



Published in final edited form as:

*J Health Psychol.* 2011 January ; 16(1): 109–115. doi:10.1177/1359105310367832.

## The Perceived Medical Condition Self-Management Scale Applied to Persons with HIV/AIDS

**Kenneth A. Wallston, PhD,**  
Vanderbilt University School of Nursing

**Chandra Y. Osborn, PhD, MPH,**  
Vanderbilt University School of Medicine

**Lois J. Wagner, PhD, MSN, and**  
Vanderbilt University School of Nursing

**Kellie A. Hilker, PhD**  
Middle Tennessee State University

### Abstract

The Perceived Medical Condition Self-Management Scale (PMCSMS), a generic instrument developed to assess self-management self-efficacy in specific medical conditions, was tailored for use with HIV+ individuals and administered to 125 HIV+ adults, predominantly men. Cronbach's alpha was 0.78, indicating internal consistency reliability. Correlations between the PHIVSMS and other validated psychometric instruments measuring generalized self efficacy, dispositional optimism, depressive symptoms, positive and negative affect and HIV quality of life demonstrate the validity of using this scale with an HIV population. The PMCSMS has broad utility as a generic template that can easily be adapted to different medical conditions.

### Keywords

Self Efficacy; Self Management; HIV

---

Self-efficacy is defined as the belief that one can successfully execute a behavior necessary to produce a given outcome (DeVellis & DeVellis, 2001). Self-efficacy is a key construct within Social Cognitive Theory (SCT) (Bandura, 1997), a theory that identifies multiple, interacting determinants of human behavior and behavior change. SCT has been applied to health behavior, and specifically of late, to self-management of chronic disease (Bandura, 2004). Within this framework, self-efficacy is central to the self-regulatory behaviors that contribute to chronic disease self-management.

While Bandura conceived of self-efficacy to be both behavior and situation specific, others (Jerusalem & Schwarzer, 1992; Smith, Wallston, & Smith, 1995; Wallston, 1989) conceptualize self-efficacy to reflect ones confidence in performing goal-directed behaviors across situations. Wallston has labeled this more generalized construct "perceived competence" to distinguish it from Bandura's more situation-focused construct (Wallston, 1989). Having self-efficacy or perceived competence is important because patients' perception of their abilities to self-manage their condition influences how and whether they attempt to follow prescribed medical regimens (Cha, Erlen, Kim, Sereika, & Caruthers,

2008; Johnson et al., 2006; Parsons, Rosof, & Mustanski, 2008; Wolf et al., 2007). In fields such as preventive medicine, nursing and health psychology, this attribute has frequently been the focus of attention. In general, the greater the self-efficacy or perceived competence one possesses in regard to one's health behavior, the better one's health outcomes tend to be (Bandura, 2004; DeVellis & DeVellis, 2001; Kaplan, Ries, Prewitt, & Eakin, 1994; Wallston, Rothman, & Cherrington, 2007).

Wallston and colleagues (Smith et al., 1995) developed the Perceived Health Competence Scale (PHCS) as a generalized health self-efficacy measure, much in the same way that Forms A and B of the Multidimensional Health Locus of Control (MHLC) scales (Wallston et al., 1978) were developed to assess locus of control beliefs in the general health domain. Similar to Forms A and B of the MHLC, the PHCS is primarily designed for use with healthy individuals, and, therefore, may not accurately assess chronically ill patients' perceived abilities to manage their medical condition. For that reason, the PHCS was modified and became the Perceived Medical Condition Self Management Scale (PMCSMS)--a generic template that can easily be made disease-specific and used with any medical condition that has self-management requirements. In this way, the PMCSMS is similar to Form C of the MHLC scales (Wallston, Stein, & Smith, 1994), which was also developed as a generic template to assess control beliefs about specific medical conditions

A diabetes-specific version of the PMCSMS, the Perceived Diabetes Self-Management Scale (Wallston et al., 2007), demonstrated adequate internal consistency (Cronbach's alpha = 0.83) and predictive validity with diabetes self-management behaviors and glycemic control. In a study of rheumatology patients (O'Neal, 2007), the PMCSMS correlated in the expected direction with life satisfaction, positive and negative affect, and physical functional impairment. Internal consistency in this sample was comparable to the diabetes study. These studies provide psychometric support for using the PMCSMS scale in chronic disease contexts.

The purpose of the analyses presented in this article is to report on the psychometric properties of the PMCSMS when adapted for use with an HIV positive population. HIV requires patients to take an active, daily role in their care (Gifford & Groessl, 2002). HIV self-management behaviors include, but are not limited to, taking medication, deciding about treatment, dealing with side effects, working with health care providers, managing fatigue and other symptoms, and eating a healthy diet (Gifford & Groessl, 2002). Due to the life long demands of managing HIV, self-efficacy to perform these behaviors have been the focus of several studies (Cha et al., 2008; Johnson et al., 2006; Parsons et al., 2008; Wolf et al., 2007). Self-efficacy has been consistently associated with adherence to HIV treatment (Arnsten et al., 2007; Barclay et al., 2007), has been shown to explain the association between psychosocial factors (e.g., perceived social support and depression) and HIV medication adherence (Cha et al., 2008), and has been a direct predictor of patients' viral load (Parsons et al., 2008). Thus, self-efficacy has been identified as an important psychosocial variable and critical determinant of self-management behaviors and health outcomes in HIV populations (Arnsten et al., 2007). The ability to assess and, perhaps, to intervene in order to raise self-efficacy necessitates identification of valid measurement tools of this construct.

Several instruments have been developed to assess HIV medication adherence self-efficacy. These instruments have included the HIV Adherence Self-Efficacy Scale (HIV-ASES) (Johnson et al., 2007); the Self-efficacy for Following Anti-Retroviral Scale (Costa et al., 2008); a self-efficacy scale targeting HIV medications (Arnsten et al., 2007); a medication adherence self-efficacy scale for low-literacy patients with HIV (Kalichman et al., 2005), among others. While these and other HIV medication adherence self-efficacy scales have

been validated in the context of HIV treatment, they are, by nature, limited in their disease-specific scope (i.e., they only apply to patients with HIV).

To our knowledge, most self-efficacy scales in chronic disease are disease-specific; few have broad application, and/or have been validated and/or successfully used across disease contexts. The advantages of the PMCSMS is that it can be completed in 2–3 minutes, and it can be easily adapted for use with any medical condition requiring self-management. Based on past research on the measure in other populations (O’Neal, 2007; Wallston et al., 2007), we expected the measure to have adequate reliability and validity in an HIV population.

## Method

### Participants

Data for this set of analyses come from 125 individuals with HIV infection who were enrolled in a set of clinical trials examining the effectiveness of expressive writing. Adults who were receiving care for HIV at the Comprehensive Care Center in Nashville, TN and who were not experiencing posttraumatic stress disorder or did not have a diagnosis of psychosis and were not currently taking antipsychotic medications were randomized into either an expressive writing or a control writing condition. Details about the clinical trials have been previously reported (Wagner, Hilker, Hepworth, & Wallston, 2008). See Table 1 for baseline descriptive characteristics of the study sample.

### Procedure

This study was approved by the Vanderbilt University Institutional Review Board and all participants gave informed consent prior to data collection. A trained research assistant administered a battery of paper-and-pencil measures to each participant in a quiet room at the Comprehensive Care Center. The current article presents data collected at baseline before participation in the expressive writing activity or control arm. The baseline assessment took approximately 30 minutes to complete and all participants were compensated for their time and travel.

### Measures

**Perceived HIV Self-Management Scale (PHIVSMS)**—The eight-item Perceived Medical Condition Self Management Scale (PMCSMS) was adapted for use with HIV positive individuals by replacing the word “condition” with “HIV infection.” This simple modification tailors the instrument to an HIV patient population, and in so doing permits the assessment of patients’ perceived ability to self-manage their HIV disease. See Table 2 for the eight items included on the PHIVSMS. Response options for the PHIVSMS ranged from 1 “strongly disagree” to 6 “strongly agree.”

**Self Performance Survey**—The Self Performance Survey (Smith, Dobbins, & Wallston, 1991; Wallston, 1989) was used to assess generalized perceived competence which is defined as a cross-situational expectancy that one is capable of performing whatever is necessary to accomplish one’s goals. This eight item generalized self-efficacy scale uses the same six Likert response options as the PHIVSMS. Adequate reliability and validity of the generalized perceived competence scale has been demonstrated in prior studies (Smith et al., 1991). The alpha reliabilities for the current sample for this measure and the following measures are given in Table 3.

**Life Orientation Test (LOT)**—The LOT is a widely used 8-item measure of dispositional optimism (Scheier & Carver, 1985). Higher scores are indicative of greater optimism. Past

research has demonstrated adequate reliability, predictive and discriminant validity of the LOT (Scheier & Carver, 1985; Scheier, Carver, & Bridges, 1994).

**Center for Epidemiological Studies–Depression Scale (CES-D)**—Depressive symptomatology over the past week was assessed by the 20-item CES-D (Radloff, 1977). The CES-D is a commonly used measure of depressive symptoms. Scores on the CES-D range from 0 to 60, with higher scores indicating greater depressive symptomatology over the past week. The CES-D has demonstrated adequate reliability and validity (Orme, Reis, & Herz, 1986; Wong, 2000).

**The Positive and Negative Affect Schedule (PANAS)**—The PANAS (Watson, Clark, & Tellegen, 1988) was administered to assess positive and negative affect. The PANAS is a 20-item scale with a 5-point response options ranging from “very slightly or not at all” to “extremely.” Words that describe feelings and emotions, such as “interested,” “distressed,” and “proud” load on either the positive or negative affect factor (10 items each). In this study, participants were asked to rate their feelings during the previous week. The PANAS has been shown to have adequate internal consistency, reliability, and validity (Watson et al., 1988).

**Medical Outcomes Study-HIV Health Survey (MOS-HIV)**—Quality of life was assessed using the MOS-HIV (Wu, Revicki, Jacobson, & Malitz, 1997), a comprehensive measure of health-related quality of life used extensively in HIV/AIDS research. The subscales of the MOS-HIV include: general health perceptions, pain, role functioning, social functioning, cognitive functioning, mental health, energy, health distress, health transition, physical functioning, and general quality of life. The reliability and validity of the MOS-HIV are well documented with Cronbach’s  $\alpha$  coefficients exceeding 0.70 (Revicki, Sorensen, & Wu, 1998). Higher scores on the MOS-HIV indicate better perceived quality of life.

## Results

### Descriptive Findings

The mean item score on the PHIVSMS was 4.46 (out of 6) with a standard deviation of 0.92. This translates to a total mean score for all 8 items of 35.68 on a scale that could range from 8 to 48. Despite the fact that the mean item score was a point higher than the neutral midpoint (3.50), neither skewness nor kurtosis was significant for the distribution of scores.

### Reliability

Internal consistency of the PHIVSMS was calculated using Cronbach’s alpha. At baseline, the Cronbach’s alpha of the PHIVSMS was 0.78 ( $n = 121$ ), demonstrating that the measure is sufficiently reliable for research purposes.

### Validity

PHIVSMS scores at baseline were not found to be significantly correlated with age, sex, income, sexual orientation, mode of transmission of HIV, years since HIV diagnosis, or whether the patient had been subsequently diagnosed with AIDS.

Along with Cronbach’s alphas for all of the measures, Table 3 displays correlations between the PHIVSMS and other psychological variables that were assessed at baseline. Scores from the PHIVSMS were positively correlated with the measure of generalized perceived competence, dispositional optimism, positive affect, and HIV quality of life. Significant inverse correlations were observed between the PHIVSMS and negative affect as well as

depressive symptoms. All correlations at baseline were significant at  $p < 0.01$ , and ranged from moderate (0.37) to strong (0.66).

## Discussion

The Cronbach's alpha of 0.78 for the PMCSMS in this study shows that it is nearly as reliable (i.e., internally consistent) when used as a measure of self-management efficacy for persons with HIV as had previously been found when the same item stems had been administered to rheumatology patients or those with diabetes. Cronbach's alphas in the range of 0.70 to 0.90 are considered reliable enough for research purposes (DeVellis, 2003). Additionally, the correlational findings support the construct validity of the measure. Greater perceived competence with regards to self managing one's HIV infection was negatively associated with depressive symptoms and negative affect, and positively associated with the generalized measure of self-efficacy, positive affect, dispositional optimism, and quality of life.

In the sample of HIV positive persons we studied, there were no sex differences in PHIVSMS scores. HIV positive females were as confident of their ability to self-manage their medical condition as were males with the same condition. This was also true of the rheumatology patients studied by O'Neal (2007) but, in two separate studies with the diabetes version of the scale, Wallston and his collaborators found males were significantly more confident of their ability to manage their disease than females were which might suggest that sex differences in self-management are disease-specific. Replication of these differences across patient populations with different chronic disease conditions might be necessary to further substantiate this finding.

The results from this study add to the literature showing the relationship between self-efficacy and related psychosocial variables in persons with HIV/AIDS. However, there are several limitations to acknowledge. First, our data were cross-sectional, which precludes making causal conclusions about directionality of the relationships between constructs. We do not know if feeling competent in one's ability to self-manage one's condition is a function of quality of life or vice versa, but we do know it is associated with the presence of positive attributes such as optimism and the absence of depressive symptoms and other negative moods. Secondly, participants volunteered for a study on expressive writing, and, therefore, may be different from other persons who are HIV positive. Thirdly, while study participants were racially diverse (i.e., African American or Caucasian), they were not ethnically diverse. There continues to be high rates of HIV/AIDS among ethnic minority groups, including Hispanic/Latinos, Native Hawaiian/Pacific Islanders, and Native Americans/Alaskan Natives. These groups should be represented in future studies involving the PHIVSMS. Finally, this report relies mostly on evidence of concurrent validity. Future research with the PHIVSMS should support its psychometric properties among ethnically diverse patient samples, provide evidence of predictive validity with respect to both behavioral changes and health outcomes, and show that it is sensitive to change over time.

The findings reported in this article, along with those previously reported for the Perceived Diabetes Self Management Scale (Wallston et al., 2007) and a study of rheumatology patients (O'Neal, 2007) show how easy it is to adapt the generic PMCSMS to assess perceived competence or self-efficacy in self-managing other medical conditions, including HIV. Based on these studies, the PMCSMS could be easily adapted for use with other chronic diseases that require self-management on the part of the patient. By doing so, investigators would no longer need to develop a new self-management self-efficacy scale for every condition they wished to study. In addition, by using the same set of item stems and response options present in the PMCSMS, researchers can compare levels of self-efficacy

across different chronically ill populations. To our knowledge, this opportunity has not been possible to date largely due to the several disease specific self-efficacy instruments that exist without a common set of item stems and response options.

## Acknowledgments

The data reported in this article were collected under the auspices of Grant # 1 R21 MH65872 to the first author from the National Institute of Mental Health. Dr. Osborn is supported by an NIH Diversity Supplement Award P60 DK020593-30S2. The authors wish to thank Takesia Richardson for assistance in collecting the data, and Steven Raffanti, MD, for providing access to the subject population.

## References

- Arnstén JH, Li X, Mizuno Y, Knowlton AR, Gourevitch MN, Handley K, et al. Factors associated with antiretroviral therapy adherence and medication errors among HIV-infected injection drug users. *J Acquir Immune Defic Syndr*. 2007; 46(Suppl 2):S64–71. [PubMed: 18089986]
- Bandura, A. *Self-efficacy: The Exercise of Control*. New York: Freeman; 1997.
- Bandura A. Health promotion by social cognitive means. *Health Educ Behav*. 2004; 31(2):143–164. [PubMed: 15090118]
- Barclay TR, Hinkin CH, Castellon SA, Mason KI, Reinhard MJ, Marion SD, et al. Age-associated predictors of medication adherence in HIV-positive adults: Health beliefs, self-efficacy, and neurocognitive status. *Health Psychology*. 2007; 26(1):40–49. [PubMed: 17209696]
- Cha E, Erlen JA, Kim KH, Sereika SM, Caruthers D. Mediating roles of medication-taking self-efficacy and depressive symptoms on self-reported medication adherence in persons with HIV: a questionnaire survey. *Int J Nurs Stud*. 2008; 45(8):1175–1184. [PubMed: 17949723]
- Costa LS, Latorre Mdo R, Silva MH, Bertolini DV, Machado DM, Pimentel SR, et al. Validity and reliability of a self-efficacy expectancy scale for adherence to antiretroviral therapy for parents and carers of children and adolescents with HIV/AIDS. *J Pediatr (Rio J)*. 2008; 84(1):41–46. [PubMed: 18264614]
- DeVellis, B.; DeVellis, R. Self-efficacy and health. In: Baum, A.; Revenson, T.; Singer, JE., editors. *Handbook of Health Psychology*. Mahwah, NJ: Erlbaum; 2001. p. 235-247.
- DeVellis, RF. *Scale Development: Theory and Applications*. 2. Thousand Oaks, CA: Sage; 2003.
- Gifford AL, Groessl EJ. Chronic disease self-management and adherence to HIV medications. *J Acquir Immune Defic Syndr*. 2002; 31(Suppl 3):S163–166. [PubMed: 12562043]
- Jerusalem, M.; Schwarzer, R. Self-efficacy as a resource factor in stress appraisal processes. In: Schwarzer, R., editor. *Self-efficacy: Thought Control of Action*. Washington, DC: Hemisphere; 1992. p. 195-213.
- Johnson MO, Chesney MA, Goldstein RB, Remien RH, Catz S, Gore-Felton C, et al. Positive provider interactions, adherence self-efficacy, and adherence to antiretroviral medications among HIV-infected adults: A mediation model. *AIDS Patient Care STDS*. 2006; 20(4):258–268. [PubMed: 16623624]
- Johnson MO, Neilands TB, Dilworth SE, Morin SF, Remien RH, Chesney MA. The role of self-efficacy in HIV treatment adherence: validation of the HIV Treatment Adherence Self-Efficacy Scale (HIV-ASES). *J Behav Med*. 2007; 30(5):359–370. [PubMed: 17588200]
- Kalichman SC, Cain D, Fuhrel A, Eaton L, Di Fonzo K, Ertl T. Assessing medication adherence self-efficacy among low-literacy patients: development of a pictographic visual analogue scale. *Health Educ Res*. 2005; 20(1):24–35. [PubMed: 15253999]
- Kaplan RM, Ries AL, Prewitt LM, Eakin E. Self-efficacy expectations predict survival for patients with chronic obstructive pulmonary disease. *Health Psychology*. 1994; 13(4):366–368. [PubMed: 7957016]
- O’Neal, C. *The development of the Normalization Assessment Measure*. Vanderbilt University; Nashville, TN: 2007.
- Orme JG, Reis J, Herz EJ. Factorial and discriminant validity of the Center for Epidemiological Studies Depression (CES-D) scale. *Journal of Clinical Psychology*. 1986; 42(1):28–33. [PubMed: 3950011]

- Parsons JT, Rosof E, Mustanski B. Medication adherence mediates the relationship between adherence self-efficacy and biological assessments of HIV health among those with alcohol use disorders. *AIDS Behav.* 2008; 12(1):95–103. [PubMed: 17503172]
- Radloff LS. The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement.* 1977; 1(3):385–401.
- Revicki DA, Sorensen S, Wu AW. Reliability and validity of physical and mental health summary scores from the Medical Outcomes Study HIV Health Survey. *Med Care.* 1998; 36(2):126–137. [PubMed: 9475468]
- Scheier MF, Carver CS. Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology.* 1985; 4(3):219–247. [PubMed: 4029106]
- Scheier MF, Carver CS, Bridges MW. Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology.* 1994; 67(6):1063–1078. [PubMed: 7815302]
- Smith CA, Dobbins CJ, Wallston KA. The mediational role of perceived competence in psychological adjustment to rheumatoid arthritis. *Journal of Applied Social Psychology.* 1991; 21(15):1218–1247.
- Smith MS, Wallston KA, Smith CA. The development and validation of the Perceived Health Competence Scale. *Health Education Research. Special Issue: Measurement in health education research.* 1995; 10(1):51–64.
- Wagner LJ, Hilker KA, Hepworth JT, Wallston KA. Cognitive Adaptability as a Moderator of Expressive Writing Effects in an HIV Sample. *AIDS Behav.* 2008
- Wallston, KA. Assessment of control in health-care settings. In: Steptoe, A.; Appels, A., editors. *Stress, Personal Control, and Health.* Chichester, England: Wiley; 1989. p. 85-105.
- Wallston KA, Rothman RL, Cherrington A. Psychometric properties of the Perceived Diabetes Self-Management Scale (PDSMS). *J Behav Med.* 2007; 30(5):395–401. [PubMed: 17522972]
- Wallston KA, Stein MJ, Smith CA. Form C of the MHLC scales: A condition-specific measure of locus of control. *Journal of Personality Assessment.* 1994; 63(3):534–553. [PubMed: 7844739]
- Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology.* 1988; 54(6): 1063–1070. [PubMed: 3397865]
- Wolf MS, Davis TC, Osborn CY, Skripkauskas S, Bennett CL, Makoul G. Literacy, self-efficacy, and HIV medication adherence. *Patient Educ Couns.* 2007; 65(2):253–260. [PubMed: 17118617]
- Wong YLI. Measurement properties of the Center for Epidemiologic studies\* \*Depression Scale in a homeless population. *Psychological Assessment.* 2000; 12(1):69–76. [PubMed: 10752365]
- Wu AW, Revicki DA, Jacobson D, Malitz FE. Evidence for reliability, validity and usefulness of the Medical Outcomes Study HIV Health Survey (MOS-HIV). *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care & Rehabilitation. Special Issue: Assessing health-related quality of life in early HIV disease: Proceedings and recommendations from an international gathering of social and medical scientists.* 1997; 6(6):481–493.

**Table 1**

## Participant characteristics at baseline

Characteristic	Mean (SD)	Frequency (%)
Age	41.7 (2.0)	
Male		91 (73)
Heterosexual		62 (49)
Race		
African American		75 (61)
Caucasian		48 (39)
Employment Status		
Employed Full/Part Time		31 (25)
On Disability		34 (37)
Annual income ≤ \$10,000		88 (71)
Years with HIV	8.1 (5.6)	
CD4 count <sup>I</sup>	432 (338)	
Diagnosed with AIDS		40 (31)
Years with AIDS	2.3 (0.5)	
Sexual Transmission		98 (80)

<sup>I</sup> CD4 counts were only available for 75 participants.



**Table 2**

## Items on the Perceived HIV Self-Management Scale (PHIVSMS)

---

1	It is difficult for me to find effective solutions for problems with managing my HIV infection. (r)
2	I find my efforts to change things I don't like about my HIV infection are ineffective. (r)
3	I handle myself well with respect to my HIV infection.
4	I succeed in the projects I undertake to manage my HIV infection.
5	I am able to manage things related to my HIV infection as well as most other people.
6	Typically, my plans for managing my HIV infection don't work out well. (r)
7	No matter how hard I try, managing my HIV infection doesn't turn out the way I would like. (r)
8	I'm generally able to accomplish my goals with respect to my HIV infection.

---

*Note:* (r) = reverse scored. The term "HIV infection" was inserted in place of the word "condition" in each item of the Perceived Medical Condition Self-Management Scale.

**Table 3**

Cronbach's alphas and inter-correlations of study variables at baseline.

Measure	1	2	3	5	5	6	7
1. PHIVSMS	(0.78)						
2. SPS	0.66	(0.83)					
3. CES-D	-0.56	-0.68	(0.92)				
4. LOT	0.53	0.72	-0.64	(0.84)			
5. NA	-0.37	-0.51	0.76	0.46	(0.91)		
6. PA	0.37	0.63	-0.49	0.65	-0.32	(0.91)	
7. HIV QOL	0.52	0.61	-0.51	0.44	-0.55	0.41	(0.95)

Note: Cronbach's alphas are in parentheses along the diagonal. PHIVSMS= Perceived HIV Self-Management Scale; SPS = Self Performance Survey; CES-D = Center for Epidemiological Studies-Depression Scale; LOT = Life Orientation Test; NA = Negative Affect; PA = Positive Affect; HIV QOL = HIV Quality of Life. All correlations in Table 3 are significant at  $p < 0.01$ .