



## Motivation for Healthy Behavior: A Review of Health Promotion Research

Sarah Dunsmore and Patricia Goodson

### ABSTRACT

*Authors reviewed the theoretical history of the “motivation” construct, and its utilization within past/current health behavior research. Textbooks and review articles functioned as sources for the theoretical history review. Research published within a 10-year period (1993–2002) in four health promotion journals (all with impact factors  $\geq 1.0$ ) comprised the systematically reviewed data. Only empirical studies containing the term “motivation” in the title/abstract were included. Studies were excluded if they did not examine motivation as a focal variable and/or assessed non-health behaviors. Data abstracted included the definition of motivation; theoretical framework; measurement tool(s) used; type of behavior being studied; and indicators measured. Abstracted data were coded and organized into a matrix. Data matrixes were qualitatively assessed. Among reviewed studies, only four (9%) provided a definition of motivation. Only eleven studies specifically measured motivation despite all included studies having “motivation” in the title/abstract (25%). The most common indicator used to measure motivation was intention. While seventy-three percent of the studies ( $n=32$ ) were theory-based, 21 different theories were used. Eleven of the studies (25%) focused on preventive behaviors ( $n=11$ ). The studies reviewed varied in the conceptualization and measurement of motivation. Such variability may significantly affect the development and evaluation of motivation-focused interventions.*

### INTRODUCTION

Etymologically rooted in the Latin word *motive* (“to move”), motivation is perceived and valued—by scholars and practitioners alike—as one of the most powerful elements in mobilizing individuals to action.<sup>1</sup> Health education, in particular, relies heavily on human motivation to foster healthy behaviors, especially since most health education efforts depend on the *voluntary* commitment of individuals—as opposed to coerced participation—for behavioral change to occur.<sup>2</sup> Indeed, behavior change programs that target motivation as a mediating factor are not only successful in

accomplishing at least some of their behavioral goals but also remain consistent with the principle of individual autonomy—a cornerstone value of health promotion practice.<sup>3–5</sup>

Given the ubiquitous nature and crucial importance of the construct “motivation” both for understanding health behavior and for effecting behavior changes, it becomes imperative to examine the question of how current health promotion researchers have handled the construct. To the best of our knowledge, similar attempts at historically and empirically organizing this area of research have not been undertaken. To exam-

ine the issue, the authors conducted a systematic review of a decade of health promotion literature and, to sharpen its focus, couched the review within the context of the historical development of the construct.

*Sarah Dunsmore, PhD, is assistant professor with the Department of Health & Nutrition Sciences, Idaho State University, Campus Box 8109, Pocatello, Idaho 83209; E-mail: dunsarah@isu.edu. Patricia Goodson, PhD, is an associate professor with the Department of Health & Kinesiology, Texas A&M University, 4243 TAMU, College Station, TX 77843-4243; E-mail: pgoodson@hlkn.tamu.edu.*



## Objective

The purpose of this paper, therefore, is two-fold: First, to *selectively* trace the theoretical history of “motivation” as the construct was elaborated and applied within different theoretical perspectives; and second, to review a sample of health promotion literature to identify how motivation is being defined and measured within health behavior research. This assessment reviews the conceptual and operational definitions offered by researchers to explain and appraise motivation, the theoretical frameworks utilized to support the understanding of the concept, and the measurement tools researchers employed to test the concept and its theoretical relationships. Forty-four studies published in four major health promotion journals between January 1993 and December 2002 are reviewed.

## Theoretical History

From its nearly simultaneous origins in the fields of Biology and Psychology, the construct of motivation has evolved through multiple iterations and various disciplines into its present-day form and function.<sup>5,6</sup> Below is a brief, selective synopsis of this evolution, including its treatment by contemporary health behavior theories.

In the 1930s and 40s, drive theories—still influential in some scientific circles—understood motivation as physiological deficits or biological needs prompting behaviors that, when practiced, satisfy those deficits.<sup>6</sup> Because these theories’ emphasis was mainly on biological factors, concepts such as instinct, arousal, drive and energy were its central foci, as were the physical aspects of behavior; cognitive factors, therefore, were largely considered to be irrelevant.<sup>7</sup>

One of the drive theories of the 1940s, attributed to Clark Hull, proposed that people seek to maintain physiological stability, or “homeostasis” through their behavior.<sup>7</sup> An internal tension to remain at this level of stability produces *drive*, or the incentive to lessen unpleasant disturbances to equilibrium. An example of drive is human hunger. Without food, an individual feels an internal tension signifying the need for

food. In order to restore the desired state of equilibrium, the individual must attend to the hunger *drive or motive* that directs him/her to eat. Stability is regained with the reduction of this tension.

If drive theories emphasized a nearly direct and organic stimulus-response relationship between motivation and behavior, field theories (which more or less followed drive theories in the chronology of motivation studies) provided a cognitive model of motivation and behavior. Field theories deal primarily with voluntary, action-oriented decision making. Their primary assumption is that an individual attempts to enhance satisfaction and minimize discomfort through *rational choices* of opportunities that will facilitate satisfactory circumstances.<sup>8</sup> It is within this category of theories that choice is first introduced as a factor influencing behavior change.

Perhaps the most influential theory within this framework is that proposed by Kurt Lewin.<sup>9</sup> Lewin suggested that motivation depends on the *value* that is placed upon a specific goal, as well as the *probability of achieving* that goal. The greater the value of the satisfactory circumstances resulting from the achievement of the goal, the stronger the level of motivation.<sup>9</sup> For example, a high school student who understands that good grades will enable him/her to get into college and believes there is a high probability of him/her achieving good grades, will be more motivated to obtain a good grade on a calculus test than someone who does not value the goal of college admission.

In the latter half of the 1950s, John Atkinson introduced Achievement Theory.<sup>10</sup>

The theory focuses on the motivation of individuals toward achievement-related tasks varying in levels of difficulty. Within this framework, people are not motivated to achieve in order to obtain extrinsic rewards such as money or promotions. Instead, the motivation is simply to accomplish the specified goal.<sup>10</sup> At least four types of motivation—each with their own corresponding theories—have been identified by achievement theorists: motivation to im-

prove, motivation to demonstrate ability, motivation to either improve or demonstrate ability in order to *improve one’s standing* relative to others, and motivation to either improve or demonstrate ability in order to *display a high standing* relative to others.<sup>11</sup>

As this line of thinking stressed achievement-related behaviors, its applicability was restricted. This limitation did not preclude, however, achievement motivation research from experiencing a resurgence in the late 1960s—when “...motivational research became almost synonymous with achievement motivation research”<sup>11</sup>—nor did it preclude achievement motivation’s sustained prestige in areas such as physical education pedagogy, for instance.<sup>12</sup>

But the limited applicability of constructs such as drive, energy, arousal, and goal achievements forced researchers to search for a more comprehensive approach to the study of motivation.<sup>13</sup> The 1960s, therefore, saw the development of cognitive theories of motivation, which dominate the field to this day.<sup>14</sup>

Cognitive models explain the transformation of motivation into behavior as resulting from the influence of mental processes. Although both environmental and biological factors still influence behavior, cognitive theorists understand that influence to be *indirect*, mediated by factors such as beliefs, emotions, and self-efficacy.<sup>15</sup> An increased emphasis on intra-personal cognitive variables, a heightened interest in individual-level processes such as perception, learning and memory, as well as a keen curiosity regarding inter-personal variability, set the stage for this shift in the focus of motivational studies.<sup>7,14</sup>

Many of the health promotion theories currently in vogue are descendents of this same cognitive tradition, explaining health behaviors themselves as a function of mental (intra-personal) processes. But even as health behavior theories have also included elements of social interaction theories and, to a certain extent, of behaviorist theories (attempting to explain health behavior comprehensively as a function of multiple factors at the individual, social and



biological levels), it is within the cognitive tradition that motivation and health behaviors converge. The understanding of specific health behaviors (such as undergoing preventive screening) is now greatly enhanced through the study of factors that shape individuals' motivation for healthy practices.

An example of a cognitive approach to health behavior, the Health Belief Model (HBM) is a psychosocial framework that attempts to explain individuals' engagement in preventive behavior as a function of, among other factors, motivation.<sup>16,17</sup> Although not accepted as a well-developed theory within the field of psychology, HBM is widely used by health behavior researchers and practitioners, thus warranting inclusion in this review. The model's basic assumption is that once an individual is aware of a health risk, an assessment of costs and benefits motivates action.<sup>18</sup> After assessing the behavior through the perspective of each of the six constructs—perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues-to-action, and health motivation—the individual finds him/herself motivated, or not, to act.<sup>19,20</sup>

Although motivation is not proposed as a construct within the Transtheoretical Model (also known as the Stages of Change model), an individual's "readiness" to behave functions as an indicator of motivation in that model.<sup>21,22</sup> "Readiness" is organized into stages within this framework, assessing the probability of actually changing an individual's current behavior. The level of readiness, or stage transition, is an indicator of the level of individual motivation.<sup>23–28</sup>

The fundamental constructs of the TTM—pre-contemplation, contemplation, preparation, action, maintenance, and termination—represent temporal dimensions regarding one's decision to act, that facilitate understanding of an individual's level of intention, desire, or "motivation."<sup>21,22</sup> Some researchers have titled the TTM phases as "motivational stages."<sup>27</sup>

The focus of both the Theory of Reasoned Action (TRA) and the Theory

of Planned Behavior (TPB)<sup>29–31</sup> is on "...theoretical constructs concerned with individual motivational factors as determinants of the likelihood of performing a specific behavior."<sup>32</sup> Given that the TPB is, essentially, an expansion of the TRA, only the TPB will be described here.<sup>33</sup>

Behavioral intention—which is the most important determinant of behavior according to these theories—is often equated with motivation and is understood within a value-expectancy framework. The value, or expectancy, placed on the outcome of a given behavior determines an individual's attitude, which in turn directly determines behavioral intention. If the behavior is valued and expected to produce favorable results, the individual is theorized to be more motivated to behave. This concept is similar to the value-expectancy and the costs-benefits analysis proposed by the Health Belief Model.<sup>18</sup> If the benefit resulting from a particular action is perceived as greater than the cost necessary to obtain it, motivation for action occurs.<sup>30,33</sup> While other factors also influence intention (perceived norms and perceived behavioral control), much of the empirical testing of this model has revealed that an individual's attitudes are the strongest predictors of intention/motivation.<sup>34</sup>

According to Social Cognitive Theory, action is undertaken if a person feels he/she has control over the outcome, if few external barriers are present in the environment, and if the person has strong self-efficacy.<sup>20</sup> According to Bandura, one's sense of efficacy (or confidence in the ability to perform the behavior) is the single, most necessary motivational element, moving individuals to action.<sup>35,36</sup>

Originally termed *Social Learning Theory*,<sup>37</sup> this framework was based on Hull's mechanistic drive theories.<sup>6</sup> While proposing that behavior is motivated by physiological drives, not cognitions, Hull nevertheless suggested that individuals who experience such drives learn to respond by observing others' responses to similar drives, hence the name Social Learning Theory. Hull also maintained that outside

reinforcements influence an individual's drive or motivation to behave. He suggested that reinforcements connect certain behaviors to certain stimuli, making it more likely that a particular behavior will occur if the stimulus is present.

The notion of reinforcements for behavior made its way into Social Cognitive Theory, which distinguishes between intrinsic and extrinsic reinforcements.<sup>33</sup> External or extrinsic reinforcement is the occurrence of an event that is known to reinforce an individual's expectation of that event. Internal or intrinsic reinforcement is a person's expectation that an event will have a certain important value. According to social cognitive theorists, individuals perform specific behaviors because they are positively reinforced, but much of the learning of new behavior occurs by observing reinforcements that others receive for their behavior.

While the concepts of extrinsic and intrinsic reinforcements are widely used within the motivational literature to describe social influences on behavior, they are, nonetheless, the center of strong controversy among socio-behavioral scientists.

Some scholars suggest that external reinforcement dampens natural internal motivation, while others claim that only internal rewards can foster sustainable motivation. The health promotion literature contains ample evidence to support both points-of-view. Many argue that "...any external constraint imposed on behavior may reduce the level of internal motivation."<sup>38</sup> But not everyone views external reinforcements as detrimental to internal motivation. Eisenberger, Pierce, and Cameron,<sup>39</sup> for instance, decry the detrimental effects of reinforcement on intrinsic motivation as a myth, and as occurring only in limited circumstances. While recognizing that certain types of rewards may reduce intrinsic motivation, they acknowledge that other types of extrinsic reinforcements may have none or even a positive effect upon intrinsic motives.

For Self-Determination Theory (SDT), individuals have certain basic psychologi-



cal needs; if these needs are fulfilled, the person is likely to be healthy and have a greater sense of well being. Attempts to meet the basic needs of *relatedness*, *competence*, and *autonomy* form the basis for motivation—identified, within this framework, as intrinsic, extrinsic, and amotivation.<sup>14,40</sup>

Intrinsic motivation is what moves people to participate in activities for the sheer enjoyment the activities provide.<sup>14</sup> Conversely, extrinsic motivation leads to performance of a task in response to the attainment of an outcome separate from the activity. Extrinsic motivation still produces intentional behavior, but often results in varying levels of autonomy within the individual.<sup>1</sup> For instance, a female who exercises regularly because she understands the value that exercise has for her longevity and well being is extrinsically motivated. Yet another female who exercises only to comply with her husband's controlling demands, would also be extrinsically motivated. Although both are examples of extrinsic motivation (as opposed to, for instance, exercising for pure enjoyment) the former involves an autonomous regulation of the behavior, while the latter describes its external regulation. Given that autonomy constitutes a basic psychological need, extrinsic motivation is perceived by theorists as potentially detrimental to an individual's sense of autonomy and should, therefore, be less favored than intrinsic motivation. Finally, *amotivation* is defined as unwillingness, lack of intention to behave.<sup>14</sup>

While the historical synopsis above depicts a rich and complex evolution of the construct of motivation, the literature reviewed below documents a snapshot of the state-of-the-art regarding health promotion researchers' contemporary use of the construct. The review examines—within a decade of publications—the conceptual and operational definitions offered to explain and assess motivation, the theoretical frameworks utilized to couch the understanding of the concept, and the measurement tools employed to test the concept and its theoretical relationships.

## METHODS

### Data Sources

In order to focus on the highest-quality research available to health promoters, only journals that had an impact factor (IF) of 1.0 or higher in 2002, and were available to the authors were selected for review. The impact factor—a proxy measure for journal quality and scholarly impact—reflects the number of citations a journal receives over time.<sup>41</sup> Although subject to debate, impact factors remain appropriate benchmarks of journal quality.<sup>42</sup> Four journals met these criteria: *American Journal of Public Health* (IF = 3.2), *Health Psychology* (IF = 3.0), *Health Education and Behavior* (formerly *Health Education Quarterly* – IF = 1.9), and the *American Journal of Health Promotion* (IF = 1.0).

### Inclusion/Exclusion Criteria

Studies from these four journals were included if they satisfied three requirements: (1) had been published between January 1993 and December 2002; (2) they contained the term “motivation” in the title or abstract (suggesting that motivation might be among the study's focal variables) and; (3) reported an empirical investigation. The 10-year time frame was chosen because the authors believed it would yield both a manageable set of studies while capturing temporal trends or variations.

Studies were excluded if they examined factors such as intention, volition, outcome-expectancies or self-direction, without relating or linking them to the concept of motivation and/or they assessed non-health behaviors. Non-empirical treatments such as theoretical or review articles also were excluded.

Between 1993 and 2002, a total of 4,676 articles were published in the four selected journals. Forty-four studies (N = 44) met the inclusion/exclusion criteria and comprised the sample for this review.

### Data Extraction and Synthesis

Information from each included study was abstracted, coded and organized into a matrix that culminated in Table 1.<sup>45</sup> The lead author coded each of the studies. Ten

percent of the studies were abstracted by both authors.

Methodological quality was assessed specifically as it pertained to the construct of interest: motivation. Data abstracted from each study included, among others, its definition of motivation and the source of the definition; the theoretical framework being applied in the study; the measurement tool(s) used; whether the data of the individual studies' were tested for validity and reliability; and sample characteristics. Indicators of motivation were also identified (Table 1). Factors that were used interchangeably with, or in place of motivation were considered an indicator of motivation.

## RESULTS

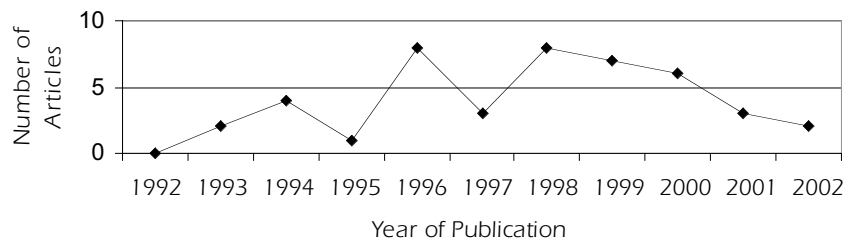
Figure 1 depicts the number of motivation studies published in each of the four selected journals while Figure 2 presents the fluctuations in the number of articles, over time. Twenty-three studies (52% of reviewed manuscripts) were published in *Health Psychology*. Eight studies (18%) were included in *Health Education & Behavior*. *The American Journal of Public Health* provided six studies (14%) on motivation, while seven (16%) came from *The American Journal of Health Promotion*. Although two surges in publication are noted in 1996 and 1998, the apparent trend is one of declining number of publications.

Although researchers have tested the theoretical relationship between motivation and many types of health behaviors, a plurality of reviewed studies examined motivation in relationship to *preventive behaviors* (n=11, 25%) such as sunscreen use,<sup>44</sup> mammogram utilization,<sup>45</sup> and participation in heart healthy activities.<sup>46</sup> The majority of these studies were published in *Health Psychology* (n = 7, 63%). Of the studies that focused on motivation and preventive behaviors, three studies specifically analyzed HIV/AIDS-related behaviors.<sup>47-49</sup> Studies focusing on drug use/cessation (n=9, 20%) and dietary change/adherence (n=8, 18%) were also prevalent. Albeit less frequently, motivation also was examined in conjunction with exercise (n=7, 16%),

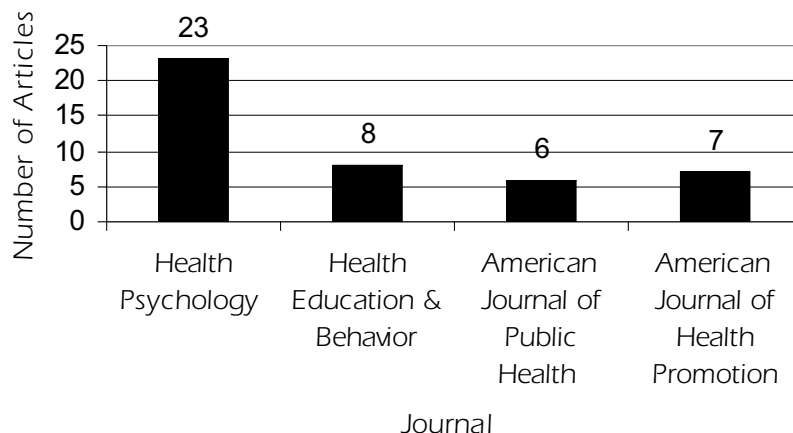




**Figure 1. Number of motivation-related articles within four leading health promotion journals by year of publication**



**Figure 2. Number of motivation-related articles published in four leading health promotion journals, between 1993–2002**



condom use ( $n=4$ , 9%), and reduction of risk perception ( $n=4$ , 9%). Two studies were dedicated to the motivational implications of chronic pain on such behaviors as goal pursuit ( $n=2$ , 5%).<sup>50,51</sup>

Studies were included within this review only if motivation appeared to be a focal variable of the inquiry. It is curious, then, that the majority of the articles included did not provide a definition of motivation ( $n=40$ , 91%). The studies that did provide a definition of motivation ( $n=4$ , 9%), provided a *conceptual* definition but not an *operational* definition. Three of the four definitions provided related specifically to motivation to engage in AIDS preventive behavior<sup>3,47,49</sup> and were all published by the same leading authors and in the same journal (Health Psychology). Only Senecal, Nouwen, and White<sup>52</sup> provided a general

definition of motivation: “*Motivation* [sic] encompasses self-regulatory processes involving the selection, activation, and sustained direction of behavior toward certain goals (e.g., Bandura, 1997) [sic].”

Most researchers within this sample ( $n=32$ , 73%) utilized a theoretical framework to guide both data collection and analysis. For the purposes of this review, a theoretical framework was a set of descriptive statements used to explain the concept of motivation and its logical association with other behavioral, cognitive or environmental/social factors. In all, 21 different theories were identified (Table 1). Among studies that utilized a theoretical framework, Social Cognitive Theory (SCT), the Health Belief Model (HBM), and the Transtheoretical Model (TTM) were the theories/models used most frequently, each

being used in seven studies, respectively.

While all reviewed studies included the term “motivation” in the title or abstract—suggesting that motivation might be among the study’s main factors—the majority did not specifically *measure* motivation. Of the 44 reviewed studies, only eleven (25%) actually measured motivation.<sup>4,27,53–61</sup> The remaining 75% of reviewed studies often discussed motivation as a factor, but failed to include it in the methods section as a measured variable.

While many of these studies may have proposed to examine motivation and its relationship to specified behaviors, in practice they often treated motivation as a latent variable and attempted, therefore, to measure manifest variables, or indicators.<sup>62</sup> This might explain, perhaps, why some studies appear not to measure motivation, despite having mentioned motivation as a focal variable. The most common indicators used to measure motivation within the studies were *intention* ( $n=19$ , 43%), and *self-efficacy* ( $n=18$ , 40%) (Table 1).

Among the eleven studies that did propose to measure motivation, only five utilized pre-tested and published measures. In the studies utilizing published measures, three of the five provided information on the validity and reliability of the data collected with these instruments. Measures cited included the Smoking Motives Scale<sup>63</sup>; the Self-Motivation Inventory<sup>64</sup>; the Exercise Motivational Stage Measure<sup>65</sup>; the Osteoporosis Health Belief Scale<sup>66</sup>; and the measure of motivation for eating low-fat foods.<sup>67</sup> The remaining six studies developed their own assessment tools consisting, mainly, of self-administered surveys and Likert-type scaled responses. None of the studies containing the self-developed tools provided any information on the validity and reliability of the data collected with these instruments.

Twenty-three studies reported measuring only reliability ( $n=13$ , 30%) or both reliability and validity ( $n=10$ , 23%) within their methods section. Of the twenty-three studies that reported testing reliability, the most common method was computation of



Table 1. Summary of Reviewed Motivation Studies Published between 1993 and 2002

Study	Behavior Examined / Population Studied	Motivation: Construct Definition	Theoretical Framework	Measurement / Indicators	Assessment of Data's Validity & Reliability
Affleck et al., 1998	<ul style="list-style-type: none"> <li>Pursuit of health-fitness and social-interpersonal goals in the context of Fibromyalgia management</li> <li>50 females</li> <li>Mean age=44</li> <li>92% Caucasian</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Striving</li> <li>Personal-goal process</li> </ul>	Validity: No Reliability: No
Altman et al., 1998	<ul style="list-style-type: none"> <li>Participation in community activities promoting heart health</li> <li>2,609 participants</li> <li>Mean age = 15</li> <li>51% male</li> <li>38% Latino; 30% Asian</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Social Cognitive Theory</li> </ul>	<ul style="list-style-type: none"> <li>Self-efficacy</li> <li>Perceived control</li> <li>Perceived incentive value</li> <li>Outcome expectations</li> </ul>	Validity: No Reliability: Cronbach alpha and test-retest
Blalock et al., 1996	<ul style="list-style-type: none"> <li>Calcium consumption</li> <li>Weight bearing exercise</li> <li>452 females</li> <li>Mean age = 40</li> <li>72% Caucasian</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Precaution Adoption Process Model</li> <li>Health Belief Model</li> </ul>	<ul style="list-style-type: none"> <li>Health motivation</li> <li>Perceived severity</li> <li>Barriers</li> <li>Health concerns</li> <li>Inconvenience</li> <li>Benefits</li> <li>Perceived controllability</li> <li>Subjective norm</li> <li>Perceived susceptibility</li> </ul>	Validity: No Reliability: No
Blanton and Gerrard, 1997	<ul style="list-style-type: none"> <li>Perceiving the risk of STD</li> <li>40 undergraduate males</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Dissonance Theory</li> </ul>	<ul style="list-style-type: none"> <li>Attitude</li> <li>Perceptions</li> <li>Estimated risk/vulnerability</li> <li>Motivation</li> </ul>	Validity: No Reliability: No
Burn et al., 1999	<ul style="list-style-type: none"> <li>Exercise</li> <li>709 participants</li> <li>Mean age = 39</li> <li>65% female</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Transtheoretical Model</li> </ul>	<ul style="list-style-type: none"> <li>Stage of change</li> <li>Self-efficacy</li> </ul>	Validity: No Reliability: No
Carey et al., 2000	<ul style="list-style-type: none"> <li>HIV risk behavior</li> <li>102 females</li> <li>Ages 17-46 (X=29.4)</li> <li>88% African American</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Information-Motivation-Behavioral Skills Model</li> <li>Health Belief Model</li> </ul>	<ul style="list-style-type: none"> <li>Risk perception</li> <li>Intention</li> </ul>	Validity: factor analysis Reliability: Cronbach alpha
Cooper et al., 1999	<ul style="list-style-type: none"> <li>Condom use</li> <li>2,052 participants</li> <li>Ages 13-19</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Attitude regarding condoms</li> <li>Self-efficacy</li> <li>Reason for condom use</li> <li>Perceived cost</li> <li>Vulnerability</li> </ul>	Validity: No Reliability: Cronbach alpha
DeLamater et al., 2000	<ul style="list-style-type: none"> <li>Condom use</li> <li>562 African American males</li> <li>Ages 15-19</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Self-Regulation Theory</li> <li>Self-Efficacy Theory</li> </ul>	<ul style="list-style-type: none"> <li>Self-regulation</li> <li>Knowledge</li> <li>Attitude</li> <li>Self-efficacy</li> <li>Intention</li> <li>Perceived risk</li> </ul>	Validity: No Reliability: Cronbach alpha
DiFranceis et al., 1998	<ul style="list-style-type: none"> <li>Participation in prevention programs</li> <li>134 participants</li> <li>Ages 18-45 (X=33)</li> <li>50% female</li> <li>54% Caucasian</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Health Belief Model</li> </ul>	<ul style="list-style-type: none"> <li>Risk behavior</li> <li>Outcome expectancy</li> <li>Self-efficacy</li> <li>Perceived severity</li> <li>Knowledge</li> <li>Perceived risk</li> </ul>	Validity: factor analysis Reliability: Cronbach alpha
Detweiler et al., 1999	<ul style="list-style-type: none"> <li>Sunscreen use</li> <li>217 participants</li> <li>Ages 18-79 (X=39)</li> <li>76% female</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Prospect Theory</li> </ul>	<ul style="list-style-type: none"> <li>Plan</li> <li>Affective reaction</li> <li>Perceived efficacy</li> <li>Anticipated effect</li> <li>Intention</li> </ul>	Validity: No Reliability: Cronbach alpha


**Table 1. Summary of Reviewed Motivation Studies Published between 1993 and 2002 (cont)**

Study	Behavior Examined / Population Studied	Motivation: Construct Definition	Theoretical Framework	Measurement / Indicators	Assessment of Data's Validity & Reliability
				<ul style="list-style-type: none"> <li>Influence</li> </ul>	
Dijkstra et al., 1998	<ul style="list-style-type: none"> <li>Smoking cessation</li> <li>752 participants</li> <li>60% female</li> <li>Mean age = 39</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Stage transition</li> <li>Intention</li> <li>Quitting behavior</li> <li>Expected outcome</li> <li>Self-efficacy</li> </ul>	Validity: No Reliability: Cronbach alpha
Fisher et al., 1994	<ul style="list-style-type: none"> <li>AIDS preventive behavior</li> <li>Study 1 = 126 gay males</li> <li>Study 2 = 259 (53% female)</li> </ul>	"In effect, motivation to practice an AIDS-preventive act is assumed to be a function of one's attitudes toward the AIDS-preventive act (Aact), and of relevant subjective norms regarding the AIDS-preventive act (SN)." p. 241.	<ul style="list-style-type: none"> <li>Social Cognitive Theory</li> <li>Theory of Reasoned Action</li> <li>Health Belief Model</li> <li>AIDS-Risk Reduction Model</li> <li>Information-Motivation-Behavioral Skills Model</li> </ul>	<ul style="list-style-type: none"> <li>Attitude</li> <li>Subjective norm</li> <li>Intention</li> </ul>	Validity: criterion-related Reliability: Cronbach alpha
Fisher et al., 1996	<ul style="list-style-type: none"> <li>AIDS risk behavior</li> <li>521 participants</li> <li>Mean age = 20</li> <li>88% Caucasian</li> </ul>	"Motivation to engage in AIDS preventative behavior – which is a function of attitudes toward performance of AIDS preventive acts, social norms regarding performance of such acts & perceptions of personal vulnerability to HIV [...]" (p.114)	<ul style="list-style-type: none"> <li>Information-Motivation-Behavioral Skills Model</li> <li>Health Belief Model</li> </ul>	<ul style="list-style-type: none"> <li>Attitude</li> <li>Social norm</li> <li>Behavioral intention</li> </ul>	Validity: No Reliability: Cronbach alpha
Fisher et al., 2002	<ul style="list-style-type: none"> <li>HIV preventative behavior</li> <li>1,577 inner city high school students</li> <li>63% female</li> <li>61% African American</li> </ul>	1. <i>Personal motivation</i> : favorable attitudes toward performance (HIV preventative acts); 2. <i>Social motivation</i> : perceived social support for performing these acts.	<ul style="list-style-type: none"> <li>Information-Motivation-Behavior Skills Model</li> </ul>	<ul style="list-style-type: none"> <li>Attitude</li> <li>Norms</li> <li>Intention</li> </ul>	Validity: No Reliability: Cronbach alpha
Frame et al., 2001	<ul style="list-style-type: none"> <li>Fruit and vegetable consumption</li> <li>226 participants</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Transtheoretical Model</li> </ul>	<ul style="list-style-type: none"> <li>Stage of change</li> <li>Readiness</li> </ul>	Validity: No Reliability: No
Glanz et al., 1994	<ul style="list-style-type: none"> <li>Adoption of healthy diets</li> <li>17,121 participants</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Transtheoretical Model</li> </ul>	<ul style="list-style-type: none"> <li>Self-rated health</li> <li>Self-efficacy</li> <li>Motivation (personalized importance)</li> <li>Intention</li> <li>Readiness</li> </ul>	Validity: No Reliability: No
Karoly and Ruehlman, 1996	<ul style="list-style-type: none"> <li>Goal pursuit</li> <li>227 participants</li> <li>Mean age = 40</li> <li>56% male</li> <li>84% Caucasian</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Social Cognitive Theory</li> </ul>	<ul style="list-style-type: none"> <li>Goal assessment</li> <li>Goal cognition</li> <li>Goal conflict</li> <li>Depression</li> <li>Self-efficacy</li> <li>Goal-related value</li> <li>Anxiety</li> <li>Intention</li> <li>Self-regulation</li> </ul>	Validity: No Reliability: No
Leslie et al., 1999	<ul style="list-style-type: none"> <li>Exercise</li> <li>2729 participants</li> <li>Ages 16-72 (X=25)</li> <li>58% female</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Motivation</li> </ul>	Validity: No Reliability: No
McBride et al., 1999	<ul style="list-style-type: none"> <li>Relapse smoking after pregnancy</li> <li>Primarily Caucasian pregnant women</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Transtheoretical Model</li> </ul>	<ul style="list-style-type: none"> <li>Type of motivation</li> <li>Level of motivation</li> </ul>	Validity: No Reliability: No
Manfredi et al., 1998	<ul style="list-style-type: none"> <li>Smoking cessation</li> <li>248 African American females</li> <li>Ages 18-39</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Health Belief Model</li> <li>Theory of Reasoned Action</li> </ul>	<ul style="list-style-type: none"> <li>Desire</li> <li>Plans</li> <li>Health beliefs/concern</li> <li>Normative perception</li> <li>Smoking habit</li> <li>Perceived use of smoking</li> <li>Education</li> <li>Perceived benefit/cost</li> <li>Intention</li> </ul>	Validity: No Reliability: No
Marcus et al., 1998	<ul style="list-style-type: none"> <li>Exercise</li> <li>1559 participants</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Social Cognitive Theory</li> <li>Transtheoretical Model</li> </ul>	<ul style="list-style-type: none"> <li>Self-efficacy</li> <li>Motivational stage</li> <li>Decisional balance</li> </ul>	Validity: concurrent Reliability: test-retest & kappa

**Table 1. Summary of Reviewed Motivation Studies Published between 1993 and 2002 (cont)**

Study	Behavior Examined / Population Studied	Motivation: Construct Definition	Theoretical Framework	Measurement / Indicators	Assessment of Data's Validity & Reliability
Melamed et al., 1996	<ul style="list-style-type: none"> <li>Hearing protection device use</li> <li>281 males</li> <li>Ages 18-65 (X=40)</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Protection Motivation Theory</li> </ul>	<ul style="list-style-type: none"> <li>Perceived susceptibility</li> <li>Perceived severity</li> <li>Perceived effectiveness</li> <li>Perceived barrier</li> <li>Self-efficacy</li> <li>Intention</li> </ul>	index Validity: Cohen's kappa Reliability: Cronbach alpha
Miller et al., 2000	<ul style="list-style-type: none"> <li>Alcohol/drug use</li> <li>College students</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Self-Regulation Theory</li> </ul>	<ul style="list-style-type: none"> <li>Alcohol pattern</li> </ul>	Validity: No Reliability: No
O'Neill et al., 2000	<ul style="list-style-type: none"> <li>Smoking cessation</li> <li>65 participants</li> <li>Ages 18-25</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Transtheoretical Model</li> </ul>	<ul style="list-style-type: none"> <li>Stage of change</li> </ul>	Validity: No Reliability: No
Ogden, 1994	<ul style="list-style-type: none"> <li>Food intake</li> <li>56 college students</li> <li>75% female</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Biological</li> </ul>	<ul style="list-style-type: none"> <li>Motivational state</li> </ul>	Validity: No Reliability: No
Resnicow et al., 2001	<ul style="list-style-type: none"> <li>Fruit and vegetable consumption</li> <li>861 African Americans</li> <li>Ages 18-87 (X=44)</li> <li>73% female</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>"...an amalgamation of several theoretical paradigms." (pg. 1687)</li> </ul>	<ul style="list-style-type: none"> <li>Outcome expectations</li> <li>Self-efficacy</li> <li>Knowledge</li> </ul>	Validity: correlation Reliability: Cronbach alpha
Rose et al., 1996	<ul style="list-style-type: none"> <li>Smoking cessation</li> <li>700 participants</li> <li>Ages 24-32 (X=28)</li> <li>52% female</li> <li>96% Caucasian</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Motive</li> <li>Attitudinal belief</li> <li>Reason</li> <li>Social role occupancy</li> </ul>	Validity: No Reliability: Cronbach alpha
Rothman et al., 1993	<ul style="list-style-type: none"> <li>Mammogram utilization</li> <li>197 females</li> <li>Ages 41-64 (X=49)</li> <li>85% Caucasian</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Attribution theories</li> </ul>	<ul style="list-style-type: none"> <li>Attitude</li> <li>Reaction</li> <li>Knowledge</li> <li>Intention</li> <li>Attributions</li> </ul>	Validity: No Reliability: No
Royce et al., 1993	<ul style="list-style-type: none"> <li>Smoking cessation</li> <li>Sample taken from the Community Intervention Trial for Smoking Cessation</li> <li>Ages 25-64</li> <li>African American &amp; non-Hispanic Whites</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Motivation (measures want/desire)</li> <li>Norms and values (social acceptability, attitudes, perceptions of society, and self-control behavior)</li> </ul>	Validity: No Reliability: No
Schwarzer and Renner, 2000	<ul style="list-style-type: none"> <li>Dietary intake</li> <li>524 participants</li> <li>Mean age = 50</li> <li>52% female</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Social Cognitive Theory</li> <li>Health Action Process Approach</li> </ul>	<ul style="list-style-type: none"> <li>Risk perception</li> <li>Outcome expectancy</li> <li>Self-efficacy</li> <li>Intention</li> </ul>	Validity: correlation Reliability: Cronbach alpha
Sears and Stanton, 2001	<ul style="list-style-type: none"> <li>Exercise adherence</li> <li>86 females</li> <li>Ages 18-68 (X=31)</li> <li>84% White</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Expectancy value theories</li> </ul>	<ul style="list-style-type: none"> <li>Expectancy value</li> <li>Self-efficacy</li> <li>Intention</li> </ul>	Validity: No Reliability: Cronbach alpha
Senecal et al., 2000	<ul style="list-style-type: none"> <li>Diet adherence</li> <li>638 participants</li> <li>Ages 20-70</li> </ul>	"Motivation encompasses self-regulatory processes involving the selection, activation, and sustained direction of behavior toward certain goals." (p. 452)	<ul style="list-style-type: none"> <li>Social Cognitive Theory</li> <li>Self-Determination Theory</li> </ul>	<ul style="list-style-type: none"> <li>Self-regulation</li> <li>Self-efficacy</li> </ul>	Validity: factor analysis Reliability: Cronbach alpha
Shannon et al., 1997	<ul style="list-style-type: none"> <li>Making dietary changes</li> <li>304 participants</li> <li>Mean age = 57</li> <li>50% male</li> <li>50% Caucasian</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Social Cognitive Theory</li> <li>Self-efficacy theory</li> </ul>	<ul style="list-style-type: none"> <li>Self-efficacy</li> <li>Social desirability</li> </ul>	Validity: construct & factor analysis Reliability: Cronbach alpha
Sinclair et al., 1996	<ul style="list-style-type: none"> <li>Practice of universal precautions to prevent bloodborne pathogen exposure</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Protection Motivation Theory</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral intention</li> <li>Negative and positive affect</li> <li>Cognition</li> </ul>	Validity: No Reliability: No
Skinner et al., 1994	<ul style="list-style-type: none"> <li>Mammogram utilization</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Health Belief Model</li> </ul>	<ul style="list-style-type: none"> <li>Mammography stage of change</li> </ul>	Validity: No Reliability: No



**Table 1. Summary of Reviewed Motivation Studies Published between 1993 and 2002 (cont)**

Study	Behavior Examined / Population Studied	Motivation: Construct Definition	Theoretical Framework	Measurement / Indicators	Assessment of Data's Validity & Reliability
	<ul style="list-style-type: none"> <li>435 females</li> <li>Ages 40-65</li> </ul>		<ul style="list-style-type: none"> <li>Transtheoretical Model</li> </ul>	<ul style="list-style-type: none"> <li>Knowledge</li> <li>Belief</li> <li>Objective and perceived risk status and barriers</li> </ul>	
Smith et al., 1997	<ul style="list-style-type: none"> <li>Interpretation of information about personal vulnerability to health risks</li> <li>Study 1 = 125 females (mean age= 19)</li> <li>Study 2 = 273 females (mean age= 19)</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Perceived vulnerability</li> <li>Perceived efficacy</li> <li>Attitude</li> <li>Risk behavior</li> </ul>	Validity: No Reliability: No
Sorensen et al., 1999	<ul style="list-style-type: none"> <li>Fruit and vegetable consumption</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Condition in the workplace</li> </ul>	Validity: No Reliability: Cronbach alpha
Sturges and Rogers, 1996	<ul style="list-style-type: none"> <li>Tobacco use</li> <li>Group 1=112 9-10 year olds</li> <li>Group 2=67 14-16 year olds</li> <li>Group 3=93 young adults</li> <li>83% Caucasian</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Protection Motivation Theory</li> </ul>	<ul style="list-style-type: none"> <li>Intention</li> <li>Self-efficacy</li> <li>Attitude</li> <li>Behavior change</li> </ul>	Validity: cluster analysis Reliability: Cronbach alpha
Sutton et al., 1999	<ul style="list-style-type: none"> <li>Condom use</li> <li>949 participants</li> <li>59% female</li> <li>Ages 16-24</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Theory of Reasoned Action</li> <li>Theory of Planned Behavior</li> </ul>	<ul style="list-style-type: none"> <li>Belief</li> <li>Outcome evaluation</li> <li>Attitude</li> <li>Normative belief</li> <li>Subjective norm</li> <li>Perceived control</li> <li>Perceived risk</li> <li>Intention</li> <li>Condom use</li> <li>Motivation</li> <li>Self-efficacy</li> </ul>	Validity: No Reliability: No
Troped and Saunders, 1998	<ul style="list-style-type: none"> <li>Exercise</li> <li>764 participants</li> <li>Mean age = 40</li> <li>76% female</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Normative belief</li> <li>Motivation to comply</li> </ul>	Validity: No Reliability: No
Unger and Johnson, 1995	<ul style="list-style-type: none"> <li>Exercise</li> <li>200 participants</li> <li>Ages 21-79 (X=39)</li> <li>52% male</li> <li>86% Caucasian</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Intention</li> <li>Frequency of exercise</li> <li>Satisfaction</li> <li>Social variables</li> </ul>	Validity: No Reliability: test-retest
Wilcox and Storandt, 1996	<ul style="list-style-type: none"> <li>Exercise</li> <li>121 females</li> <li>Ages 20-85</li> <li>83% Caucasian</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Self-Motivation</li> <li>Self-efficacy</li> <li>Attitude</li> </ul>	Validity: No Reliability: Cronbach alpha
Williams et al., 2002	<ul style="list-style-type: none"> <li>Smoking cessation</li> <li>239 participants</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Self-Determination Theory</li> </ul>	<ul style="list-style-type: none"> <li>Perceived competence</li> <li>Self-regulation</li> </ul>	Validity: No Reliability: No
Witte et al., 1998	<ul style="list-style-type: none"> <li>Condom use</li> <li>219 females</li> <li>Ages 17-22</li> <li>79% Caucasian</li> </ul>	Not defined	<ul style="list-style-type: none"> <li>Extended Parallel Process Model</li> </ul>	<ul style="list-style-type: none"> <li>Danger control response (attitude, intention, behavior)</li> <li>Fear control response (defense avoidance, issue derogation, and perceived manipulation)</li> </ul>	Validity: No Reliability: Cronbach alpha



the Cronbach alpha ( $n=20$ , 87%). Other methods included test-retest reliability and computation of a kappa index. Five of the ten studies that reported measuring the validity of their scores utilized factor analysis (50%). Additional reported methods of measuring validity were criterion, concurrent, and construct.

## DISCUSSION

The portrait of how contemporary health promotion scholars are handling the concept of motivation in their research depicts a complex image of theoretical engagement but waning enthusiasm. Despite the relatively small number of motivation-related publications in the last decade, and much to the credit of contemporary scholars however, the majority of empirical investigations reviewed in this study were theory-based. Since many areas of inquiry in health promotion have been identified as dangerously a-theoretical,<sup>68</sup> it is heartening to find that studies involving motivation as a focal variable don't seem to suffer from this problem.

If encouraging on the one hand, the theory-related picture that emerges from these reviewed studies is, nonetheless, problematic even if not unique. Echoing our finding of 21 different theories in 32 studies, Gotcham identified 51 theories applied within 116 theory-based articles studying motivation.<sup>69</sup> Portrayed by Bandura<sup>35</sup> as a "spawn(ing) [of] cafeteria style research" such proliferation of frameworks is characterized by the selection of constructs and traits from various theories and their placement within new frameworks, leading to redundancy, less predictability, and overall disconnectedness with the theory of origin.

The use of such a large number of theories to explain a single construct suggests an absence of theoretical consensus regarding both the definition of motivation and its measurement. But what may this phenomenon mean and what are its implications? Is such absence of consensus indicating that scholars are truly dealing with an inherently complex, dynamic and multi-dimensional construct that does not easily

lend itself to agreement regarding its key facets? Or does it signal territoriality issues among scholars who, in attempts to develop novel explanatory models for the construct, employ variable nomenclature and explanatory schemes for characteristics, dimensions, and traits that are essentially similar across theories? And what are the implications of such absence of theoretical consensus for practitioners: if scholars define one indicator of motivation as *intention* in one theory, for example, but define it as *desire* in another theory, what are practitioners to do? Should their interventions emphasize individuals' plans for action, or should they try to make the task more "likeable", so the individual will desire to do it?<sup>70</sup>

The lack of theoretical consensus regarding theory and conceptual definitions of motivation is also reflected in issues of measurement. In this review, a limited number of studies used psychometrically sound measures and, of those, no two employed the same tool. Moreover, researchers frequently failed to provide assessments of the data's validity and reliability, weakening even further the possibility of ascertaining the quality of their measurement tools. Because validity and reliability are sample specific, they must be re-measured and reported with each data collection.<sup>71</sup> Given the importance of valid and reliable data both for scholarly research and for evaluating program interventions,<sup>71</sup> an accurate and psychometrically sound measurement of motivation is essential for understanding whether intervention/educational efforts are actually affecting motivation and, in turn, behavior change.

As this review organized a decade of researchers' dealings with the concept of motivation within the health promotion/education literature, it was embedded, nonetheless, in important limitations. The small number of journals selected, for instance, as well as the decade chosen for study (1992–2002) may have skewed findings in an uncertain and non-representative direction. Not summarizing the specific *hypotheses* and *findings* of the reviewed studies may also have limited our analysis. Given that

the majority of studies document a positive association between motivation (or its indicators) and health behaviors, reporting their findings would have lacked variability and would have resembled a "constant." While this constant would add little information regarding how researchers are approaching and manipulating the construct of motivation in their research, it might have, nonetheless, yielded important information regarding the potentially different relationships between various articulations of motivation and the many types of health behaviors studied (exercise, dietary management, smoking cessation, etc.). The construct of motivation has deep roots and a rich history which may extend beyond the scope of this paper. The theoretical and historical discussion, therefore, is a selective synopsis of motivation within the health behavior literature. Further examinations into how motivation is being handled theoretically within health behavior research are recommended. Limiting our selection criteria only to studies that contained the term "motivation" in the title or abstract may have inadvertently caused us to exclude studies that address motivation, without naming the construct as such. As is evident from this review, motivation is so broadly defined that it would have been problematic to not set such exclusions. In recognition that this review is not all encompassing, it should be made clear that this is an attempt to organize this body of literature. The question of whether our results can be generalized to the entire population of motivation-related health research can only be answered through the support of continued reviews.

As the authors attempted to summarize the historical evolution of the motivation construct and its present-day application into empirical health promotion research, the main strengths of this attempt are found in the manner in which it (a) provides a synopsis of how a sample of published health promotion literature within the last decade is conceptualizing and discussing motivation; (b) distinguishes the definition, theoretical framework, and measurement of



the concept within this body of literature; and (c) discusses weaknesses and potential pitfalls contained in the research which are imperative to consider in future inquiry and program development. Based on this review's findings the authors recommend that other, similar summaries of the state-of-the-art regarding research on motivational factors be conducted and disseminated; that researchers examining motivation as a focal variable become aware of the potential drawbacks of theory proliferation and seek to promote theoretical consensus surrounding motivation; and that researchers become equally concerned with measurement issues related to the construct. Improvements in any of these aspects of the motivation research can only benefit the field of health promotion in both its research/theory-building efforts and its practice.

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