VALIDATION AND PSYCHOMETRIC EVALUATION OF A HEALTH CARE ORIENTATION ASSESSMENT

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BACKGROUND

- The Provider-Dependent Health Care Orientation (PDHCO) assesses an individual's orientation towards health and health care. (Kaplan, 1996)
- This instrument includes thirteen (13) items (Figure 1), to assess an individual's dependence (i.e., passivity) related to health care and disease management. Each item is scored on a five-point scale and the items are summed and transformed for a total score ranging from 0 to 100 with higher scores indicating lesser passivity. (Kaplan, 2010)
- Very little information has been published on the PDHCO, hence its validation has not been well established.
- We evaluated the psychometric properties of the PDHCO and tested equivalence between paper and web-based administration modes in an observational study.

Figure 1: PDHCO

The following questions ask about your beliefs about health and health care. For each statement, please circle the number on the scale that comes closest to how much you agree or disagree with the statement. There are no right or wrong answers.

Circle one number on each line

	Strongly Agree	Moderately Agree	Feel Neutral	Moderately Disagree	Strongly Disagree
1.) I like my doctor to take over my care when I feel sick	1	2	3	4	5
2.) Doctors relieve or cure only a few of the medical problems their patients have	1	2	3	4	5
3.) I prefer to leave decisions about my care with my doctor	1	2	3	4	5
4.) Doctors can do very little to prevent illness	1	2	3	4	5
5.) I often feel that no matter how hard I try I am helpless (when it comes to influencing my medical care) to change the kind of medical care I get	1	2	3	4	5
6.) I depend a great deal on the doctor to help me make changes in my lifestyle to further my health	1	2	3	4	5
7.) More and more, I feel helpless to control my disease	1	2	3	4	5
8.) I often feel like giving up on my medical care	1	2	3	4	5
9.) Almost all treatment decisions are better left up to the doctor	1	2	3	4	5
10.) Even when patients have had diseases for a long time, it is better for the doctor to make all the treatment decisions	1	2	3	4	5
11.) People who are pushy with doctors are not good patients	1	2	3	4	5
12.) Patients should never challenge the authority of the doctor	1	2	3	4	5
13.) I like to lean on my doctor when I feel sick	1	2	3	4	5

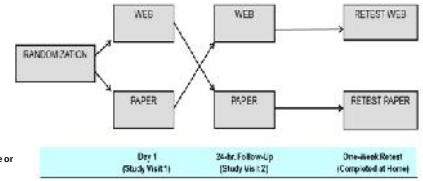
NOTE: Higher scores indicate lower levels of passivity.

METHODS

Study Design

- The PDHCO and other questionnaire measures were administered to a large convenience sample of adults with chronic illnesses in a non-interventional study (outside of the clinical trial setting).
- This observational data collection effort used a randomized crossover design to assess equivalence between paper and electronic formats of the PDHCO.
- This study employed a web-based general population recruitment strategy in eight (8) U.S. cities. Individuals responding to study advertisements were screened via telephone for eligibility.
- Individuals between the ages of 18 and 70, who self-reported a diagnosis and treatment of depression, rheumatoid arthritis [RA], or type 2 diabetes [T2D]; who were able to able to speak, read, and write in English, and were available to attend both data collection sessions for their location were eligible for participation.
- Recruitment quotas were used to generate subgroups of participants within each of the three (3) targeted health conditions.
- After providing informed consent, participants were randomized to complete the PDHCO on either paper or computerized format at their first study visit. The alternate format was completed at the second study visit (24 hours later) and the one-week retest was completed from home (Figure 2).

Figure 2: Diagram of Data Collection



Measures

- PDHCO, paper and web versions
- Chronic Disease Self-Efficacy Scales ("Communicate With Physician Scale" and the "Manage Disease in General Scale") (Lorig 1996)
- Health Assertiveness Scale (HAS, Lindler, 2006)
- Self-reported demographic and health variables

Statistical Analyses

- Participant demographic and health variables were characterized with descriptive statistics.
- Equivalence of the two modes of administration was evaluated by testing differences in scores between the baseline and 24-hour crossover assessments with the intraclass correlation coefficient (ICC). The ICC ranges between 0.00 and 1.00 with equivalency defined as both versions at or above the minimal acceptable level of 0.70.
- The theoretical formula for the ICC is:

$$ICC = \frac{\pm^2(b)}{\pm^2(b)+\pm^2(w)}$$

- The intraclass correlation coefficient (ICC) was calculated to assess the one-week reproducibility of the PDHCO.
- Measurement equivalence is a function of the comparability of the psychometric properties of the data obtained via the original paper and adapted web administration mode. Equivalence of the paper and web-based PDHCO scores were assessed in this study by calculating the ICC between scores from the two modes, with values of 0.70 or greater considered indicative of equivalence (Nunnally & Bernstein, 1994) .
- Cronbach's alpha was calculated to assess the internal consistency of the PDHCO.
- Convergent validity was assessed by examining the association between the PDHCO and the "Communicate With Physician Scale" and "Manage Disease in General Scale" of the Chronic Disease Self-Efficacy Scales
- "Known groups" validity was assessed by examining discriminance between hypothesized groups with analysis of variance (ANOVA) models. Groups were defined by trichotomous groupings of scores from a validated measure, the Health Assertiveness Scale (HAS).
- All analyses were conducted using SPSS.

RESULTS

Table 1: Demographic Characteristics

PARTICIPANT CHARACTERISTIC (N=230)		
Age	Mean (SD, range)	44.3 (13.5, 18-75)
Education (highest grade completed)	Mean (SD, range)	14.7 (2.4, 8-20)
Gender	N (%) Male	112 (48.7%)
	N (%) Female	118 (51.3%)
Ethnicity	N (%) Not Hispanic	190 (82.6%)
	N (%) Mexican American/Mexican	15 (6.5%)
	N (%) Other Hispanic or Latino	15 (6.5%)
	N (%) Both Mexican and other Hispanic	2 (0.9%)
	N (%) Missing	8 (3.5%)
Race	N (%) American Indian or Alaskan Native	3 (1.3%)
	N (%) Asian	8 (3.5%)
	N (%) Black/African American	50 (21.7%)
	N (%) Hispanic or Latino	21 (9.1%)
	N (%) Native Hawaiian or other Pacific Islander	---
	N (%) White	134 (58.3%)
	N (%) Other	14 (6.1%)
Marital Status	N (%) Married	54 (23.5%)
	N (%) Widowed	4 (1.7%)
	N (%) Separated	11 (4.8%)
	N (%) Divorced	38 (16.5%)
	N (%) Never married	90 (39.1%)
	N (%) Living with partner	24 (10.4%)
	N (%) Other	8 (3.5%)
	N (%) Missing	1 (0.4%)
Employment	N (%) Full time	51 (22.2%)
	N (%) Part time	46 (20.0%)
	N (%) Homemaker	4 (1.7%)
	N (%) Student	14 (6.1%)
	N (%) Retired	20 (8.7%)
	N (%) Not employed	81 (35.2%)
	N (%) Other	14 (6.1%)
Household Income	N (%) UNDER $5,000	12 (5.2%)
	N (%) $5,000-11,999	27 (11.7%)
	N (%) $12,000-15,999	27 (11.7%)
	N (%) $16,000-19,999	12 (5.2%)
	N (%) $20,000-24,999	17 (7.4%)
	N (%) $25,000-29,999	16 (7.0%)
	N (%) $30,000-34,999	11 (4.8%)
	N (%) $35,000-49,999	30 (13.0%)
	N (%) $50,000-74,999	22 (9.6%)
	N (%) $75,000-99,999	19 (8.3%)
	N (%) $100,000 AND OVER	19 (8.3%)
	N (%) Missing	18 (7.8%)
Living Situation	N (%) Living alone	74 (32.2%)
	N (%) Living with spouse/partner only	40 (17.4%)
	N (%) Living with spouse/partner and children	35 (15.2%)
	N (%) Living with other relative(s)	31 (13.5%)
	N (%) Living with other(s) (not related)	36 (15.7%)
	N (%) Other	14 (6.1%)

Table 2: Health Characteristics

PARTICIPANT CHARACTERISTIC (N=230)		
Qualifying Target Health Condition	N (%) Depression	101 (43.9%)
	N (%) Type 2 Diabetes	76 (33.0%)
	N (%) RA	53 (23.0%)
General Health	N (%) Excellent	15 (6.5%)
	N (%) Very Good	56 (24.3%)
	N (%) Good	99 (43.0%)
	N (%) Fair	51 (22.2%)
	N (%) Poor	9 (3.9%)
Number of Days Physical Health Not Good in Last 30 days	Mean (SD, range)	7.2 (9.3, 0-30)
Number of Days Spent Sick in Bed in Last 30 Days	Mean (SD, range)	3.4 (5.4, 0-27)
Number of Days Mental Health Not Good in Last 30 Days	Mean (SD, range)	9.6 (10.0, 0-30)
Number of Medical Professional Visits in Last 3 Months	Mean (SD, range)	3.4 (3.9, 0-30)
Number of Daily Medications	Mean (SD, range)	3.7 (3.0, 0-17)
SF-36 (PCS)	Mean (SD, range)	44.3 (12.3, 13.0-71.0)
SF-36 (MCS)	Mean (SD, range)	35.2 (15.8, 2.6-71.5)

Participant Characteristics

- 230 participants enrolled and completed the baseline assessment, and 228 (99%) completed the retest.
- Participant demographic characteristics are presented in Table 1.
  - The mean age of participants was 44.3 years; 51.3% were female, and 58.3% were White.
  - 33.9% of participants were married or living with a partner, 39.1% had never been married.
  - 42.2% of participants were employed either part- or full-time; 35.2% were unemployed at the time of the study.
- Health Characteristics of participants are presented in Table 2.

Measurement Properties of the PDHCO

- The mean (SD) PDHCO score among study participants was 54.9 15.6 (Paper) and 54.9 15.2 (Web).
- The score difference between Paper and Web was -0.04 (p=0.942).
- The ICC between Paper and Web was 0.899 [CI 0.869 to 0.922] (Table 3).
- Test-retest reproducibility was observed to be strong (ICC of 0.913, combined) (Table 3).
- The instrument was internally consistent (alpha=0.735, combined).

Table 3: PDHCO Equivalence and Reproducibility

Measurement Characteristic	N	Intraclass correlation coefficient	95% CI Lower	95% CI Upper
Equivalence: PDHCO Paper to PDHCO Web	230	0.899	0.869	0.922
One-week test-retest: PDHCO Paper	125	0.906	0.865	0.934
One-week test-retest: PDHCO Web	105	0.876	0.817	0.916

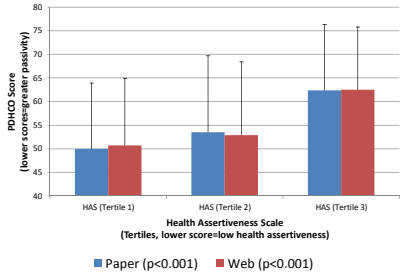
Convergent Validity

- The PDHCO had a significant relationship with the "Manage Disease in General Scale" of the Chronic Disease Self-Efficacy Scale (r=0.358** Paper, r=0.383** Web).
- The PDHCO had a lower than expected relationship with the "Communicate With Physician Scale" of the Chronic Disease Self-Efficacy Scale (r=0.149* Paper, r=0.127 Web).

Known-groups Validity

- The PDHCO significantly discriminated between tertiles of the HAS (p<0.001) (Figure 3).

Figure 3: PDHCO Scores by HAS Tertile



LIMITATIONS

- The study utilized a convenience sample recruited from web-based advertisements. As such, the sample may differ in demographic and or health characteristics from the overall US population.
- The self-reported nature of the data is potentially vulnerable to response bias.

CONCLUSIONS

- In this randomized crossover validation study, the PDHCO was observed to have adequate measurement properties.
  - The measure was observed to have high one-week reproducibility and was found to be internally consistent.
  - Equivalence between paper and web-based administration mode was demonstrated.
  - The PDHCO was significantly related to the Chronic Disease Self-Efficacy "Manage Disease in General" Scale.
  - The PDHCO successfully discriminated between appropriate known groups of the Health Assertiveness Scale.
- This study provides evidence that the PDHCO is a valid and psychometrically sound brief measure of health care orientation.

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