

The 3D Health Alliance Project: The Why and How

I. INTRODUCTION

Educators and others interested in improving the health of Maine adolescents face serious challenges today. Various measurements and trends indicate an overall unacceptable state of health for this population. These outcomes are likely mediated by a number of factors, including individual health behaviors and community health status. Indicators and trends related to these and other mediators are also sobering. Needed are innovative programs and charismatic leaders to share messages to help adolescents find ways to develop perspectives and create lives that promote long-term, widespread health. This literature review includes a description of a theoretical framework linking individual, community, and environmental health, as well as research about present threats to adolescent health, the insufficiency of various attempts to counter those threats, and use of tested theories and research findings in development and proposed implementation of the 3D Health Alliance Project.

II. THEORETICAL FRAMEWORK

Numerous factors can influence development of positive and negative adolescent health outcomes. Models derived from well-tested theoretical constructs can help in envisioning how outcomes develop by organizing and accounting for various types of mediators, as well as interrelationships between mediators and temporal effects. Figures 1 and 2 (see below) represent the author's attempt to illustrate the main assumptions upon which subsequent descriptions of health problems and the 3D Health Alliance Project are based.

By combining and building on constructs from a variety of theories, these currently untested models allow for application of varied research about health problems and interventions. The idea that real and perceived environments are important factors comes from Bandura's Social Cognitive Theory, as does behavior modeling as a teaching tool (Bandura 1977). From the Health Belief Model (HBM) come the concepts of perceived benefits and barriers for a given behavior, along with perceived susceptibility to and severity of a given health outcome (Janz 2002). Associated knowledge or awareness levels tend to underlie these beliefs. Self-efficacy, or self confidence about being able to perform a behavior under specific

conditions, is another concept borrowed from the HBM (Janz 2002). Meanwhile, belief-linked attitudes (Figure 2) and behavioral intentions are key constructs from the Theory of Reasoned Action (Montaño 2002). Habits can also be powerful predictors of future behaviors (Triandis 1977). Finally, mental heuristics, cognitive shortcuts used to simplify decision-making, come from consumer research by Tversky and Kahneman (1974). Community and environmental health behaviors and outcomes are additions made by the author to expand the model's scope.

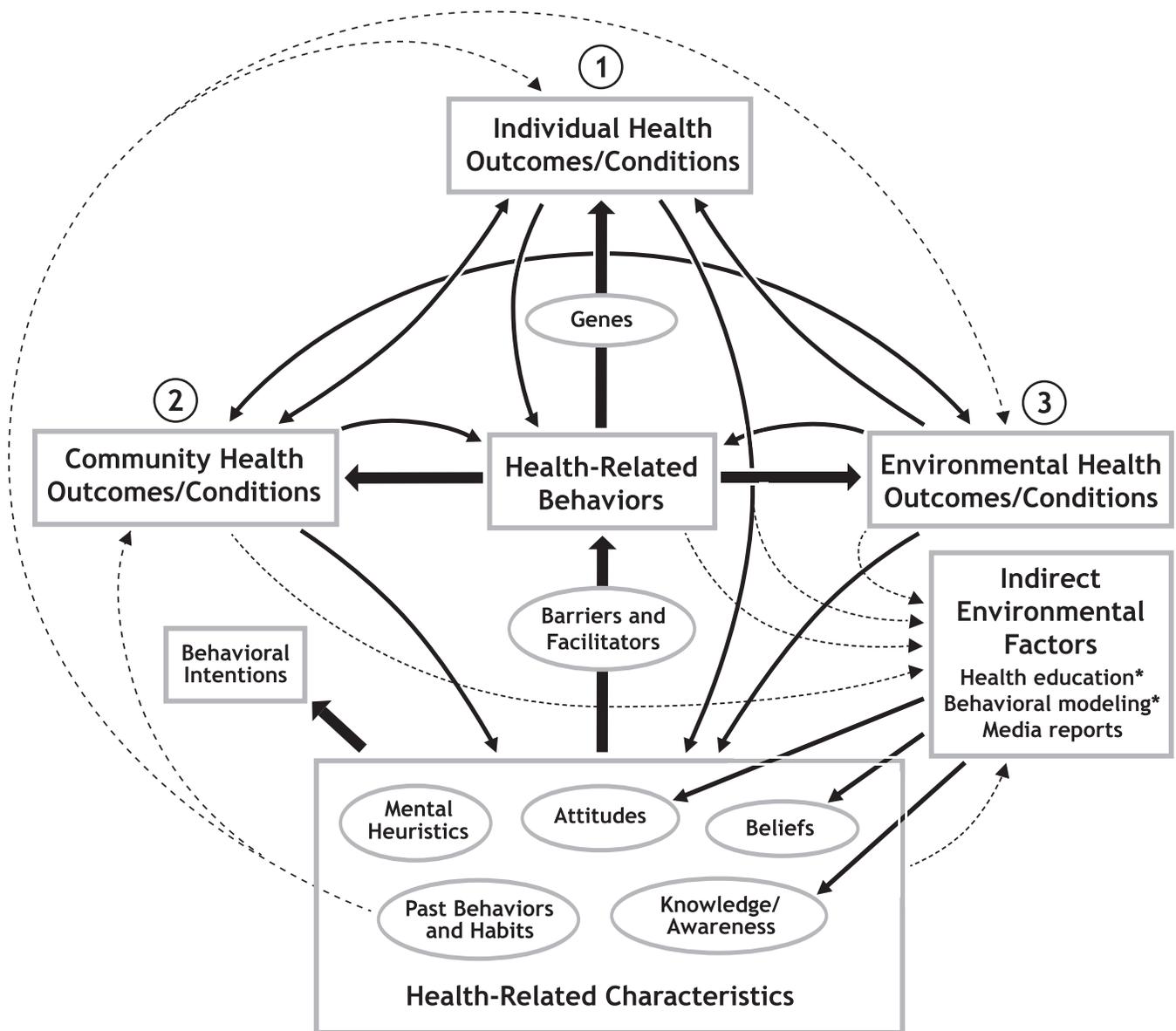


Figure 1. The 3D Health Model

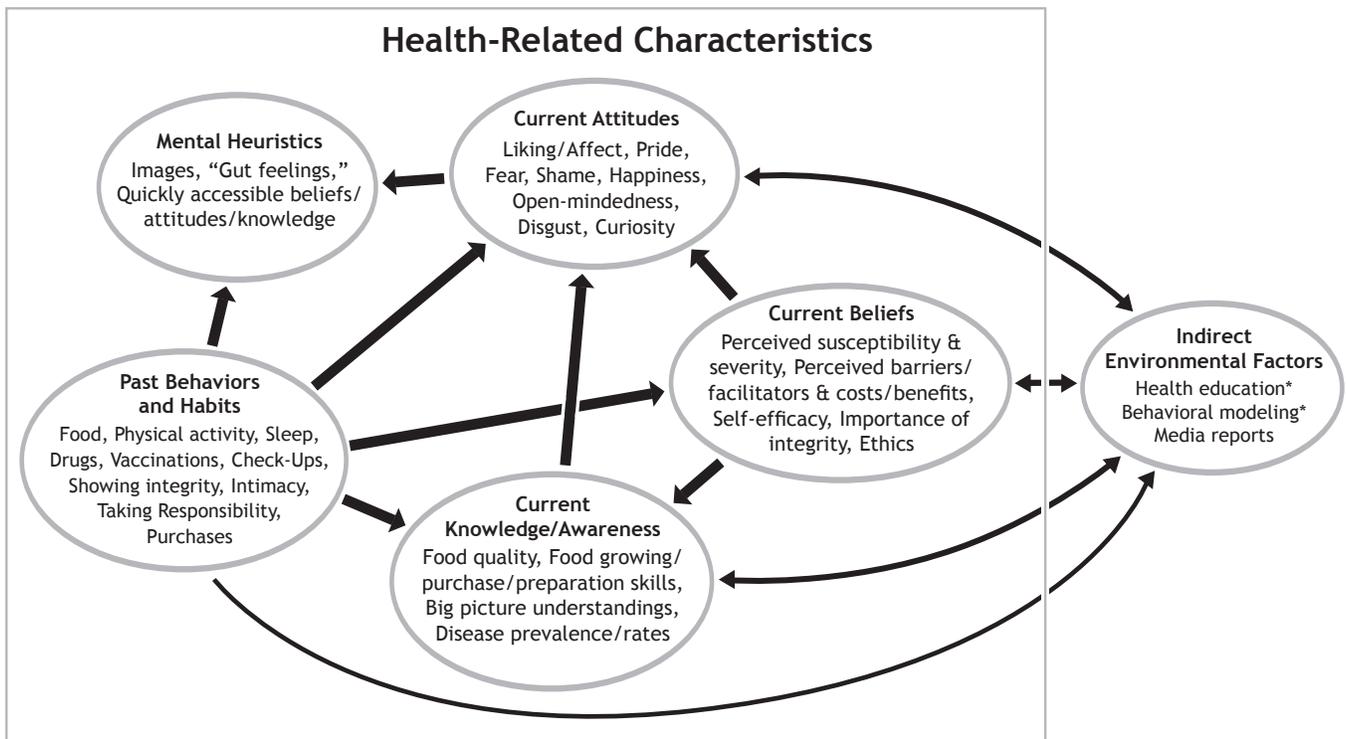


Figure 2. Theoretical Cognitive and Habit-Related Behavioral Mediators in Individuals

As applied to The 3D Health Alliance Project, the crux of the 3D Health Model lies in its depiction of relationships between individuals and 3 levels of health outcomes/conditions. It portrays individual health outcomes/conditions as arising from health-related behaviors (with influence from genes). The health-related behaviors in turn depend on how barriers and facilitators mediate the effects of health-related characteristics like attitudes, beliefs, knowledge/awareness, habits, and mental heuristics. In addition, indirect environmental factors like behavior modeling are shown as capable of influencing attitudes, beliefs, and knowledge/awareness.

Health-related behaviors also exert important effects on the health of communities and the natural environment. In the context of this piece, "communities" can include families, schools, towns/cities, or whole societies. "Environmental health" refers to the condition of natural habitats and resources. Buying nutritious food for one's family or spreading diseases through risky sexual activity are examples of contrasting behaviors with community health implications. Meanwhile, consuming sustainably produced foods or driving a gas-fueled car are examples of behaviors with environmental implications.

A single behavior often has implications for multiple types of health outcomes. Buying food for one's

family, assuming the buyer consumes some of it, is likely to contribute to specific individual, community, *and* environmental health outcomes. Becoming aware of the potential for having such effects on others may be a key step in consumers taking responsibility for their actions.

The model further accounts for potential influences on individual health based on community and environmental health conditions. These influences may be direct or occur via effects on health-related behaviors. Abusive parenting can directly jeopardize adolescents' health, while availability of local recreation programs can be an indirect mediator by promoting after-school physical activity. Likewise, contaminated drinking water can harm consumers directly, while excessive summertime heat can do so indirectly by discouraging physical activity.

As indicated by other arrows, factors related to health are perceived to interrelate in numerous ways. The model accounts for ways in which:

- Community and environmental health outcomes/conditions can influence one another
- Individual health outcomes/conditions can influence community health outcomes/conditions
- Past behaviors and habits influence all three health outcomes/conditions
- All three health outcomes/conditions can influence health-related characteristics like beliefs and attitudes

Indirect environmental factors, including health education, behavioral modeling, and media reports, are all also subject to influence. The model depicts this through dashed arrows pointing to the indirect environmental factors box from all three health outcomes/conditions, as well as from the health-related behaviors and characteristics boxes.

There is a variety of evidence supporting the existence of these influences. As described below, effective health curricula are research-based. For example, measuring existing health-related characteristics, along with associated behavior and health outcome prevalence, is essential for designing interventions that address health priorities and limiting factors (Durlak 2007). Meanwhile, as indicated by expenditures on market research (Longenecker 2006), product marketers (including news companies) seek to understand, influence, and tailor their goods to changing consumer interests, perceptions of “coolness,” and purchasing behaviors.

Health-related characteristics (attitudes, beliefs, knowledge/awareness, past behaviors and habits, and mental heuristics) also interrelate in interesting and frequently measurable ways. Figure 2 lists examples of each characteristic and also indicates the author's perceived directionality of influences. Since the relative roles of the characteristics likely vary for different behaviors, this model does not present them in any order of importance. As with Figure 1, it also portrays indirect environmental factors as exerting effects on knowledge/awareness, beliefs, and attitudes. Along with past behaviors and habits, these factors are all depicted as influencing the indirect environmental factors as well.

Perturbations within the conceptual framework of health factors and outcomes in Figures 1 and 2 have numerous impacts. As proposed by Bandura through the construct of "reciprocal determinism," change in one place, such as adoption of a new individual health behavior, tends to produce other changes (Bandura 1977). The system is dynamic and tends to generate unexpected outcomes, warranting both humility and vigilance from those attempting to predict, influence, or monitor the effects of interventions.

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