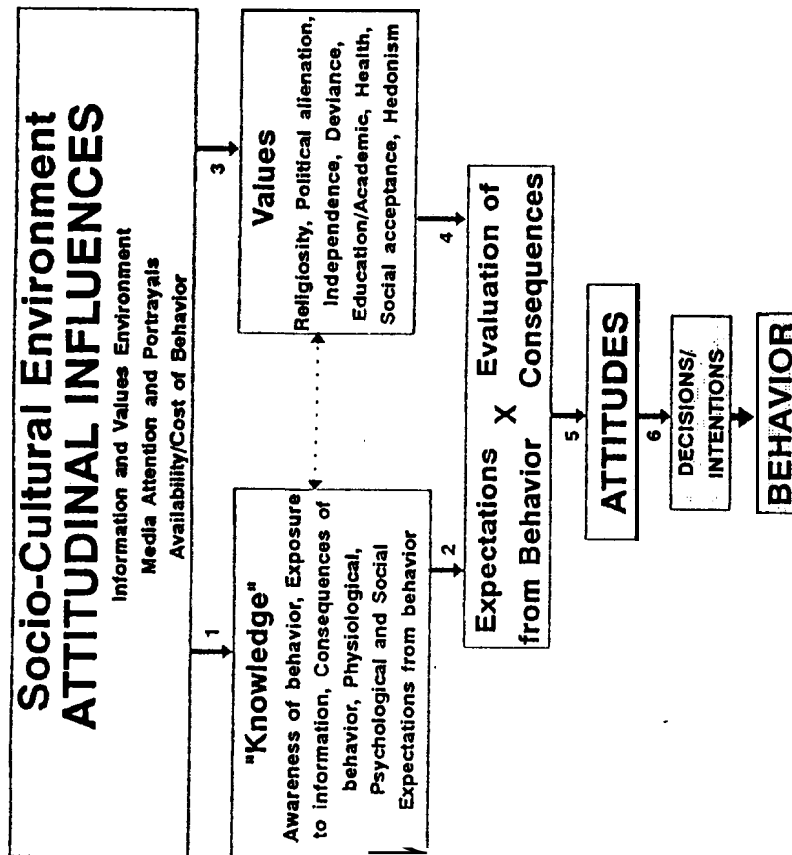


Figure 3. Attitudinal Influences on Health-related Behavior

that health-related values contribute to HRBs, but only *indirectly*, and that their primary effects will be on how people evaluate the expected consequences of various HRBs (see Path 4). For instance, many women might expect that breast self-exams might promote their **longterm** health. Whereas such expectations might promote self-exams among women who worry about their health, they might have little effect among women who are relatively unconcerned about their health or think that breast cancer is extremely rare. Consequently, health educators should anticipate that the effectiveness of interventions will vary over time as sociocultural climates change.

Attitudes toward HRBs and Decisions

Some data (Bachman, Johnston, and O'Malley 1990; Bachman, Johnston, O'Malley, and Humphrey 1988) suggest that substance use is strongly related to both perceptions of personal risks and personal values. Extending this to HRBs in general, the TTI contends that health-related beliefs and personal values converge to shape attitudes toward HRBs. In a manner similar to other theories (cf., Becker 1974; Fishbein and Ajzen 1975; Rogers 1983), the TTI adopts an expectancy-value notion of attitudes. It contends that attitudes toward most HRBs are shaped by (a) expectations regarding the health, financial, and social consequences of a given HRB (i.e., outcome expectancies); and (b) evaluations of those consequences (see Path 5). Moreover, the theory assumes that expectations are shaped by exposure to health-related information from the broad sociocultural environment (see Paths 1-2), and evaluations are shaped by health-related values which are transmitted from the sociocultural environment (see Paths 3-4). These forces combine to shape health-related attitudes which, in turn, contribute to decisions to engage in a health-promoting behavior or a health-compromising behavior (see Path 6).

Social Influences on HRBs

We described the first stream of the TTI as originating in the broad sociocultural environment and flowing through factors which shape health-related values, general beliefs about health threats, expectations regarding the consequences of HRBs, and evaluation of those consequences. All of these factors are thought to affect HRBs by shaping health-related attitudes. By contrast, the second stream of the TTI originates in an individual's more immediate social setting or microenvironment, and consists of factors that are thought to affect HRBs by shaping perceived social pressures to adopt or maintain a given HRB. The theoretical origins of the social stream lie in the assumption that one's own HRBs can be shaped by observing and imitating the attitudes and behaviors of other people to whom one is most closely bonded. This assumption is derived from social bonding theories (e.g., Elliott, Huizinga,

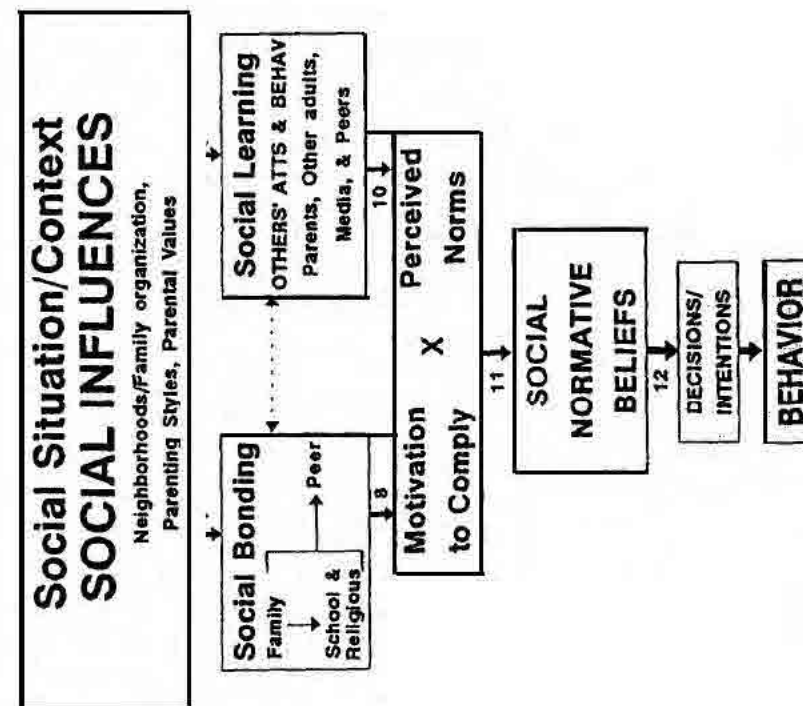


Figure 4. Social Influences on Health-related behavior

and Ageton 1985; Hawkins and Weis 1985; Hirschi, 1969), the theory of reasoned action (Fishbein and Ajzen 1975), and social learning theory (Akers 1977; Akers and Cochran 1985; Akers, Krohn, Lanza-Kaduce, and Radosevich 1979; Bandura 1977, 1986).

Empirical evidence suggests that social influences play a major role in HRBs in general, and substance use in particular. For example, marijuana use is more common among adolescents who have talked to friends about using illicit drugs (Kandel, Kessler, and Margulies 1987), have friends who hold positive attitudes towards marijuana use (Bailey and Hubbard 1990; Kandel et al., 1978), have friends who use cigarettes, alcohol, marijuana and narcotics (see Flay, Miller and Koepke, 1989; Huba, Wingard and Bentler, 1980; Kandel et al., 1978), and have been offered cigarettes, marijuana, alcohol and pills by their friends (Kandel et al. 1978; Huba, Wingard, and Bentler 1980). Moreover, Akers et al. (1979) found among adolescents that nearly half of the variance in alcohol use and nearly two-thirds of the variance in marijuana use could be predicted from their perceptions that significant adults, peers, and close friends approve of alcohol and marijuana use. The mechanisms by which social influences affect HRBs are represented in Figure 4.

Social Settings, Learning, Bonding and Normative Beliefs

The TTI assumes that conditions in an individual's immediate social surroundings contribute to HRBs in two ways. First, social psychologists have long known that one of the best predictors of affiliation and friendship patterns is proximity, such that we bond with those people with whom we spend the most time. Thus, the TTI assumes that immediate social settings or contexts will directly affect to whom an individual becomes most closely bonded (see Path 7) and will indirectly affect with whom an individual is motivated to comply (see Path 8). Second, as sociologists would point out, HRBs are not evenly distributed within a culture, and there are pockets where some health-compromising behaviors are widespread and others where they are less common. Recognizing this, the TTI assumes that social settings or microenvironments can contribute to an individual's HRBs by affecting the health-related attitudes, values, and behaviors of other people in the same environment (see Path 9). In turn, these factors are thought to affect one's perceptions of norms concerning a given behavior (see Path 10). As examples, children from families where no one smokes are likely to think that smoking is socially unacceptable, and adults whose close friends exercise regularly are likely to believe that exercise is normative.

Like Fishbein and Ajzen's (1975) theory of reasoned action, and Ajzen's (1985, 1988) theory of planned behavior, the TTI assumes that perceived norms and motivation to comply combine to affect social normative beliefs directly (see Path I I), and to shape decisions to adopt a particular HRB indirectly (see

Path 12). When applied to health promotion, the TTI would suggest that interventions should not simply provide information about health threats while ignoring social pressures which maintain health-compromising behaviors. It also suggests that interventions might be successful if they (a) alter people's social networks or the social support they obtain from others by, for example, strengthening bonds with and motivation to comply with people who hold positive health-related attitudes and display health-promoting behaviors or weaken motivation to comply with people who encourage health-compromising behaviors; (b) alter the behaviors of those people with whom one is motivated to comply; or (c) change perceptions that a health-compromising behavior is normative or that a health-promoting behavior is not normative.

Intrapersonal Influences on HRBs

Although the TTI asserts that social and attitudinal influences affect health-related decisions, it recognizes that two people under similar social conditions (e.g., bonded to people who disapprove of smoking) and with similar attitudes toward HRBs (e.g., with similar expectations concerning smoking cessation), might not make identical decisions regarding HRBs. Instead, the theory recognizes that inherited traits and personality dispositions might also contribute to health-related decisions and behaviors. Figure 5 identifies potential intrapersonal influences in the TTI.

The "Big Five", Sense of Self, Social Competence and Self-Efficacy

In recent years, there has been a growing acceptance of genetic contributions to personality dispositions, intrapersonal characteristics (Buss and Plomin 1984) and behaviors (McClearn, Plomin, Gora-Maslak, and Crabbe 1991). Although there are potentially hundreds of intrapersonal characteristics that might affect HRBs, numerous personality theorists have argued that personality can be characterized along five basic dimensions, sometimes called "The Big Five" (see Digman [1990] for a review). Despite some disagreement on what to call each dimension, theorists generally agree that personality can be adequately characterized by:

1. behavioral control (e.g., behavioral constraint, impulsivity, task persistence, hyperactivity, aggressiveness, and motivation to achieve);
2. emotional control (e.g., psychological adjustment, emotional stability, neuroticism, and emotional distress);
3. **extraversion/introversion** (e.g., social activity, social adaptability, and assertiveness);
4. sociability (e.g., likability, friendliness, compliance, and conformity); and

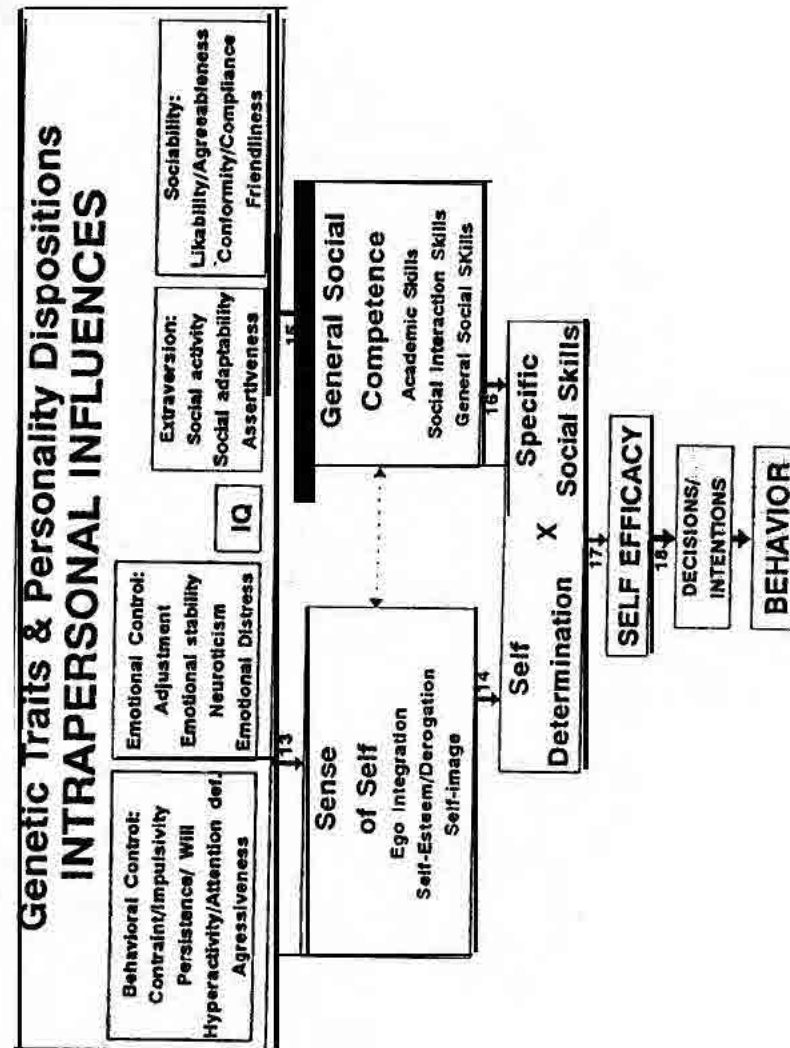


Figure 5. Intrapersonal Influences on Health-related Behavior

5. intellect or general intelligence.

"The Big Five" form the foundation of **TTI's** intrapersonal influences, and the first two are thought to contribute to **HRBs** by shaping health-related self-determination. The **TTI** takes the position that one's general ability to control his or her behaviors and emotions might affect one's sense of self or self-concept (see Path 13) such that people who can control their actions and moods are likely to develop stronger self-esteem and more coherent self-concepts. In turn, they are hypothesized to place greater value on self-determination when it comes to **HRBs** (see Path 14). This hypothesis is based, in part, on the recognition that ceasing a health-compromising behavior and adopting a health-promoting alternative is often a difficult process. For example, high fat and high sodium meals simply taste too good for many people to forsake in favor of blander meals with little fat and sodium. As a general rule, the **TTI** assumes that people with stronger self-determination (i.e., will) should be more interested in planning, regulating, and restraining their **HRBs**. By contrast, those who hold unfavorable or incoherent images of themselves are assumed to be more prone to take risks, act impulsively, and not care as much about the possible consequences of their **HRBs**.

In a similar manner, the third and fourth of "The Big Five" are thought to contribute to **HRBs** by shaping one's health-related skills. Introversion and weak sociability are two traits thought to affect adversely one's general social competence (see Path 15), poor social competence, in turn, is likely to affect a person's perceptions of his or her skills at performing **HRBs** (see Path 16), such that people who are introverted and have trouble getting along in social situations might come to doubt their ability to successfully complete a health-promoting behavior.

Health-related self-efficacy is a crucial component of Bandura's social learning (1977) and social cognitive (1986) theories, and have been incorporated in Ajzen's (1985, 1988) theory of planned behavior, Roger's (1983) protection motivation theory and the recently modified health beliefs model (Rosenstock, Strecher, and Becker 1988). However, only Bandura describes how self-efficacy is determined. The **TTI** makes the assumption that health-related self-efficacy is shaped by self-determination or will to control behaviors in general, and perceptions of personal skills in controlling **HRBs** in particular (see Path 17). People who have the will to control their behaviors, and believe they have the skills to perform a given HRB should have stronger health-related self-efficacy and should be more likely to decide to adopt health-promoting behaviors (see Path 18).

Tiers (levels) of causes

To this point we have described three major streams of influence on **HRBs**: one flowing from the sociocultural environment and flowing into health-related

attitudes, another flowing from one's immediate social situation and flowing through social influences, and a third originating in intrapersonal factors and flowing into health-related self-efficacy. Figure 6 marshalls together these three streams of influence (see Paths 1-18). As depicted in Figure 6, each of these streams flows through multiple tiers or levels of constructs before they have their final influence on behavior. Consequently, one of our most basic assumptions of the TTI is that the causes of HRBs exist on varying levels of influence as follows.

1. The top tier represents the *ultimate causes* of behavior; factors in one's background and environment that are believed to be the deep-seeded, root causes of behavior. They include one's inherited traits and personality dispositions, one's sociocultural heritage and the macro-environment in which one is raised and lives, and more immediate social situations and contexts (microenvironments) in which the behavior takes place.
2. The second tier, which we call the social-person nexus tier, is the level at which the ultimate causes interact to provide the personally relevant, but still general, social relationships, knowledge and values, and sense of self- and social competence.
3. On the expectancy-value (third) tier, properties on the social-person nexus become more specific to the particular behavior we wish to predict. For example, general knowledge influences beliefs about the particular consequences of a particular behavior.
4. All three streams flow into the cognitive (fourth) tier — social normative beliefs, attitudes, and self-efficacy.
5. The social cognitions on the fourth tier determine the final single predictor of any one behavioral action — the decision/intention to act in a certain way in a particular situation (fifth tier).

Our conceptualization of multiple levels of influence on HRBs is consistent with developments in other fields, such as evolutionary biology (Alcock 1989), cognitive sciences (Massaro 1991) personality theory (Marshall 1991) and communications theory (Malamuth 1989) where distinctions have been made among proximal, distal, and ultimate levels of influence. According to this distinction, proximal variables (e.g., health-related decisions) are highly predictive but focus only on the most immediate precursors of a behavior and do little to explain the deeper roots of behaviors. Distal variables, by contrast, focus on various levels of influence, and help explain less immediate causes of behaviors (e.g., general life values). Finally, ultimate causes are exogenous causes that are beyond the immediate control of individuals, but clearly are major determinants of their behavior (e.g., neighborhood organization). When compared to more proximal causes, ultimate causes probably are more deeply rooted but less predictive for any one individual or group. This is because they

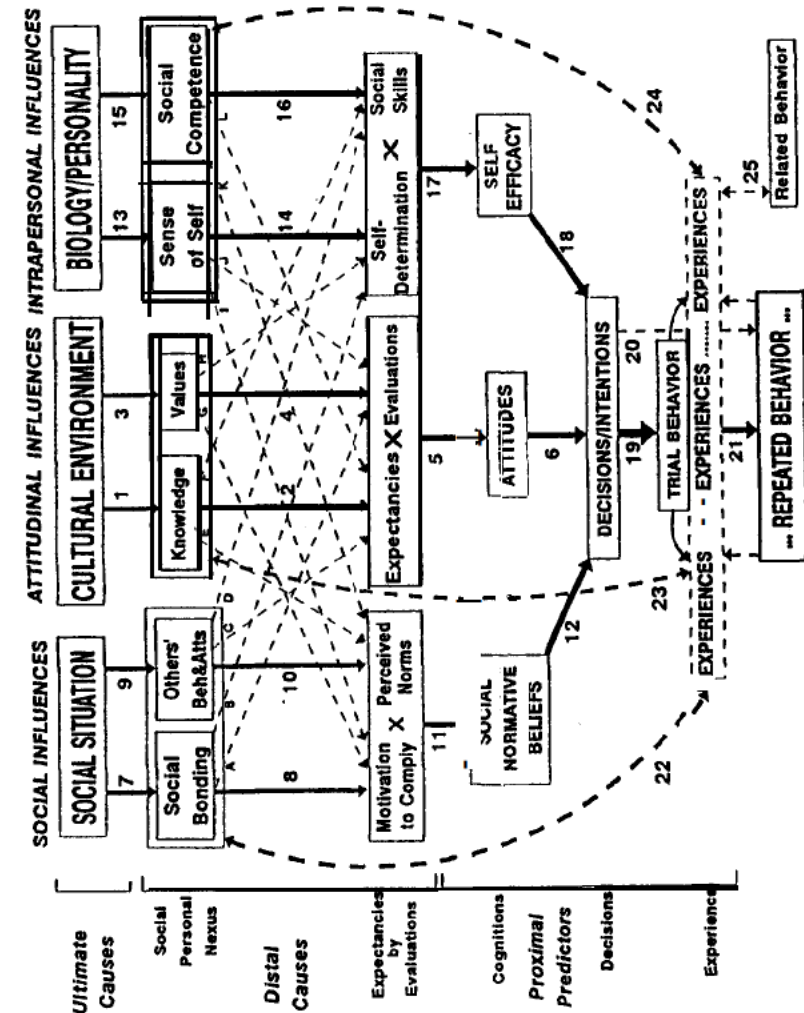


Figure 6. The Theory of Triadic Influence

might have little variance in most studies, they might change little over time for whole populations and they are not easily changed or manipulated experimentally. We have tried to incorporate all levels of influence here, believing it would be a grave error to focus on a single level of analysis at the expense of other levels (cf. Marshall 1991).

Interstream Pathways

Although we have argued that there are three primary streams of influence on **HRBs**, we do not assume that all influences flow neatly down one stream or another. On the contrary, we recognize that factors which primarily affect one stream might also, to a lesser extent, contribute to other streams. In fact, the **TTI** assumes that all possible “interstream pathways” exist between the first and second tiers. Thus, the environmental, situational and personal factors from the first tier are all thought to contribute in varying degrees to (a) social bonding, (b) the health-related attitudes and behaviors of others, (c) health-related knowledge, (d) general social values, (e) a person’s sense of self, and (f) a person’s general social competence. For example, the **TTI** assumes that a personal trait (such as intelligence) might have its primary influences on a person’s sense of self and social competence, but it might have secondary influences on the acquisition of knowledge and values (located in the attitudinal stream), and how **well** one bonds with others and their behavioral expectations (located in the social stream). Thus, when compared to less intelligent people, more intelligent people might have different knowledge about **HRBs**, hold different values, have different social bonds, observe different **HRBs** among other people, establish stronger self-concepts, and feel more socially competent.

Not only is it important to consider interstream pathways between the first and second tiers, it is equally important to consider such pathways between the second and third tiers. There are 12 possible interstream pathways between the social-personal nexus tier and the expectancy-value tier (Figure 6, Paths A-L). Four of these paths (Paths A-D) concern how social influences contribute to attitudinal and intrapersonal influences. Path C, for example, points out that the behaviors and attitudes of others are likely to have strong effects on expectations regarding the social consequences of one’s own behavior, such that individuals who observe others engaging in particular **HRBs** might expect that their own engagement in those behaviors will be viewed positively by other people or that those **HRBs** will produce positive personal consequences. Four other paths (Paths E-H) concern how attitudinal influences contribute to the social and intrapersonal stream. As an example, Path H recognizes that people who adopt conventional values might exert more restraint over their behavior than people who lack conventional values (Hirschi 1969). Similarly, four interstream paths (Paths I-L) focus on how second-tier personal factors contribute to third-tier social and attitudinal factors. In particular, Path J

captures Kaplan’s (Kaplan et al. 1982, 1984) assertion that self-derogation is a key factor in substance use. It also captures the assertion made by Simons, Conger and Whitbeck (1988) that people who are depressed or emotionally distressed might see substance use as a means of coping and personal problems.

Different extant theories may encompass various direct and interstream paths. For example, Bandure’s social learning theory includes the following direct paths: Path 17 from social skills to self-efficacy; the direct Path 18 from self-efficacy to decisions/intentions; and the direct paths 5-6 from outcome expectancies to decision/intentions. Equally important are two interstream paths: Path D from (observation of) others’ behaviors and attitudes to social skills; and Path C from (observation of) others’ behaviors and attitudes to outcome expectancies.

Two features of interstream paths are worth special attention. First, the effects of interstream paths can be either additive or interactive. Additive paths are those where a variable in one stream contributes to a variable in another stream. For instance, the effect of intelligence on health-related knowledge is likely to be additive such that more intelligent people might acquire more knowledge about **HRBs** than less intelligent people. Interactive paths, by contrast, are those where a variable in one stream modifies the effect of a variable in another stream. For example, intelligence might interact with social influences such that, when compared to less intelligent people, more intelligent people might be less susceptible to the health-related attitudes and behaviors of other people.

Second, interstream pathways demonstrate the overpowering importance of the most distal or “ultimate” causes of **HRBs**. Because the effects of the sociocultural environment, more immediate social settings, and fundamental personality characteristics flow both within and between streams, they contribute to **HRBs** in innumerable ways. Consequently, prevention programs that can address these ultimate causes will obviously have the greatest impact over the long term. Unfortunately, however, this is often unrealistic.

Decisions, Experiences, Feedback and Related-behaviors

We now turn attention to describing a dynamic process by which initial decisions and experiences with **HRBs** feedback to influence subsequent decisions and repeated **HRBs**. This dynamic process is represented by Paths 20-25 of Figure 6.

Decision making and the role of rationality

One cornerstone of the **TTI** is that the decision to engage in a particular behavior is the most proximal cause of that behavior. This holds true for both initial or trial attempts at **HRBs** (see Path 19) and repeated **HRBs** (see Path

20). However, the prominence given to health-related decisions does not imply that people, especially adolescents, necessarily make health-related decisions in an *objectively* rational manner. Rather, we take the position that there are important bounds on rationality (Simon 1976) and that health-related decisions are at best *subjectively* rational. That is, we do not assume that people meticulously evaluate all possible consequences of **HRBs** and weight these consequences against the consequences of alternative behaviors. Nor do we assume that people are necessarily consistent in either the consequences they envision or the value they place on those consequences. Rather, **we** assume that health-related decisions are largely suboptimal because they are based on incomplete and imperfect perceptions of **HRBs** (Bandura 1989). For instance, when deriving their attitudes towards substance use, adolescents might unknowingly underestimate the likelihood of adverse physiological consequences and overestimate the value of positive consequences. According to the theory, the actual consequences of **HRBs** are less important than the anticipated consequences. Moreover, although their decisions might be based on largely inaccurate information, the decisions “make **sense**” or seem rational from the perspective of the decision makers. Consequently, the **TTI** assumes that health-related decisions are often based on inaccurate “input” but, nonetheless, follow an otherwise “rational” process.

The Role of Behavioral Experience and Feedback

Once people engage in **HRBs**, they acquire personal experiences which **might** feed back and **influence** their future behaviors. For example, people are more likely to repeat behaviors for which they receive praise from other people they want to **please** and **less likely** to repeat behaviors for which they receive disapproval or punishment. The reinforcement people receive will depend on the strength of social bonds they have with the person giving it. In turn, the reinforcement strengthens the bond with the person giving the **reinforcement** and increases the likelihood of **pkasing** them again in the future by repeating the behavior. This is the feedback loop within the social stream (Path 22 in Figure 6).

There are also feedback loops in the attitudinal and intrapersonal streams (see Paths 23 and 24, respectively). Concerning feedback in the attitudinal stream, how people experience a behavior depends to some extent on their expectations regarding it (viz the many studies of expectancies regarding alcohol use). In turn, performance of a behavior gives people immediate feedback regarding some of its consequences, both good and bad. Whether these experiences are the same as or different from those expected, the experience adds to personal knowledge about that behavior. This modified or reinforced knowledge then influences future behavior. By comparison, Path 24 depicts the feedback loop in the intrapersonal stream, and suggests that personal experiences with **HRBs** might produce emotional and psychological

consequences. For instance, the decision to take up jogging or use heroin might dramatically redefine a person’s self-concept or sense of self.

Another form of feedback is depicted in path 25. Many **HRBs** are inherently similar. For instance, using cocaine and smoking marijuana are closely related **HRBs**. Path 25 depicts the idea that engaging in one **HRB** provides some experiences which are relevant for closely related **HRBs**. Thus, for example, smoking marijuana might provide experiences which affect a person’s knowledge about drug use in general, and consequently contribute to future cocaine use.

IMPLICATIONS FOR HEALTH PROMOTION

The Theory of Triadic Influence is certainly not a simple model of **HRBs**. However, as the need for this volume suggests and the vast army of **microlevel** theories attests, **HRBs** are also not simple. The **TTI** represents our efforts to understand and simplify the complexity of **HRBs**. We believe that the **TTI** provides a fairly comprehensive understanding of how **HRBs** are caused and offers practical guidance on how they can be changed. For instance, by reminding health educators that there are three streams of influence, the **TTI** also reminds educators that interventions which are based on any one stream are likely to have limited effects on **HRBs**. Unfortunately, this is what many interventions do when they only provide people with health-related information (in the hope of influencing their health-related attitudes) but ignore social and intrapersonal factors which also affect **HRBs**.

Similarly, by reminding health educators that there are multiple levels or tiers of influence, the **TTI** reminds them that interventions that focus on one or two levels of influence are also unlikely to have much effect. For instance, the effects of campaigns which aim **primarily at** health-related decisions are likely to be short-lived unless they also attempt to affect more distal factors on which those decisions are made. The “Just Say ‘No’ to Drugs” campaign is a case in point. Encouraging adolescents to decide against substance use might be a **necessary final** step in decreasing substance use, but it needs to be supported by interventions which begin further “up stream.” Laws and the cultural image of substance use need to be changed. The availability of substances needs tighter controls. Social conditions which promote substance use need to be rectified. Sense of self and social competence need developing so that adolescents have the will and skill to control their own behaviors.

In addition to its practical applications, the **TTI** offers some insights into **HRBs** which have not become apparent from other theories. Some of these insights have been mentioned already. For instance, we have already stressed that (a) there are three unique streams of influence on **HRBs**, (b) that there are different tiers or levels of influence within each stream, and (c) that there are conceptual similarities among variables on a given tier.

Other insights, however, have not yet been mentioned. One concerns the etiology of **HRBs** which share close empirical relationships. According to this theory, **HRBs** which are closely related probably share similar etiologies. Figure 7 suggests that two **HRBs** which are closely related might appear different on the surface, but they might share very similar etiologies. For example, the environmental, situational, and personal characteristics which are the ultimate causes of smoking might be exactly the same as those which ultimately cause drug use. Moreover, the distal causes of smoking and drug use, although probably not identical, might nonetheless be very similar, such that the self-concepts, values and social bonds which promote smoking are probably similar to the self-concepts, values, and bonds which promote drug use. In fact, the etiologies of closely-related behaviors might only differ appreciably in their proximal predictors. This explains how closely related behaviors (e.g., smoking and drug use) may be addressed in the same preventive program, but only if careful attention is given to attitudes, social normative beliefs, and refusal skills (self-efficacy specific to each behavior. This also explains how only moderately related behaviors (e.g., drug use and unsafe sex) might share similar distal causes but different proximal causes. In fact, the **TTI** asserts that the weaker the empirical relationship between two **HRBs**, the weaker their etiological similarities.

Another insight offered by the **TTI** concerns the dynamic interaction between feedback loops and levels of experience with **HRBs**. When people first engage in a **HRB**, the feedback loops are likely to be quite long, going all the way up to the second tier. The experience of using illicit drugs for the first time, for example, is likely to shape adolescents' knowledge about drugs (e.g., what "getting high" feels like), their social bonds (e.g., being accepted by peers who use drugs), and their self-concepts (e.g., "I'm a 'druggie'"). However, as people engage in a behavior more regularly, the feedback loops are likely to shorten. For example, as adolescents progress to more regular drug use their knowledge about drugs, social bonds, and self-concepts are not likely to change much. They might, however, become increasingly motivated to comply with peers who use drugs, perceive drug use to be more normative because they are associating with more drug-using peers, have clearer expectations regarding the personal consequences of drug use, evaluate those consequences more favorably as their lifestyles gradually change, and be less willing or able to control or determine their own drug use. Ultimately, as regular behavior continues, the feedback loops shorten to the point where the behavior is repeated habitually. In the case of drug use, regular use turns into habitual and addictive use.

This dynamic process helps explain why health interventions need to be tailored to the experience level of the audience. Drug prevention programs for adolescents, for example, often target social bonds, general values, drug-related knowledge, the sense of self, and social competence. By contrast, drug rehabilitation programs have a different audience. With addicts, the short term

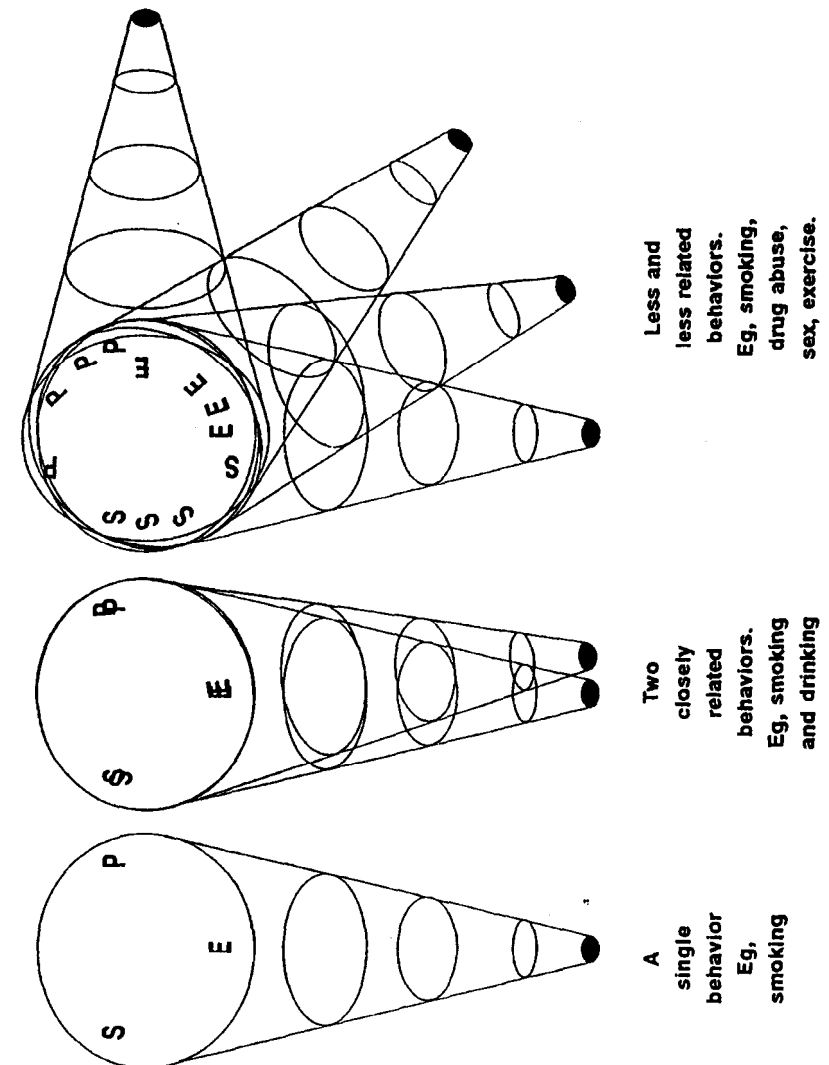


Figure 7. The Similar Etiology of Related Behaviors

objective is often to interrupt the habit, the intermediate objective is to promote the decision to stay **off drugs** one day at a time by promoting **addicts' self-efficacy** and beliefs that they are capable of abstinence, and the long term objective is to change a recovering addicts' social situation, values, and sense of self.

In the end, a good theory of **HRBs** should do several things. It should build upon the work of earlier theorists; it should help organize **our** current knowledge about the causes of **HRBs**; it should add clarity in areas where confusion exists; it should offer empirical predictions; and it should offer insights which are not available through other theories. We believe that the **TTI** does all of these things. We have integrated prominent theories which **address** proximal predictors of **HRBs**, such as the health beliefs model (Becker 1974; Janz and Becker 1984) and the theory of planned **behavior** (Ajzen, 1985, 1988). We have also integrated notions about the ultimate and distal causes of **HRBs** (e.g., Johnston 1991; **McKinlay** 1992). Furthermore, the **TTI** helps organize and clarify current knowledge about **HRBs** by pointing to different streams and levels of influence. Finally, it offers testable predictions and insights about the etiology and dynamics of **HRBs**. As a macrolevel theory, the **TTI** provides a framework for **marshalling** together hundreds of hypotheses and dozens of microlevel theories in the field of **HRB**.

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