Perceived Self-Efficacy

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Self-Efficacy and Health Behavior Theories

Most prominent health behavior theories include self-efficacy (or similar constructs). Self-efficacy is a proximal and direct predictor of intention and of behavior. According to **Social Cognitive Theory** (SCT; Bandura, 1997), a personal sense of control facilitates a change of health behavior. Self-efficacy pertains to a sense of **control over one's environment and behavior**. Self-efficacy beliefs are cognitions that determine whether health behavior change will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and failures. Self-efficacy influences the effort one puts forth to change risk behavior and the persistence to continue striving despite barriers and setbacks that may undermine motivation. Self-efficacy is directly related to health behavior, but it also affects health behaviors indirectly through its impact on goals. Self-efficacy influences the challenges that people take on as well as how high they set their goals (e.g., "I intend to reduce my smoking," or "I intend to quit smoking altogether"). Individuals with strong self-efficacy select more challenging goals (DeVellis & DeVellis, 2000). They focus on opportunities, not on obstacles (e.g., "At my university there is a smoking ban, anyway," instead of "There are still a lot of ashtrays at my university.").

According to the **Theory of Planned Behavior** (TPB; Ajzen, 1991), intention is the most proximal predictor of behavior. Cognitions that affect a specific intention are attitudes,

subjective norms, and perceived behavioral control (perception about being able to perform a specific behavior**)**. A typical item to assess perceived behavioral control is, "It is easy for me to do xy." Self-efficacy and behavioral control are seen as almost synonymous constructs. However, self-efficacy is more precisely related to one's competence and to future behavior.

According to the **Transtheoretical Model** (TTM; Prochaska, Norcross, Fowler, Follick, & Abrams, 1992), self-efficacy and perceived positive ("pros") and negative ("cons") outcomes are seen as the main social-cognitive variables that change across the **stages**. Self-efficacy is typically low in early stages and increases when individuals move on to the later stages. For a critical discussion of this model, see Sutton (2005) and West (2005).

The **Health Action Process Approach** (Schwarzer, 1992, 2001) argues for a distinction between (a) **preintentional motivation processes** that lead to a behavioral intention and (b) **post-intentional volition processes** that lead to actual health behavior. In the motivation phase, one needs to believe in one's capability to perform a desired action ("I am capable of initiating a healthier diet in spite of temptations"), otherwise one will fail to initiate that action. In the subsequent volition phase, after a person has developed an inclination toward adopting a particular health behavior, the "good intention" has to be transformed into detailed instructions on how to perform the desired action. Self-efficacy influences the processes of planning, taking initiative, maintaining behavior change, and managing relapses (see Luszczynska & Schwarzer, 2003; Marlatt, Baer, & Quigley, 1995). For a critical discussion, see Sutton (2005).

There are a few studies that have compared the predictive power of constructs derived from different theories. Dzewaltowski (1989) compared the predictive utility of the **Theory of Reasoned Action** (TRA) and SCT in the field of exercise motivation. The exercise behavior of students was recorded and then related to prior measures of different cognitive factors. The variables from TRA predicted exercise behavior. In addition, strength of self-efficacy,

expected outcomes and satisfaction with level of activities were assessed. Individuals who were confident that they could adhere to the strenuous exercise program, who were dissatisfied with their present level of physical activity, and who expected positive outcomes also exercised more. TRA variables did not account for any unique variance in exercise behavior after controlling for the social cognitive factors. These findings indicate that SCT provides powerful explanatory constructs. Other studies using constructs from different theories also show that the effects of self-efficacy on physical activity are stronger than those of other psychosocial determinants (see Rovniak, Anderson, Winett, & Stephens, 2002).

Measurement

General Perceived Self-Efficacy

General self-efficacy assesses **a broad and stable sense of personal competence** to deal effectively with a variety of stressful situations. This approach is not in opposition to Bandura's (1997) suggestion that self-efficacy should be conceptualized in a situation-specific manner. Rather, general self-efficacy can be used to explain a complex set of adherence behaviors (e.g., in diabetes) or the perception of health or various symptoms. The **General Self-Efficacy** (GSE) scale (Schwarzer & Jerusalem, 1995) was created to predict coping with daily hassles as well as adaptation after experiencing various kinds of stressful life events (see Appendix). Preferably, the 10 items are randomly mixed into a larger pool of items that have the same response format. It requires 4 minutes on average to answer the questions. Responses are made on a 4-point scale. Responses to all 10 items are summed up to yield the final composite score, with a range from 10 to 40. No recoding. In samples from 23 nations, Cronbach's alphas ranged from .76 to .90. The scale is unidimensional, as found in a series of confirmatory factor analyses (Scholz, Gutiérrez-Doña, Sud, & Schwarzer, 2002). Criterion-

related validity is documented in numerous correlation studies where positive coefficients were found with favorable emotions, dispositional optimism, and work satisfaction. Negative coefficients were found with depression, anxiety, stress, burnout, and health complaints. In studies with cardiac patients, their recovery over a half-year time period could be predicted by presurgery self-efficacy (for an overview of validation studies see Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005).

Perceived Self-Efficacy for Health Behaviors

A number of studies on the adoption of health practices have measured self-efficacy to assess its potential influences in initiating behavior change. Often single-item measures or very brief scales (e.g., 4 items) have been used. It is actually not necessary to use larger scales if a specific behavior is to be predicted. More important is rigorous theory-based item wording. A rule of thumb is to use the following semantic structure: "I am certain that I can do xx, even if yy (barrier)" (Luszczynska & Schwarzer, 2005). If the target behavior is less specific, one can either go for more items that jointly cover the area of interest, or develop a few specific subscales. Whereas general self-efficacy measures refer to the ability to deal with a variety of stressful situations, measures of self-efficacy for health behaviors refer to **beliefs about the ability to perform certain health behaviors**. These behaviors may be defined broadly (i.e., healthy food consumption) or in a narrow way (i.e., consumption of high-fiber food).

Nutrition-Related or Dietary Self-Efficacy

Dieting, weight control, and preventive nutrition can be governed by nutrition self-efficacy beliefs. It has been found that nutrition self-efficacy operates best in concert with

general changes in lifestyle, including physical exercise and provision of social support. Self-confident clients in intervention programs were less likely to relapse to their previous unhealthy diets (Bagozzi & Edwards, 1998; Brug, Hospers, & Kok, 1997; Fuhrmann & Kuhl, 1998; Gollwitzer & Oettingen, 1998).

Nutrition self-efficacy has been shown to be a significant predictor of physical, social and self-evaluative outcome expectancies regarding healthy nutrition (Anderson, Winett, & Wojcik, 2000). A study using an objective measure of nutrition behavior, namely grocery receipts, demonstrated that the effect of dietary fiber self-efficacy on fat, fiber, fruit and vegetable intake was mediated by physical outcome expectations. Nutrition goal setting was linked to higher dietary fiber self-efficacy and actual fiber intake (see Schnoll & Zimmerman, 2001). In a similar study, self-efficacy to eat more fruit and vegetables as well as outcome expectancies in terms of fruit and vegetable intake predicted a 24-hour recall of actual fruit and vegetable intake (Resnicow et al., 2000). Additionally, these fruit- and vegetable-specific predictors were inversely related to an unhealthy diet, that is, high-fat cooking.

Studies aimed at predicting nutrition in vulnerable populations or patients with chronic or terminal diseases usually provide support for SCT. The nutrition of women 65 years or older has been found to be related to current nutrition self-efficacy, but not to outcome expectancies (Conn, 1997). Besides knowledge about proper nutrition, dietary self-efficacy and perceived spousal support were associated with dietary behaviors amongst Type 2 diabetes patients (Savoca & Miller, 2001). Diabetes-related self-efficacy was found to be strongly related to maintenance of diabetes self-care (diet, exercise and glucose testing; see Bond, 2002). The most powerful effects were observed when strong optimistic self-beliefs were combined with strong beliefs about outcomes (Bond, 2002). Nutrition and exercise self-efficacy were also connected to the maintenance of diet and physical activity in breast cancer patients (Pinto et al., 2002).

The measurement of this kind of self-efficacy aims at statements that include control over the temptation to eat too much or to choose the wrong foods. Items can include particular foods, such as “I am certain that I can eat five portions of fruits and vegetables per day,” or can refer to self-regulatory efforts, as in the example in the Appendix. Another way to assess nutrition self-efficacy was presented by Anderson et al. (2000). Self-efficacy was a predictor of nutrition behavior among shoppers (cf. scale in the Appendix) . Some instruments target very specific components of nutrition, such as fat intake in specific populations. An example of scale development is the following: Chang, Nitzke, and Brown (2003) have developed a self-efficacy measure for eating low-fat diets in low-income women.

Physical Exercise Self-Efficacy

Perceived **exercise self-efficacy** has been found to be a major instigating force in forming intentions to exercise and in maintaining the practice for an extended time (Dzewaltowski, Noble, & Shaw, 1990; Feltz & Riessinger, 1990; McAuley, 1992, 1993; Shaw, Dzewaltowski, & McElroy, 1992; Weinberg, Grove, & Jackson, 1992; Weiss, Wiese, & Klint, 1989). The measurement of exercise self-efficacy may relate to a specific task, such as “I am certain that I can run for half an hour without stopping, even uphill.” Or the target behavior is not directly specified in favor of explicit barriers, as shown in the example (cf. Appendix). In the context of patient education (Lorig et al., 1996), physical activity self-efficacy scales have been used (cf. Appendix). The role of efficacy beliefs in initiating and maintaining a regular program of physical exercise has also been studied by Desharnais, Bouillon, and Godin (1986), Long and Haney (1988), Sallis et al. (1986), Sallis, Hovell, Hofstetter, and Barrington (1992), and Wurtele and Maddux (1987). Endurance in physical performance was found to depend on exercise efficacy beliefs that were created in a series of experiments on competitive efficacy by Weinberg, Gould, and Jackson (1979), Weinberg,

Gould, Yukelson, and Jackson (1981), and Weinberg, Yukelson, and Jackson (1980). In terms of competitive performance, tests of the role of efficacy beliefs in tennis performance revealed that perceived exercise efficacy was related to 12 rated performance criteria (Barling & Abel, 1983). A study on vigorous physical activity among school girls provided strong support for SCT, modest support for the TPB, and only weak support for the TRA (Motl et al., 2002). Exercise self-efficacy was the strongest predictor of moderate and vigorous physical activity, whereas behavioral control predicted only vigorous activity.

Alcohol Consumption and Self-Efficacy

This area of research can be subdivided into **controlled drinking self-efficacy, drinking refusal self-efficacy,** and **abstinence self-efficacy**. It is relevant in clinical research on alcohol dependence, binge drinking, and relapse prevention, but also primary prevention to examine how youngsters believe that they can resist the temptation to drink. Heavy drinkers had lower abstinence self-efficacy than those who drink less or who drink only in social situations (Christiansen, Vik, & Jarchow, 2002). For alcohol consumption, instruments were presented by Rychtarik, Prue, Rapp, and King (1992), Sitharthan and Kavanagh (1990), and Young, Oei, and Crook (1991).

Most of the research on self-efficacy and drinking behavior has used the **Situational Confidence Questionnaire** (SCQ; Annis, 1984, 1987). Ratings of self-efficacy have predicted drinking behavior (Annis & Davis, 1988). Adolescents with substance abuse, anxiety, and conduct disorder, diagnostic combinations were found to have significantly lower self-efficacy scores across all the SCQ subscales. Sitharthan, Soames Job, Kavanagh, Sitharthan, and Hough (2003) reported the factor structure of a 20-item **Controlled Drinking Self-Efficacy Scale** (CDSES) that included four factors: negative affect, positive mood/social context, frequency of drinking, and consumption quantity. The CDSES can be a useful

measure in treatment programs providing a moderation drinking goal. Assessing one's self-efficacy to reduce alcohol consumption follows the same pattern as in the previous examples. Items can target a highly specific behavior such as "I am certain that I can refuse a drink tonight when my buddies offer it to me." Or it can be less specific, as proposed by Schwarzer and Renner (2000; see Appendix). There are specific self-efficacy measures that have been developed primarily for problem drinkers who seek a moderation drinking goal.

The **Drinking Refusal Self-Efficacy Questionnaire** (DRSEQ) by Young and Oei (1996) assesses the belief in one's ability to resist alcohol. A revised factor structure (DRSEQ-R) was confirmed in community, student, and clinical samples. The DRSEQ-R was also found to have good construct and concurrent validity. DiClemente, Carbonari, and Montgomery (1994) have developed the 20-item **Alcohol Abstinence Self-Efficacy** scale (AASE). There were 174 men and 92 women who came to an outpatient alcoholism treatment clinic. Ratings were made on a 5-point Likert *scale* of confidence to abstain from alcohol across 20 different high-risk situations. A parallel set of items assessed the participants' temptation to drink in each situation. The four 5-item subscales of the AASE measured types of relapse precipitants labeled negative affect, social positive, physical and other concerns, and withdrawal and urges.

Smoking Cessation Self-Efficacy

Confidence to overcome barriers (i.e., smoking cessation self-efficacy) can predict attempts to quit smoking (Dijkstra & DeVries, 2000). Nicotine abstinence of self-quitters depends on various demographic, physiological, cognitive and social factors, but only a few factors are common predictors of maintaining abstinence. These are physiological factors, such as lower nicotine dependence, longer duration of previous abstinence, and, as a cognitive factor, high perceived smoking cessation self-efficacy (see Ockene et al., 2000).

Poor smoking cessation self-efficacy is associated with lapses. Coping successfully with high-risk situations as they occur during the maintenance period is dependent on self-efficacy. Confidence in one's ability to abstain from smoking might refer to particular environmental or affective contexts, such as feelings of irritation or sadness, socializing with smokers, or being in a bar or a restaurant. Gwaltney et al. (2002) found that lapse episodes within a four-week abstinence period were predicted by **abstinence self-efficacy**. Abstinence self-efficacy differentiated between the temptation episodes in which the former smoker was able to resist smoking and situations that ended up with lapses. In a study on lapses and relapses of smokers who attempted to quit, self-efficacy was measured daily in order to analyze whether changes in optimistic self beliefs precede lapses during 25 days after quitting smoking (Shiffman et al., 2000). On days when both groups were abstinent, persons who never lapsed during the monitoring period reported higher daily self-efficacy than those who lapsed. Daily average self-efficacy over the lapse-to-relapse interval was lower among persons who relapsed than daily average postlapse self-efficacy among those who did not. Self-efficacy after the lapse significantly predicted subsequent behavior.

The classic **smoking self-efficacy measurement** is the scale by Colletti, Supnick, and Payne (1985). They developed the 17-item SSEQ, an instrument designed to measure *self-efficacy* for resisting the urge to smoke. Participants were treated in a behaviorally oriented *smoking* reduction program. Analyses based upon SSEQ ratings, carbon monoxide measurements, *self*-reported *smoking* rate, and relapse data supported the predictions derived from *self-efficacy* theory. Smoking abstinence self-efficacy ratings should be context-specific; they should vary across situations. This variability could signal high risk for relapse situations. In a study by Gwaltney, Shiffman, and Normal (2001), the **Relapse Situation Efficacy Questionnaire** (RSEQ) was developed. Results showed that both context-specific and unidimensional measures of self-efficacy were relevant. Context-specific factors included Negative Affect, Positive Affect, Restrictive Situations (to smoking), Idle Time, Social-Food

Situations, Low Arousal, and Craving. These factors predicted cessation outcome, after controlling for concurrent smoking rate.

Some smoking cessation self-efficacy scales were composed in a multidimensional manner. In one study (Dijkstra & De Vries, 2000), the following five subscales were constructed: **Emotional self-efficacy, Social self-efficacy, Skill self-efficacy, Relapse self-efficacy and Try self-efficacy**. Twenty-seven items were used in the questionnaire: Situational Self-Efficacy, 8 items; Skill Self-Efficacy, 9 items; Relapse Self-Efficacy, 5 items; Try Self-Efficacy, 5 items (see Appendix).

In a sample of smokers with low motivation to quit, two subsequent self-report measurements of smoking cessation self-efficacy were conducted. It was found that quitting history and smoking behavior were related to the types of self-efficacy. Number of past attempts at quitting was only related to relapse self-efficacy. Only skill self-efficacy was predictive of quitting activity between Time 1 and Time 2. Point prevalence quitting at Time 2 was predicted by Skill self-efficacy and relapse self-efficacy. The more clearly the means to accomplish the task are specified, the more valid the self-efficacy judgments were (Dijkstra, Bakker, & DeVries, 1997).

Adherence to Medication Self-Efficacy and Rehabilitation Self-Efficacy

Poor compliance with recommended treatment may result partly from patients' experience of adverse side effects, but it may also be due to a lack of self-regulatory skills. Considering psychosocial factors, adherence is related to lack of social support and lack of self-efficacy beliefs about one's ability to adhere to medication (Catz, Kelly, Bogart, Benotsch, & McAuliffe, 2000). For example, Molassiotis et al. (2002) have found that adherence to antiretroviral medication in patients with HIV was strongly related to self-efficacy (that is, optimistic self-beliefs about the ability to follow the medication regimen).

These self-beliefs, together with anxiety and nausea, were related to adherence to the recommended treatment. The relation between social support and medication adherence was weaker than the relation between self-efficacy and medication adherence. Low adherence self-efficacy, together with low outcome expectancies regarding the benefits following the treatment regimen, have also been found to be related to low medication adherence in HIV symptomatic women or women with AIDS (Murphy, Greenwell, & Hoffman, 2002).

Some medications must be self- injected on a frequent basis. A study by Mohr, Boudewyn, Likosky, Levine, and Goodkin (2001) examined cognitive and affective contributions to the ability to self-inject and adherence among patients with a relapsing form of MS. Pretreatment injection self-efficacy expectations were related to 6-month adherence.

A study by Kobau and Dilorio (2003) described self-efficacy beliefs and outcome expectancies toward medication, seizure, and lifestyle management behaviors among adults with epilepsy. Participants responded to the Epilepsy *Self-Efficacy* scale addressing the confidence for following medication dosing schedule, planning for medication refills, coping with adverse effects of medication, getting sufficient sleep, avoiding alcohol, and obtaining social support. Those with low self-efficacy are expected to benefit from self-efficacy interventions to enhance their self-management ability.

Diabetes self-efficacy was associated with a measure of metabolic control in insulin-dependent diabetes patients (Grossmann, Brink, & Hauser, 1987). Authors used a 35-item measure, the **Self-Efficacy for Diabetes scale**. Adolescents rated on a 5-point scale how much they were confident that they could implement tasks specific for four components of insulin-dependent diabetes management (insulin injections, blood glucose monitoring, dietary prescriptions, exercise).

A **medication adherence self-efficacy scale** was developed by Gbenga, Mancuso, Allegrante, and Charlson (2003) in ambulatory hypertensive African-American patients in

two sequential phases. After an initial test with a 43-item self-efficacy questionnaire, 26 items were retained for the final self-efficacy scale. This scale can be used to identify risk situations in adherence to prescribed medications.

Condom Use Self-Efficacy

Condom use self-efficacy has been studied to explain unprotected sexual behavior, such as not using contraceptives to avoid unwanted pregnancies. Teenage girls with a high rate of intercourse have been found to use contraceptives more effectively if they believe they could exercise control over their sexual activities (Levinson, 1982; Wang, Wang, & Hsu, 2003). Most of the studies referring to risky sexual behaviors have examined social cognitive predictors of condom use. Optimistic beliefs in one's capability to negotiate safer sex practices emerged as the most important predictor of protective behaviors (Basen-Engquist, 1992; Kasen, Vaughn, & Walter, 1992; Wulfert & Wan, 1993). Brafford and Beck (1991) have developed the **Condom Use Self-Efficacy scale**, consisting of 28 items describing an individual's feelings of confidence about being able to purchase and use condoms. Among college students, those who differed on levels of previous condom use as well as on sexual intercourse experience also showed differences on this *scale* in the expected direction. Giles, Liddell, and Bydawell (2005) have studied self-efficacy in the context of the TPB to predict and explain condom use in young adults at two points in time. Condom use self-efficacy was designed to measure the extent to which an individual believes he/she has the confidence/ability to use a condom, such as “I believe I have the ability to use a condom the next time I have sex.” Results provided some support for TPB. Subjective norm and self-efficacy emerged as substantial predictors. Kaljee, Genberg, and Riel (2005) present findings from a randomized-controlled trial of an HIV prevention program for adolescents. They used the Vietnamese Youth Health Risk Behavior Instrument, including scales based on the

protection motivation theory (PMT). The modified instrument included an 8-item self-efficacy scale with items such as: (1) I could get condoms if I wanted to. (2) I could put a condom on correctly. (3) I could convince the person I am having sex with that we should use a condom, even if he doesn't want to. (4) I could ask for condoms in a pharmacy. The data suggest the potential applicability of the PMT for HIV program development with non-Western adolescents.

Detective Behaviors and Self-Efficacy

Some studies provided evidence that both **outcome expectancies and perceived self-efficacy** were the best joint predictors of the intention to engage in regular breast cancer detection behaviors (Meyerowitz & Chaiken 1987; Seydel, Taal, & Wiegman, 1990]).

Some screening behaviors refer to actions that are performed by individuals without any contact with health practitioners. These include breast or testicular self-examination. An example of a **breast self-examination (BSE) self-efficacy scale** was developed by Luszczynska and Schwarzer (2003). Additionally, the authors divided BSE self-efficacy into those referring to forming an intention (preaction BSE self-efficacy), and those referring to the maintenance of BSE (maintenance BSE self-efficacy). These types of BSE self-efficacy were related to the intention to perform BSE and to behavior, respectively. The scale has good reliability (alphas of .81 and .77) and a two-factorial structure (cf. Luszczynska & Schwarzer, 2003). The scale is presented in the Appendix.

A study on first-degree relatives of prostate cancer patients supports the role of self-efficacy for screening behaviors. Physician recommendation, knowledge, and risk estimation were only poor predictors, whereas self-efficacy beliefs and positive outcome expectancies were more closely linked to prostate cancer screening (Cormier, Kwan, Reid, & Litwin, 2002). Participation in endoscopic colorectal cancer screening was predicted by self-efficacy,

followed by the individuals' beliefs about the outcome of participation. Self-efficacy discriminated between those who participated in the screening and those who did not (Kremers, Mesters, Pladdet, van den Borne, & Stockbrügger, 2000).

Cancer screening might be a first step on the way to change everyday health behaviors. However, people who enrolled in a single cancer screening (e.g., lung cancer) do not necessarily have high self-efficacy regarding behaviors related to this cancer (e.g., regular screening, quitting smoking). Among those women who smoked heavily who were asked to participate in lung cancer screening, almost two thirds were classified as having low self-efficacy regarding smoking cessation (Schnoll et al., 2002), while most of them (76 per cent) reported high positive outcome expectancies of quitting. The results are in line with SCT, which emphasizes the role of self-efficacy in the process of behavior change. Despite relatively high expectations about quitting smoking, the participants were unable to change their smoking habits

Similar Constructs

Self-efficacy is a unique theoretical construct different from related ones, such as self-concept, self-esteem, locus of control, or self-concept of ability. **Self-concept** refers to an organized knowledge about oneself ("I see myself as a diligent person"), whereas **self-esteem** has its main focus on the emotional side of this knowledge ("I feel that I have a good character," or "I am proud of myself"). **Locus of control** refers to an attribution of responsibility for outcomes (internal agency versus external causation), and **self-concept of ability** pertains to a judgment of one's competence ("I am good at math") without reference to any subsequent action. Only self-efficacy ("I am certain that I can quit smoking even if my partner continues to smoke") is of a prospective and operative nature, which furnishes this construct with additional explanatory and predictive power in a variety of research

applications. In sum, perceived self-efficacy can be characterized mainly as being competence-based, prospective, and action-related as opposed to similar constructs that share only part of this portrayal (Bandura, 1997).

Dispositional Optimism

Generalized outcome expectancies have been coined **dispositional optimism**, measured with the **Life Orientation Test** (LOT;(Scheier & Carver, 1985). This construct reflects a sense of confidence about attaining a goal**.** It does not specify the cause of goal attainment, but the theory (Carver & Scheier, 1998) assumes that effort is a key self-regulatory component that is made responsible for the outcomes. In contrast, perceived self-efficacy requires an explicit attribution of expected goal mastery to one's competence. Although both constructs share the notion of optimism, the source for this optimism is different (Schwarzer, 1994). Dispositional optimism is the broader construct because it includes ability attribution as one possibility among others (See contribution by Carver).

Hope

The hope construct is two-dimensional, consisting of **agency** and **pathways** (Snyder, 1994, 2002). The Hope scale includes 4 items for each of these components (Snyder et al., 1991). Agency is conceptualized as almost the same as perceived self-efficacy although the scale items are somewhat ambiguous. Pathways resemble outcome expectancies. (See contribution by Carver).

Health Locus of Control

According to Rotter's (1966) social learning theory, people may have either an **internal** or an **external locus of control**, often abbreviated as the I/E-dimension. The level of generality or situation specificity of this construct can vary. The research team of K. A. Wallston deserves the acclaim to have applied successfully Rotter's basic idea to the health domain. This domain specificity may be regarded as a medium level of generality, constrained to the subjective interpretation of various phenomena such as health behaviors, health outcome, health care, etc. (Wallston, Wallston, & DeVellis, 1978). The term "locus" refers to the location where control resides–either internal (I) to the individual (based on one's traits or behaviors) or external (E) to the individual (due to other forces or chance). There are two dimensions, I and E, and, obviously, it is possible to subdivide them further. For example, chance and powerful others are quite distinct subfactors of the E dimension. The construct of MHLC has been built upon this idea, and its corresponding measure, the MHLC scales, contain exactly these three subscales, one I dimension and two E dimensions, all of which are considered to be orthogonal (Wallston et al., 1978). The measurement of MHLC refers to wide areas of functioning, health, and medical conditions (see Wallston et al., 1978). This generality might also explain the lack of significant associations between the loci and specific measures of health status or health behaviors. According to implicit assumptions that form the background of many studies, a firm internal locus of control belief might promote better health or healthier behaviors**.** Self-efficacy, nevertheless, seems to be the more powerful construct when it comes to the prediction of health behaviors. Self-efficacy shares the internal locus of control, but is also behavioral and prospective.

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APPENDIX

Type of self-efficacy scale	**Example of items from the scale**	**Response Format**	**Source**
General Self-Efficacy (GSE) scale	I can always manage to solve difficult problems if I try hard enough. If someone opposes me, I can find the means and ways to get what I want. It is easy for me to stick to my aims and accomplish my goals. I am confident that I could deal efficiently with unexpected events. Thanks to my resourcefulness, I know how to handle unforeseen situations. I can solve most problems if I invest the necessary effort. I can remain calm when facing difficulties because I can rely on my coping abilities.	1 –definitely not 4 – exactly true	Schwarzer & Jerusalem, 1995

	When I am confronted with a problem, I can usually find several solutions. If I am in trouble, I can usually think of a solution. I can usually handle whatever comes my way.		
The Nutrition Self-Efficacy Scale	How certain are you that you could overcome the following barriers? I can manage to stick to healthful foods, ... 1) ...even if I need a long time to develop the necessary routines. 2) ...even if I have to try several times until it works. 3) ...even if I have to rethink my entire way of nutrition. 4) ...even if I do not receive a great deal of support from others when making my first attempts. 5) ...even if I have to make a detailed plan.	1 –definitely not 4 – exactly true	Schwarzer & Renner, 2000
The Nutrition Self-Efficacy Scale	How certain are you that you can … 1) I can bring a slice of bread with fiber to work or school for a	1 (very sure I cannot) – 10 (very sure I can	Anderson, Winett, & Wojcik, 2000

	snack. 2) I can get at least 4 servings from every pound of ground beef I buy.		
Exercise self-efficacy scale	How certain are you that you could overcome the following barriers? I can manage to carry out my exercise intentions, ... 1) ... even when I have worries and problems. 2) ... even if I feel depressed. 3) ... even when I feel tense. 4) ... even when I am tired. 5) ... even when I am busy.	1 –definitely not 4 – exactly true	Schwarzer & Renner, 2000
Exercise regularly scale	We would like to know how confident you are in doing certain activities. For each of the following questions, please choose the number that corresponds to your confidence that you can do the tasks regularly at the present time. 1) How confident are you that you can do gentle exercises for	1 – not et all confident; 10 – totally confident	Lorig et al., 1996

	muscle strength and flexibility three to four times per week (range of motion, using weights, etc.)? 2) How confident are you that you can do aerobic exercise such as walking, swimming, or bicycling three to four times each week? 3) How confident are you that you can exercise without making symptoms worse?		
Situational Confidence Questionnaire – alcohol abstinence self-efficacy	I would be able to resist the urge to drink heavily ... 1) If I felt that I had let myself down. 2) If I had trouble sleeping. 3) If I had an argument with a friend. 4) If I were out with friends and they stopped by a bar for a quick drink. 5) If I remembered how good it tasted. 6) If I wanted to prove to myself that I could take a few drinks without becoming a drunk.	6-point scale, response options range from 0% (not at all confident) to 100% (very confident), with mid-range options including 20%, 40%, 60% and 80% confidence levels	Annis, 1984, 1987

The Alcohol Resistance Self-Efficacy Scale	I am certain that I can control myself to ... 1) ... reduce my alcohol consumption. 2) ... not drink any alcohol at all. 3) ... drink only on special occasions.	1 –definitely not 4 – exactly true	Schwarzer & Renner, 2000
Smoking cessation self-efficacy	Imagine you are engaging in a quit attempt. Are you able to refrain from smoking... 1) …when you are angry? 2) … when you are going out with friends? Imagine you are engaging in a quit attempt. Are you able to divert yourself when you feel like smoking? Are you able to maintain your quit attempt when you have been refraining from smoking for one month, but you light a cigarette? Are you able to smoke fewer cigarettes a day?	7-point scale and could be scored from "not at all sure I am able to" (-3) to "very sure I am able to" (+3)	Dijkstra & De Vries, 2000
Adherence (self-injection) self-efficacy	How difficult do you expect it will be to give yourself the injection?	1 - I will not have any problems	Mohr et al., 2001

		injecting myself; 6 - I will not be able to tolerate it at all.	
Condom-Use Self-Efficacy Scale	1) I feel confident in my ability to put a condom on myself or my partner. 2) I feel confident that I would remember to use a condom even after I have been drinking.	0 - strongly disagree; 1 - strongly agree	Brien & Thombs, 1994
Preaction BSE Self-Efficacy Scale:	I am able to perform breast self-examination regularly, 1) ...even if I will have to make a detailed plan describing how to remember about breast self-examination. 2) ...even if I will have to rethink my behaviors and opinions concerning breast self-examination. 3)...even if I will have to overcome my different habit of non-examination. Imagining that you make an attempt to perform regular breast	1 –definitely not 5 – exactly true	Luszczynska & Schwarzer, 2003

	self-examination, do you think that you will procrastinate and reschedule it?		
Maintenance BSE Self-Efficacy Scale	I am able to perform BSE regularly, even if I need a long time to develop necessary routines. I am able to perform it regularly, even if I have to try several times before it works.	1 –definitely not 5 – exactly true	Luszczynska & Schwarzer, 2003