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A meta-synthesis of health-related self-efficacy instrumentation: Problems and suggestions

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A Meta-Synthesis of Health-Related Self-efficacy Instrumentation: Problems and Suggestions

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Background and Purpose: Self-efficacy, a central construct in health interventions, has been measured in various contexts. The absence of any published meta-review of self-efficacy instrumentation led to the current meta-synthesis that reports and evaluates the instrumentation processes. **Methods**: A systematic search resulted in 39 self-efficacy instrumentation studies, which were evaluated for the aspects of conceptual bases, health contexts, operational definition, instrumentation procedures, reliability and scale length, and item content. **Results**: Primarily based in Bandura's social cognitive theory, these studies reported self-efficacy instrumentation for developing new scales and modifying/validating measures for illness management, healthy behavior adoption/maintenance, disease/risk prevention, and aging management. Trait-like, specific-domain, and situation approaches were used for generating item content. Problems in some studies include non-efficacy items, a lack of systematic instrumentation procedures, item content too general for specific-domain self-efficacy, and measurement inefficiency. **Conclusions:** The piecemeal fashion of self-efficacy instrumentation has resulted in incomparable self-efficacy measures of similar domains of health functioning. A trans-domain framework thus is warranted. Suggestions are provided for solving other problems in self-efficacy instrumentation.

Keywords: self-efficacy measures, social cognitive theory, meta-synthesis

Introduction

Self-efficacy, the belief in one's ability to perform a certain task, is a key concept in explaining health-related behaviors (Bandura, 1986, 1995). Self-efficacy is a central construct in health interventions due to its ability to link belief, attitude, and behavior. Empirically, self-efficacy has been frequently documented as a most significant predictor of behavioral intentions and actual health behaviors (DiClemente, Fairhurst, & Piotrowski, 1995). People of varying health states, ages, and ethnic groups make decisions whether to adopt healthful behaviors by exercising their assessment of self-efficacy (Maase & Anderson, 2003; Resnick, 1998; Sohng, Sohng, & Yeom, 2002).

Because health intervention programs often are designed to enhance individuals' self-efficacy for the desired behavior, self-efficacy has become an important variable in health intervention research and practice. Developing valid self-efficacy measures is crucial to the assessment of intervention needs and the evaluation of intervention effects. The absence of any published meta-review of self-efficacy instrumentation led to the current meta-synthesis. This study begins with a review of Bandura's social cognitive theory (also social learning theory), widely regarded as the theory of self-efficacy (see van der Bijl and Shortridge-Baggett, 2002). The influence of other theories is negligible as self-efficacy is not treated as a central construct in those theories. Social cognitive theory was the most cited theory in the studies included in this meta-synthesis (see the "Conceptual Bases" section under Results).

Self-efficacy, first introduced by Bandura (1977) in social learning theory (later, social cognitive theory), is defined as individuals' beliefs about their capabilities to produce designated levels of performance that affect their lives directly or indirectly (Banduara, 1982, 1986, 1994, 1995). A higher degree of efficacy leads to greater intention to perform the designated behavior or higher likelihood to display the actual behavior. Banduara argues that self-efficacy perceptions consist of three dimensions: magnitude, strength, and generality.

Magnitude refers to the ordering of tasks by difficulty level. Individuals expecting a low-magnitude (or less difficult) task often feel more capable of performing the task than do those expecting a high-magnitude task. *Strength* refers to the probabilistic judgment of how certain one is of his/her ability to perform a specific task. *Generality* concerns the extent to which efficacy expectations about a specific situation can be generalized to other situations.

Social cognitive theory provides a general conceptual basis (rather than a specific theory) for operationalizing self-efficacy as confidence in one's ability to perform tasks. For the range of health related tasks, van der Bijl and Shortridge-Baggett (2002) argue that constructing self-efficacy scales must contain an analysis of the relevant domain of health functioning (e.g., diabetes management or arthritis pain management) and relevant behavioral factors. A self-efficacy measure thus consists of the behavioral indicators of a domain of functioning and the judgment of one's ability to exhibit such behaviors.

Despite a proliferation of self-efficacy studies, to date, no meta-review of research on health-related self-efficacy has been published. This meta-synthesis takes an initial step to examine systematically the instrumentation process of published health-related self-efficacy measures. Specifically, this paper analyzes and evaluates the state of self-efficacy measure development by focusing on conceptual bases, instrumentation procedures, construct operational definitions, reliability, and item content. Consistent with the generic meta-review format recommended in the *Handbook of Research Synthesis and Meta-Analysis* (see, Clark, 2009, p.523-524), this paper consists of a sequence of introduction, methods, results (i.e., the meta-reviewed literature), discussion, and conclusion. To save space, only the first author is cited in the text for an article (included in the meta-review) with more than three authors.

Methods

Literature Search

With a broad scope, the key words "health and self-efficacy" were used to include

liberally studies on self-efficacy for a larger funded meta-review project that aimed to examine self-efficacy in various health contexts. With these key words, a search of the PsycInfo, Medline, and Cochrane databases returned 2728 unique abstracts (up to 2010), of which, 1, 532 original research studies pertaining to health promotion, disease prevention, and health/illness management were eligible for the larger meta-review project. Ninety-eight percent of the full articles of all eligible studies were obtained and archived.

The researcher and a trained graduate assistant independently read all abstracts and sometimes the full articles if necessary and then identified 38 articles that met the two criteria: (a) mentioning the name of a self-efficacy measure and (b) describing procedures involved in developing, modifying, or validating self-efficacy measures. Two self-efficacy development studies, reported in one article, were both included in the present meta-synthesis sample (*K* =39). All measures (and their basic characteristics) included in the meta-synthesis are listed in Table 1.

Data Synthesis

Upon carefully reading the 39 studies, the researcher created a coding scheme to capture key aspects of self-efficacy instrumentation, which are reported in the results. Then the researcher and the assistant coded all 39 studies independently. For objective information discrepancies (e.g., reliability and sample size), the researcher simply went back to the original articles and took the correct information. For coding involving some judgment, discrepancies, approximately 6.3% of all judgment-based coding, were resolved by another faculty member, who agreed mostly with the researcher.

Two steps were taken for data synthesis: quantitative summary and qualitative review. The quantitative summary (i.e., descriptive statistics) reported an overview of the state of an aspect of self-efficacy instrumentation. The researcher further examined the patterns (shown in the quantitative summary) via an in-depth qualitative review that identified pertinent,

typical examples to illustrate the patterns.

Results

Samples Used in the Studies

US samples were used in 21 studies; UK, the Netherlands, and Taiwan samples were respectively used in 2 studies; and respondents from Turkey, Belgium, Denmark, Thailand, Turkey, South Korea, Sweden, Spain, Japan, Hong Kong, and Canada served as the sample in only one study. A mixed sample of respondents from Germany, Poland, and South Korea were reported in one study. The mean respondent sample size is 406.3 with a minimum of 48 and a maximum of 4,790.

Data Collection Methods Reported in the Studies

All studies used survey for data collection (three studies embedded surveys in an experiment). The majority of the studies (61.5%) used a paper-and-pencil method, 28.2% used face-to-face interview, 7.7% used computer-assisted media, and 2.6% used telephone interview. For venues, a third of the surveys (30.8%) were conducted in the field such as clinics and participants' homes, 23.1% proceeded in controlled environments such as classrooms and labs, and 46.2% of surveys were administered by respondents themselves.

Health Contexts Reflected in the Studies

The studies included in the sample ($K = 39$) were classified into five categories of health contexts. The *largest* category (48.7%) was self-efficacy for managing a chronic illness/condition such as diabetes, HIV/AIDS, sickle cell, asthma, arthritis, spinal cord injury, pelvic injury, pain, infertility, and pregnancy. The *second largest* category (20.5%) was adoption and maintenance of healthy behaviors. General self-efficacy, exercise self-efficacy, weight-control self-efficacy, physical self-efficacy, self-efficacy for eating behaviors, and perceived health competence were examined in healthy populations and populations with a chronic condition (e.g., self-efficacy for eating among people with asthma). The *third*

category (15.4%) involved specific disease prevention. Self-efficacies measured in this context were for Pap smear screening participation, testicular self-examination, condom use, breast self-examination, and breast cancer screening. The *fourth* category (15.4%) dealt with self-efficacy for risky/unhealthy behavior prevention without focusing on a specific disease. Self-efficacies for resisting smoking initiation, anti-smoking efficacy, and harm reduction self-efficacy scales were developed or validated. The *fifth* category was self-efficacy for self-management among the elderly (7.71%), with self-efficacies measured for falls, exercise, and general self-management. The distribution of health contexts for new scale development largely mirrors the pattern for the total 39 studies. See Table 2 for details.

Conceptual Bases for Operationalization

Over half of the studies (k = 20, 51.2%) were guided by a review of Bandura's social cognitive theory as the only conceptual basis for instrumentation. Five studies (12.8%), in addition, mentioned the health belief model, theory of planned behavior, or protection of motivation theory. Self-efficacy in one study (2.6%) was guided by the health belief model alone. Three studies (7.7%) reviewed self-efficacy research without naming any theory. Another three studies (7.7%) validated existing measures but did not provide a literature review, and the operationalization appeared consistent with social cognitive theory. Finally, seven studies (17.9%) provided little information on the conceptual basis for instrumentation.

Instrumentation procedures

More than half of the studies (56.4%) developed a new scale, 20.5% validated an existing measure with a different population, 15.4% validated a scale in a different language, and 7.7% tested a modified, existing scale.

New scale development (k =*22*). The scale development studies took one or more of the following steps: literature, informant interviews, expert panel rating and interviews, pre-testing, interviews, and focus groups. The most cited reason was the lack of such a measure

in a given context. For example, exercise self- efficacy for people with spinal cord injury was needed as the existing exercise self-efficacy measures could not be used for that particular population (Kroll, Kehn, Ho, & Groah, 2007) (also see Moens, Grypdonck, & van der Bijl, 2001). Expert panels (e.g., specialist physicians, nurses, and researchers) were used mainly for determining the behavioral indicants of self-efficacy for a given health condition or a domain of health functioning. Focus groups or informant interviews were used for identifying challenges for performing the desired tasks.

Measure modification (k = 3). Three studies reviewed the new illness condition and contexts for modifying existing measures. For example, Tenetti's Falls Efficacy Scale was modified for the elderly population (Ewards & Lockett, 2008) (also see Koyama et al., 2006).

Measure validation in a different context (k = 8). Eight studies validated the existing measures (without modification) in the same language but in a different context (e.g., in Hong Kong and with STD patients in the US). Three of them reported direct validation without a review of the new context, another three reviewed the new context, one solicited feedback from the informants, and one merged three factors in the original scale to one for the new context.

Measure validation in different languages (k = 6). In this category, two translated the measures without any other modification or a review of the new population. Three studies sought feedback from experts, and one reviewed the context for the population. Validated measures included efficacies for condom use, Type II Diabetes, and pain management in populations in Turkey, Spain, Taiwan, and Thailand.

Construct Operational Definitions

All measures used a Likert format with at least two polar anchors indicating the nature of the construct being measured. Of all 39 studies, self-efficacy was operationalized via (a) belief about one's ability to exhibit behavior (k = 12), (b) confidence in exhibiting behavior (k

= 22), (c) knowledge of how to prevent/cope with an illness/condition (*k*= 1), (d) behavioral intention (*k* = 1), (e) perceived task difficulty (*k* = 1), and (f) mixed (e.g., importance, ease) (*k* = 4). For studies of measure development, see Table 3 for details.

Reliability and Scale Length

Thirty-eight self-efficacy measures had a reliability of .70 or higher, but the pictographic medication adherence self-efficacy scale (Kalichman, et al., 2005) yielded a reliability of .68. The mean reliability was .87 (*SD* = .07) and the mean number of items was 15.5 (*SD* = 10.85). See Table 1 for details.

Item Content

Self-efficacy measures varied in item content. In creating coding categories for item content, the researcher carefully examined items for all included measures and discovered three approaches: trait-like, specific-domain, and situation. The subsequent coding by both the researcher and the research assistant did not yield any additional category. Nine (23.1%) studies measured self-efficacy much like a stable general trait, thus, the "the trait-like approach." Twenty-four (61.5%) studies treated self-efficacy as ability to exhibit behaviors specific to a condition/purpose without considering situations, hence, "the specific domain approach." Five (12.8%) studies examined behaviors relevant to various situations and are of "the situation approach." One study (2.5%) did not report any information about item content.

The trait-like approach (*k* = 9)**.** This approach examines individuals' assessment of their ability to exhibit desired behaviors for good health or coping with a stable chronic condition in some generalized everyday conditions/states. The trait-like measures include self-efficacy for psychological adjustment (Koayma et al., 2006), perceived health competence (Smith, Wallston, & Smith, 1995), self-management ability in aging people (Schuurmans, 2005), general self-efficacy (Luszcynska, Scholz, & Schawrzer, 2005), and self-care efficacy (Lev & Owen, 1996). Sallis et al.'s (1988) self-efficacy for exercise scale,

for example, includes generalized conditions for exercise such as "get up early to exercise even on weekends," "continue to get up early to exercise," and "continue to exercise with others even though they seem too fast and too slow for you." Much like personality, self-efficacy here is considered a stable trait that can predict behavioral patterns.

The specific domain approach (*k* = 24)**.** The majority of the scales fall under this category. Self-efficacy is associated with a specific domain of health functioning such as managing a specific stage of life (e.g., perimenopause) or an illness (e.g., sickle cell disease) and preventing a disease (e.g., breast self-examination). In this category, all researchers claimed that they developed the measure for a specific domain. However, not all measures actually examined symptoms, medication, treatment, and/or daily management specific to the given domain. Rather, some measures are quite general as the items deal with generic illness management without referring to symptoms specific to the health condition. In the current article, the former is termed "domain-specific efficacy measures" and the latter "domain-specific efficacy (in the name) measures".

All domain-specific self-efficacy measures (*k* = 15) consisted of items that describe symptoms, treatment, and daily activities pertaining to a specific health condition. Moens, Grypdonck, and van der Bijl's (2001) Type I Diabetes Self-Efficacy items cover the specific characteristics of the diabetic such as "inject insulin in all situations," "follow diet prescriptions all the time or extra blood sugar check in case of skipping a meal," "discuss results of good or bad glycemic control with physicians," and "eat exactly the right amount of food in case of a hypo." A breast self-examination (BSE) scale (Gözüm & Aydlin, 2004) focuses on the specific characteristics of breast self-examination with the items that state "I can find a breast lump by performing BSE," "I am able to find a breast lump of the size of a walnut," "… a hazelnut," "... a pea," and "I can use the correct part of my fingers when examining my breasts."

To illustrate domain-specific self-efficacy (in the name) self-efficacy measures (k = 9), Edwards, Telfair, Cecil, and Lenoci's (2000) Sickle Cell Self-Efficacy Scale is used. This scale measures self-efficacy via nine items such as "cut down on most of the pain you have when having a pain episode," "keep doing most of the things you do day-to-day," "you can keep sickle cell disease pain from interfering with your sleep," and "you can reduce your sickle cell disease pain by using methods other than taking extra medication." This sickle cell efficacy scale in essence is about managing pain, discomfort, and daily activities that are common in patients suffering various pain-related health conditions. The same can be said about the Perceived Therapeutic Efficacy Scale (Diabetes II) (Wu et al., 2008), the Self Management of Asthma measure (Belloch et al., 1997), and Arthritis Self-Efficacy Scale (Lomi et al., 1995), all containing items generally about a patient's management of his/her daily life without references to the specificity of the conditions.

The situation approach (k = 5). Self-efficacy was treated as confidence in one's ability to exhibit the desired behaviors in specific, challenging situations, which are labeled "salient situations" in this article. Two approaches have been observed. The first approach emphasizes the role of situations over behavioral tasks/acts. A typical self-efficacy scale contains items that describe different situations, and respondents are asked to rate their confidence in performing the *same* tasks in different situations. For example, self-efficacy for exercise (Resnick & Jenkins, 2000) prompts respondents to recall their ability to exercise in situations such as: "the weather was bothering you," "you were bored by program or activity," and "you felt pain when exercising." Or sometimes, an item pairs an act with a situation. Dilorio et al's (1997) condom use self-efficacy scale contains these typical items: "I can say no to sex with a new partner if we don't have a condom even if we want to have a relationship," "I can always take a condom with me when I go out just in case I need it," and "I can stop before sex to use a condom even if I am very sexually aroused."

In the second, more complex approach, a set of self-efficacy acts was developed first and then tested under a few salient situations, one by one. For example, Phillips and Rosenberg (2008) developed a multidimensional self-efficacy inventory, the Harm Reduction Self-Efficacy Questionnaire (for drug users). In the questionnaire, a set of 15 coping acts was repeated three times under each of the three salient situations (experiencing withdrawal, feeling depressed, and feeling social pressure to use drugs unsafely). In a similar fashion, Kalichman et al, (2005) identified three salient situations for HIV medication adherence self-efficacy, which are unexpected visitors, oversleeping, and alcohol use.

Discussion

The absence of any published meta-review of self-efficacy instrumentation led to the current meta-synthesis that reports and evaluates the instrumentation processes. Of all the instrumentation aspects reported in the results, sample characteristics and data collection methods are quite straightforward without needing any analysis, and, thus, the discussion focuses on the other aspects of self-efficacy instrumentation processes: health contexts, conceptual bases, instrumentation procedures, construct operational definitions, reliability and scale length, and item content.

Health Contexts: Self-efficacy for Health and Chronic Conditions

The instrumentation studies included in this meta-synthesis examined self-efficacy in six types of health contexts (Table 2) that require repeated behavior for prevention and management of health and health conditions. These health contexts do not include acute situations in which a behavior can not be anticipated easily. Clearly, self-efficacy is highly relevant in health contexts in which intermediate or long term planning is needed.

Conceptual Bases: Social Cognitive Theory as the Dominant Framework

The tally of conceptual bases points to social cognitive theory as the dominant theory for self-efficacy instrumentation. Self-efficacy deriving from perceived behavioral control in

theory of planned behavior (Ajzen, 1985), as a coping-appraisal element in protection motivation theory (Rogers, 1985), and as perceived control in the health belief model (Rosenstock, 1966) share a definition similar to Bandaura's, but self-efficacy is not a focal construct in those theories as it is in social cognitive theory. A closer examination of the studies citing these theories reveals that these theories were cited to underscore the importance of self-efficacy as a theoretical construct, and the operational definitions in most of these studies as judgment of one's ability to perform tasks were in line with social cognitive theory. Further, a third of the studies did not appear to be well established in any theory (e.g., reviewing some literature without naming a theory or treating self-efficacy as a taken-for-granted construct).The absence of a review of relevant theories perhaps reflects a lack of theoretical framework or reporting rigor.

For the studies guided by social cognitive theory, none followed all of Bandura's three aspects of self-efficacy (i.e., magnitude, strength, and generality) in constructing self-efficacy measures. Self-efficacy was typically conceptualized in terms of the strength aspect, the degree of certainty one feels about his/her ability to perform a specific task. Some trait-like self-efficacy measurement studies stressed the generality aspects, but then neglected magnitude. On the other hand, that most of these measures predicted positive health outcomes indicates that the full application of Bandura's three aspects of self-efficacy may not be necessary. It seems social cognitive theory, specifically, the strength dimension, serves as a general framework or methodological approach for operationalizing self-efficacy as confidence in one's ability to perform tasks. The content of a self-efficacy scale (to be discussed in a later section) needs to come from a review of the context and/or the specific domain of health functioning (van der Bijl & Shortridge-Baggett, 2002).

Instrumentation Procedures: A Systematic Approach Needed

No serious problems were detected in the studies that validated or modified existing

measures in different populations. A weakness in literature reviews, however, was discovered in new measurement studies. Studies examining self-efficacy for managing a specific health condition (e.g., hip osteoarthritis and Type I Diabetes) often limit the literature review to only that health condition. Researchers seemed to assume that self-efficacy for a specific domain and sometimes a specific population was unique, so unique that its self-efficacy measure must be developed anew. As result, researchers seldom conducted a literature review of the existing self-efficacy measures in the same category of the domain of functioning under investigation. To illustrate, researchers often do not review measures of chronic pain conditions when they endeavor to develop a self-efficacy measure for arthritis pain. The Sickle Cell Self-efficacy Scale (Edwards et al., 2000) was developed from scratch without any attempts to review the existing self-efficacy measures for other chronic pain conditions; its nine items are about confidence in managing general pain, feelings, and emotions without referring to the specific symptoms of the sickle cell condition.

This type of piecemeal measurement development has caused these domain-specific efficacy (in the name) scales to actually measure management of similar chronic problems. Studies using different measures for similar conditions create a hurdle for meta-analysis, which in turn prevents the integration of the empirical self-efficacy literature. Health and healthcare researchers need to overcome the conventional assumption that each health condition is independently unique and create comparable self-efficacy measures for the sake of literature integration and research efficiency. To that end, a framework for self-efficacy instrumentation, something to the effect of a trans-domain framework, needs to be developed (more in the conclusion).

As a general rule, self -efficacy subscales, resulting from an exploratory factor analysis of a pool of items, should not be used independently as a self-efficacy measure. Such subscales are data driven, but do not offer the strong content validity needed for a theoretical

construct. This type of scale can be used only as a dimension in the context of the larger multidimensional scale. For example, Schuurmans, et al.'s (2005) subscale of Self-Management Ability Scale-30 contains five items that depict an elderly person's ability to "find agreeable activities, take good care of him/herself, have friendly contacts with others, and let others know that he/she cares about them, and is good at something." This subscale cannot be used as self-management self-efficacy for the elderly as many aspects of self-management are missing. Refer to Table 1 for specific scales with multi-dimensions.

Construct Operational Definitions: Guarding against Non-efficacy Measures

The conceptualization of self-efficacy refers to one's confidence/judgment in performing tasks. The operationalization of self-efficacy as belief (a in Table 3) or confidence (b in Table 3) about one's ability to exert behaviors or perform specific tasks are congruent with the conceptual definition, and, thus, are appropriate. However, knowledge, behavioral intention, task difficulty, and mixed use of importance and ease (see Table 3) are incongruent with the conceptual definition, and, thus, these measures no longer assess the construct of self-efficacy. Rew, McDougall, Riesch, and Parker's (2005) self-efficacy scale for testicular self-examination tests one's knowledge of how to perform the self-examinatiledn, as respondents are instructed to indicate "yes" or "no" to items such as "I know that testicular self-examination is important for my health," and "I know that testicular self-examination is most effective if done the same time of each month." (Also see Self-Efficacy Scale for Pap Smear Screening Participation, Hogenmiller et al., 2007). In those cases, self-efficacy was measured by its correlates such as knowledge or task difficulty, which likely predict self-efficacy but are not self-efficacy.

Reliability and Scale Length: Measurement Efficiency Needed

All self-efficacy measures appear to have good internal consistency. However, a reliable scale does not necessarily imply that the included items are content-valid. For

example, those domain-specific (in the name) measures, although reliable, are not really content-valid as the items do not tap the specific characteristics of the domain of health functioning. Long scales (e.g., with more than 15 items) with an internal consistency reliability of .90 or higher indicate the possibility of over-specificity and measurement inefficiency. Indeed, item overlapping appears quite prevalent, as 28 (72%) studies contained a self-efficacy scale with at least 10 items, for which the mean reliability is .89 and the mean scale length is 18.5 items. Ideally, overlapping items can be identified based on inter-item correlations, which, however, is not feasible here as only two studies reported inter-item correlations.

Item Content: Unifying the Three Approaches

The three approaches to measurement content each have merit. The trait-like approach includes self-efficacy for the likes of physical efficacy, health competency, exercise, pelvic muscle exercise, self-management, general wellbeing, pain management, and self-adjustment. These self-efficacies pertain to repeated, predictable routines that tend not to vary due to situations. The required self-efficacy acts do not seem difficult to perform (e.g., walking, running, and eating fruits), but maintaining these acts constantly or over a period of time becomes the challenge. Operationalizing these self-efficacies as an individual's ability to maintain a stable pattern of behavior appears quite appropriate.

For the domain-specific approach, the "in the name only" measures are rather general and the researchers did not do a good job discovering characteristics specific to the given health condition. These "in the name only" scales are not meaningful and warrant redevelopment. The focus here is on the substantively domain-specific measures. The behavioral acts included in these measures are more complex than those in the trait-like measures. In order to be efficacious, an individual likely needs to have special knowledge about the health condition (e.g., symptoms, self-examination, and medication), receive some

training about daily management, and be alert to physical changes. Task difficulty itself probably accounts for more variance than situations. For example, if a diabetic can correctly check blood sugar level, whether he/she is at home or in a hotel on a trip probably will not matter that much. Thus, situations do not have to be emphasized when domain-specific knowledge and skills determine self-efficacy.

The situation approach stresses how an individual's sense of self-efficacy may change in different contexts. Some situations appear generic (e.g., being tired, bad weather, or low blood sugar level), and others are more specific (e.g., drug users experiencing withdrawal). In those cases, researchers appear to believe that the situations likely make a difference in an individual's self-efficacy level.

As the main role of self-efficacy in health intervention is its ability to predict behavioral outcomes (see the opening paragraph), a good self-efficacy measure must capture large variability. To that end, item content development can begin by locating the sources of variability (i.e., where the challenges reside) for self-efficacy. The three approaches seem to capture these challenges appropriately. The trait-like approach, covering repeated, simple behaviors, recognizes the challenge for self-efficacy in the maintenance of the behaviors (or trait-like stable behavioral patterns). The specific domain approach implies that the challenge to self-efficacy for managing a given health condition is a matter of having specific knowledge and management skills for that condition. The situation approach acknowledges that salient situations pose a challenge for self-efficacy. In essence, self-efficacy instrumentation is about locating the variability of self-efficacy, choosing one of the three approaches, and then creating items that capture such variability.

Suggestions for Self-efficacy Instrumentation

The current search method did not include all self-efficacy measurement studies; more studies likely result in the discovery of more problems. The problems identified thus far

warrant suggestions for improvement in self-efficacy instrumentation. First, researchers need to follow the definition of self-efficacy in social cognitive theory as judgment of one's ability to perform tasks. Researchers must resist the temptation of operationalizing self-efficacy as measures of its related constructs such as knowledge, task difficulty, behavioral intention, and importance of a health issue. Second, researchers need to locate the sources of variability (i.e., the challenges) for self-efficacy and decide on an item content generation method from the three approaches (i.e., trait-like, situation, and domain-specific approaches). Third, for behavioral indicators that comprise item content, researchers need to guard against redundant, over-specific items. Long, inefficient measures can create data collection problems for samples that include physically or mentally challenged respondents who may not have the attention span or physical stamina to complete lengthy questionnaires.

Conclusion

The piecemeal fashion of self-efficacy instrumentation has led to incomparable measures of similar domains of health functioning. To solve this problem, a trans-domain framework is warranted. A trans-domain model is consistent with the interdisciplinary nature of health intervention processes. Similar to the idea of the transtheoretical model of behavior change, the trans-domain framework will need to include the generic aspects of self-efficacy that are relevant to various health conditions. Some of the generic aspects, for example, can include pain, treatment routines, psychological management, and daily activities. Then additional domain-specific aspects are added for a given health condition when needed. Self-efficacy measures following the trans-domain model offer comparable attributes, which can assist in the integration of research findings. Studies using trans-domain model based measures are highly desirable for meta-analysis. Integrated research findings improve health researchers' and practitioners' understanding of the role of self-efficacy, which, in turn,

facilitates the enactment of effective intervention programs designed to enhance individuals' health self-efficacy.

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Table 1

Measures Included in the Meta-Synthesis

Author(s)	Measurement Name	Sample *N*	Total Items	Relia-bility	Dimen-sions
Barlow, Williams, & Wright (1997)	Arthritis Self-Efficacy Scale	53	11	>.9	2
Belloch et al. (1997)	Self-Efficacy Expectancies (for asthma)	100	no info	no info	
Champion & Scott (1997)	Breast Self-Examination Self-Efficacy	329	10	0.9	1
Chen (2004)	The Pelvic Floor Muscle Exercise Self-Efficacy Scale	106	17	0.95	2
Cousineau et al.(2006)	The Infertility Self-Efficacy Scale	213	16	94/.91	1
Day, Bodmer, & Dunn (1996)	Subscale of Questionnaire of Factors Responsible for Successful Self-Management of Insulin-Treated Diabetes	128	7	0.71	1
de Vries, Dijkstra, & Kuhlman (1988)	Self-Efficacy (for antismoking)	85	9	0.8	1
Dilorio et al. (1997)	The Condom Use Self-Efficacy Scale	641	26	0.91	5
Edwards & Lockett (2008)	Falls Efficacy Scale	542	11	0.88	2
Edwards et al. (2000)	The Sickle Cell Self-Efficacy Scale	83	9	0.89	1
Gonzalez & Gonzalez (1990)	Self-Efficacy of Breast Self-Examination	106	11	0.79	3
Gözüm & Aydin (2004)	Subscale of Champion's Health Belief Model Scale	266	10	0.81	1
Hansen et al. (2007)	Self-efficacy for resisting smoking initiation (subscale)	4790	3	0.87	1
Hogenmiller et al. (2007)	Self-efficacy for Pap Smear Screen Participation	161	20	0.95	2/3
Kalichman et al. (2005)	Pictographic Self-Efficacy Scale (for HIV medication adherence)	81	6	0.68	1
Gerber et al. (2006)	Diabetes Self-Efficacy	255	12	0.72	1
Kendall, Olson, & Frongillo (2001)	Weight-Control Related Self-efficacy (subscale)	622	8	0.9	2
Koyama et al. (2006)	Subscale of the Nottingham Adjustment Scale	163	4	0.83	1
Kroll et al. (2007)	The Spinal Cord Injury Exercise Self-	368	10	0.93/0.8	1

	efficacy Scale			8	
Lev & Owen (1996)	Strategies Used by People to Promote Health	275	36	0.93/0.95	4
Lim et al. (2007)	Pain Self-efficacy Questionnaire-HK	120	10	0.93	1
Lomi et al. (1995)	Arthritis Self-Efficacy Scale	99	20	>.9	3
Luszczynska, Scholz, & Schwarzer (2005)	General Self-Efficacy Scale	1933	10	.86-.94	1
Moens, Grypdonck, & van der Bijl (2001)	Self-efficacy for Managing Type I Diabetes	84	26	0.86	2
Phillips & Rosenberg (2008)	Harm Reduction Self-efficacy Questionnaire	99	15	.89/.92/.91	1
Reecce & Harkless (2002)	Perimenopausal Health Self-efficacy Scale	98	21	.88/.90	4
Resnick & Jenkins (2000)	The Self-efficacy for Exercise	187	9	0.92	1
Rew (2005)	Self-efficacy for Testicular Self-Examination Scale	306	7	0.84	1
Risser, Jacobson, & Kripalani (2007)	Self-efficacy for Appropriate Medication Use Scale	436	13	0.89	2
Sallis et al. (1988)	Self-Efficacy for Eating Behaviors Scale	171	61	>.93	5
Sallis et al. (1988)	Self-Efficacy for Exercise Behaviors	171	12	>.83	2
Schuurmans et al. (2005)	Self-management Ability Scale-30	1338	30	0.91	5
Shin, Jang, & Pender (2001)	The Exercise Self-efficacy Scale	249	18	0.94	3
Shively et al. (2002)	HIV Self-Efficacy Questionnaire	153	34	0.96	6
Smith, Wallston, & Smith (1995)	The Perceived Health Competence Scale	238	8	.82/.83	1
Sumerlin, Pointer-Thompson, & Thaxton (1997)	Physical Self-efficacy Scale	137	22	0.78	1
Thato, Hanna, & Rodcumdee (2005)	Condom Self-efficacy scale	383	14	0.85	3
Wigal et al. (1993)	Self-efficacy Subscale of The Knowledge, Attitude and Self-efficacy Asthma Questionnaire	48	20	.85/.89	1
Wu et al. (2008)	Perceived Therapeutic Efficacy Scale Chinese Version	230	10	0.95	1

Table 2

Health Contexts for Self-Efficacy Instrumentation

Health Contexts for Self-Efficacy Instrumentation	All Studies in the Sample (K = 39) k (%)	Measure Development Studies Only (k = 22) k (%)
1. Illness/Condition Management (e.g., diabetes, HIV, sickle cell disease, arthritis, renal cancer, heart disease/mediation adherence, spinal cord injury, infertility treatment, incontinence, asthma, general chronic condition/pain)	19 (48.7%)	10 (45.5%)
2. Adoption/Maintenance of Healthy Behavior (e.g., exercise, diet midlife transition, keeping off weight, physical fitness)	8 (20.5%)	5 (22.7%)
3. Disease Prevention (e.g., cervical cancer, testicular cancer, HIV/STD , breast cancer)	6 (15.4%)	3 (13.6%)
4. Examination/Prevention of Risky Behaviors (e.g., anti-smoking, drug addiction)	3 (7.7%)	3 (13.6%)
5. Elderly Self-Management/Physical Activity (e.g., falls, exercise)	3 (7.7%)	1 (4.5%)

Table 3

Operationalization of Self-Efficacy

Operational Definition Reflected by the Rating Anchors	All Studies in the Sample (*K* = 39) *k* (%)	Measure Development Studies Only (*k* = 22) *k* (%)
a. Belief about ability to exert behaviors (e.g., uncertain-certain, unsure-sure)	11 (28.2%)	4 (18.1%)
b. Confidence in ... under challenging circumstances (not confident--very confident, unsure-sure)	22 (56.4%)	12 (54.5%)
c. Behavioral intention (I would do . . .)	1 (2.6%)	1 (4.5%)
d. Task difficulty (I find it easy to . . .)	1 (2.6%)	1 (4.5%)
e. Mixed (importance, ease, knowledge, behavior. . .)	4 (12.8%)	4 (18.2%)