OXFORD

Measurement Article

Measuring Work Engagement, Psychological Empowerment, and Organizational Citizenship Behavior Among Health Care Aides

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Abstract

Purpose of the Study: Health care aides (HCAs) provide most direct care in long-term care (LTC) and home and community care (HCC) settings but are understudied. We validate three key work attitude measures to better understand HCAs' work experiences: work engagement (WEng), psychological empowerment (PE), and organizational citizenship behavior (OCB-O).
Design and Methods: Data were collected from 306 HCAs working in LTC and HCC, using survey items for WEng, PE, and OCB-O adapted for HCAs. Psychometric evaluation involved confirmatory factor analysis (CFA). Predictive validity (correlations with measures of job satisfaction and turnover intention) and internal consistency reliability were examined.
Results: CFA supported a one-factor model of WEng, a four-factor model of PE, and a one-factor model of OCB-O. HCC workers scored higher than LTC workers on Self-determination (PE) and lower on Impact, demonstrating concurrent validity. WEng and PE correlated with worker outcomes (job satisfaction, turnover intention, and OCB-O), demonstrating predictive validity. Reliability and validity analyses indicated sound psychometric properties overall.
Implications: Study results support psychometric properties of measures of WEng, PE, and OCB-O for HCAs. Knowledge of HCAs' work attitudes and behaviors can inform recruitment programs, incentive systems, and retention/training strategies for this vital group of care providers.

Key Words: Health care aide/nursing aide, Work attitudes, Job satisfaction, Measurement, Confirmatory factor analysis

In Canada, health care aides (HCAs) constitute a major component of the health care labor force. They are concentrated in the long-term care (LTC) and home and community care (HCC) sectors and provide up to 80% of direct care to elderly Canadians (Lum, Sladek, Ying, & Holloway Payne, 2010). HCAs (also termed nursing aides,

personal support workers and, in HCC, home support workers) work under the direction of a Registered Nurse or Registered Practical Nurse. (Lum et al., 2010)

Until recently, HCAs in Canada fulfilled purely supportive roles, assisting activities of daily living such as bathing, dressing, meal preparation, or "light" household tasks. However, elderly home care clients and LTC residents increasingly need more complex care (Williams et al., 2009). Workforce shifts and growing complexity of care have led to HCA role substitution and expansion; roles of some HCAs now include delegated acts such as catheterization and injection (Berta, Laporte, Deber, Baumann, & Gamble, 2013).

Although HCAs deliver most direct care to LTC residents and HCC clients, they are an understudied worker group (Castle, Engberg, Anderson, & Men, 2007; Crown, Ahlburg, & MacAdam, 1995). Most research investigates impact of nursing care on resident outcomes (Alameddine et al., 2006). Very little is known about relationships among worker characteristics (including training/preparation), context/work structure for HCAs, and worker attitudes (quality of work life, job satisfaction, work engagement (WEng), and organizational commitment). In other contexts within and outside health care, these variables influence key work outcomes such as individual performance and turnover intention. We know that work retention is an acknowledged (Faul et al., 2010) and increasing problem among HCAs and that HCA absenteeism is associated with poor performance on key quality indicators (Castle & Ferguson-Rome, 2014). We also know that aggression from LTC residents toward HCAs during personal care is a significant problem (Zeller et al., 2009). Almost half of Canadian HCAs in LTC experience violence daily or almost daily (Daly, Banerjee, Armstrong, Armstrong, & Szebehely, 2011). Knowledge of HCAs' work attitudes and intentions is key to recruitment programs, incentive systems, and retention/training strategies for this vital group of workers.

Few work attitude measures are utilized or validated for HCAs. As a first step toward examining aspects of HCAs' work, we assess the validity of three constructs relating to HCAs' work attitudes: WEng, psychological empowerment (PE), and organizational citizenship behavior (OCB). WEng and PE reflect psychological states rather than traits—they are affected by situation (e.g., work context) and are modifiable. OCBs are modifiable work behaviors linked to organizational effectiveness and innovation (LePine & Van Dyne, 1998).

Scales/instruments exist to measure these constructs but were developed in and applied to work settings other than health care. In health care, the measures are used primarily with regulated health professionals rather than unregulated HCAs. This, coupled with the high proportion of HCAs with English as a second language (ESL; Estabrooks, Squires, Carleton, Cummings, & Norton, 2015), signals the need to adapt and validate work attitude measures for this

important, understudied group of unregulated health care providers.

Constructs

WEng's predominant definition (Hultell & Gustavsson, 2010) is "a positive, fulfilling work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli, Bakker, & Salanova, 2006, p. 702). Support for WEng as a three-dimensional construct including *Vigor* (high energy levels and mental resilience), *Dedication* (involved in work, enthused, and inspired), and *Absorption* (engrossed in work) was established by Schaufeli and colleagues (2006) using CFA, and Cronbach's alpha for the three scales exceeded .70 in most countries they studied. Schaufeli and colleagues (2006) developed the Utrecht Work Engagement Scale (UWES) with several occupational groups in 10 countries and measured *Vigor* as highest among educators, managers, and police officers and lowest among blue collar workers, social workers/counselors, and health care workers. Health care workers also had low levels of *Absorption*. WEng is unidimensional (Salanova, Agut, & Peiro, 2005; Shimazu, Schaufeli et al., 2008) or multidimensional (Hultell & Gustavsson, 2010) depending on worker sample. The three-factor model receives more attention in the literature, but initial analyses of the UWES-9 (Schaufeli & Bakker, 2003), recent examination of the UWES and an alternate measure of WEng (Viljevac, Cooper-Thomas, & Saks, 2012), and a recent European study (Halberg & Schaufeli, 2006) all conclude that WEng dimensionality is unclear.

WEng is associated with positive behaviors such as organizational commitment, academic performance (Schaufeli, Martınez, Marques-Pinto, Salanova, & Bakker, 2002), lower levels of turnover intention (Schaufeli & Bakker, 2004), lower sickness duration and frequency (Schaufeli, Bakker, & van Rhenen, 2009), and OCB (Ariani, 2013). WEng is predicted by job resources (Salanova et al., 2005; Schaufeli & Bakker, 2004) and (mediated by service climate) positively related to customer perceptions of employee performance (Salanova et al., 2005).

PE reflects an active orientation of wishing and feeling able to shape one's work role and context (Spreitzer, Kizilos, & Nason, 1997). PE is specific to the work domain, not generalizable to life situations and roles, and is viewed as a four-dimension construct (Maynard, Gilson, & Mathieu, 2012). Using CFA and Structural Equation Modeling, Spreitzer (1995) established support for a four-factor measure of PE that includes *Meaning* (of work tasks), *Competence* (belief in ability to perform work activities), *Self-determination* (control over work behaviors and choice in actions), and *Impact* (of work behaviors). PE relates positively to affective states including job satisfaction (Cicolini, Comparcini, & Simonetti, 2014) and organizational commitment (Liden, Wayne, & Sparrowe, 2000) and is linked to lower rates of turnover intention (Koberg,

Boss, Senjem, & Goodman, 1999; Spreitzer, 2008) and job-related strain (Spreitzer et al., 1997). Job satisfaction is the most consistently supported outcome of PE (Maynard et al., 2012). PE is also associated with employee effectiveness (Spreitzer et al., 1997) and productivity (Koberg et al., 1999; Spreitzer, 2008). Specifically relevant for HCAs in HCC, PE may be an important adaptive mechanism for team members working more independently with decentralized supervision (Spreitzer, 2008).

OCB reflects extra-role behaviors and seven areas including organizational loyalty, civic virtue, and helping, among others are commonly identified as dimensions of OCB (Podsakoff, MacKenzie, Paine, & Bachrach, 2000). One OCB dimension, *Individual Initiative*, refers to improving organizational effectiveness through "voluntary acts of creativity and innovation" that stand to induce positive change (Podsakoff et al., 2000). This dimension, OCB-O ("O" for "organization," the intended beneficiary), is also termed task revision, voice, innovative behavior, or change-oriented extra-role behavior. Choi (2007) defines OCB-O as "constructive efforts by individuals to identify and implement changes with respect to work methods, policies, and procedures to improve the situation and performance" (p. 469). OCB-O interests management scientists because it is linked to workplace proactivity, creativity, innovation, task performance, and job satisfaction (LePine & Van Dyne, 1998). Other work suggests that OCB-O is required for high organizational performance, which resonates with organizational learning theory where sustaining high performance derives from balancing innovation and routinization (March, 1991).

Extra-role behaviors influence performance outcomes positively in other health care settings (Bolan, 1997) and industries (Choi, 2007). In HCC and LTC, HCAs are increasingly relied upon for extra-role behaviors that sustain or improve outcomes for clients or residents (Berta et al., 2013). For example, staff may extend a shift beyond paid time to ensure adequate care for a particular client. Extra-role behaviors aiming to improve organizational effectiveness may be especially important in resource-constrained environments such as LTC and HCC, where constraints diminish organizational effectiveness and innovation capacity (March, 1991).

Figure 1 depicts anticipated relationships between variables; this study examines constructs in yellow.

Methods

We adapted and validated measures of WEng, PE, and OCB-O in three phases. Phases 1 and 2, summarized in the following paragraphs, provide background to Phase 3, the focus of this article. In Phase 1, we consulted with four industry experts from for-profit and nonprofit LTC facilities in Ontario and British Columbia, Canada, in reviewing wording of the UWES-9 (Schaufeli et al., 2006), the PE Scale (Spreitzer, 1995), and Choi's (2007) OCB-O measure. The original scales have been applied in more educated workforces with lower rates of ESL. We identified and adapted items with complex wording and changed phrasing not applicable to LTC and HCC.

We subsequently undertook linguistic validation of item content validity using three face-to-face focus groups with 21 LTC HCAs in Ontario and British Columbia (convenience sample). Our industry experts helped identify focus group participants representing this workforce's diversity: range of HCA tenure, English as a first or second language, range of employment status, and formal training/certification (Lum et al., 2010). Focus groups were conducted as cognitive interviews (DeMaio & Rothgeb, 1996). Participants were asked to "think aloud" about the adapted items, describe how they interpreted each item, flag unclear items or wording, and suggest clearer wording. We revised several items based on this cognitive debriefing.

In Phase 2, we piloted the revised item set using a structured questionnaire with 25 items designed to measure WEng, PE, and OCB-O. We also included measures of job satisfaction and turnover intention to explore discriminant and predictive validity of our three measures. The Phase 2
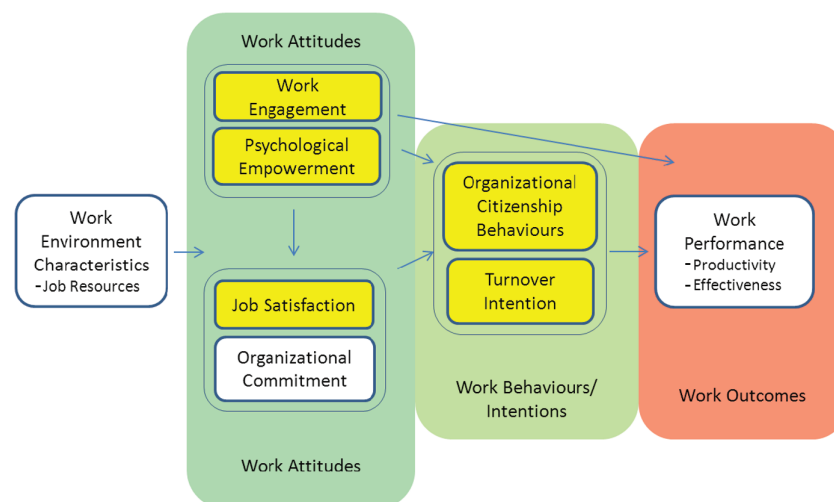

Figure 1. Relationship between key work attitudes, behaviors, intentions, and outcomes.

pilot allowed preliminary exploration of factor structure and scale internal consistency. We also tested for viability of an eSurvey, given the variety of handheld and desktop devices used by HCAs. In Winter/Spring 2014, questionnaires (or links to an eSurvey) were distributed to a convenience sample of HCAs attending Ontario regional meetings (e.g., the Ontario Long Term Care Association's Research Day) or participating in a work-life discussion forum in a British Columbia health region. Eighty-two questionnaires were completed. Results suggest that items worked well, with little missing data and strong scale alphas (approaching or exceeding .80 for most scales). Exploratory factor analysis highlighted one WEng item ("At my job, I really feel like I know what I am doing") that departed from the construct definition during Phase 1. We reverted to the original UWES-9 wording ("At my job, I feel strong and vigorous").

In Phase 3 (Spring/Summer 2014), we conducted a larger validation survey with HCAs working in Ontario LTC and HCC settings. This article focuses on the Phase 3 results.

Participants

We sought 200–300 completed surveys—sufficient for confirmatory factor analysis (CFA; Kline, 2010)—from HCAs working in LTC and HCC. We partnered with Home Care Ontario, a province-wide association of HCC providers. Ten of their member organizations, representing an estimated 3,736 HCAs (Home Care Ontario has 53 member organizations employing 19,800 HCAs. Ten of their member organizations, representing an estimated 3,736 HCAs, opened our online survey and were asked to invite their HCA staff to complete the survey. We cannot access exact data on the number of HCAs employed in these organizations, so we estimate (10/53) * 19,800 = 3,736 HCAs and assume all HCAs in these 10 organizations received the survey link.). We also engaged a corporation operating nine residential LTC facilities; each facility distributed paper surveys to 20 HCAs (total = 180).

Survey Administration

HCC leaders clearly preferred an online survey as the best approach for their members, who typically work remotely and rely on handheld devices at work. In LTC we worked with one corporation to explore logistics and accessibility of online and paper survey formats. An invitation to participate and survey link were sent electronically to HCC participants, and paper surveys were distributed to LTC participants. The anonymous survey asked respondents to indicate only their work sector (HCC or LTC). As a modest participation incentive, respondents were entered in a draw for a $100 gift card from one of three vendors/retailers (their choice) if they provided contact information on a separate postcard (paper surveys) or separate online database (online responses). Returning a completed questionnaire constituted consent to participate. This study was approved by the Research Ethics Boards at each author's institution.

Measures

Original and revised item wording for all three measures is in Supplementary File 1. We adapted the 9-item UWES-9 (Schaufeli et al., 2006), which has three items in three dimensions: *Vigor* (e.g., "I look forward to going to work"), *Dedication* (e.g., "I am excited about doing my job"), and *Absorption* (e.g., I feel happy when I am working hard"). As noted earlier, these three dimensions were validated previously and alphas were in the range of .70 for all three scales (Schaufeli et al., 2006). All items used the 7-point frequency-based response scale from the original UWES, with response categories from 0 (*never*) to 6 (*always—every day*).

We adapted the four subscales of the PE Scale (Spreitzer, 1995): *Meaning* (e.g., "The work that I do is important to me"), *Competence* (e.g., "I have all the skills needed to do my job well"), *Self-determination* (e.g., "I can decide how to do my work"), and *Impact* (e.g., "My work makes a big difference on my unit"). As noted earlier, these four dimensions were validated previously and alphas for all four scales were in the range of .79 to .85 (Spreitzer, 1995). All items used a 7-point agreement-based response scale from 1 (*very strongly disagree*) to 7 (*very strongly agree*).

For OCB-O, we adapted the 4-item measure from Choi (2007) supported as a unique dimension of OCB using CFA with an alpha = .83 (Choi, 2007). Items used a 7-point agreement scale. Table 1 indicates the magnitude of item changes from the first two phases of our revisions.

Only one study we found (Morgan, Sherloch, & Ritchie, 2010) used a measure of job satisfaction in the HCC context, but focused on job facets such as pay, peers, and supervisor, not global measurement of job satisfaction. They cited no information or published work on creation or derivation of their 15-item measure. Hence, we chose an alternate measure: a positively worded version of the Michigan Organizational Assessment Questionnaire Job satisfaction subscale (MOAQ-JSS-3). (In phase 2, we used the original three-item MOAQ-JSS with two items positively phrased and one negatively ["In general, I don't like my job"]. We saw evidence of a methods effect, which can occur in scaling positively and negatively phrased items together. Negatively worded items are intended as "cognitive speed bumps" that help people respond to questions carefully [Podsakoff, MacKenzie, Lee, & Podsakoff, 2003], but they may impact scale dimensionality [DiStefano & Motl, 2006]. We used a positively phrased item ["In general, I like my job"] in phase 3.) This commonly used 3-item scale measures affective components—feelings about one's job (e.g., "In general, I like working here")—and is a reliable (alpha = 0.85 across 79 samples) and construct-valid measure of global job satisfaction (Bowling & Hammond, 2008). The MOAQ-JSS-3

Table 1. Magnitude of Item Word Adaptations for HCAs

OCB-O example

Original wording (Choi, 2007)	Revised item wording
I frequently come up with new ideas or new work methods to perform my task	I often come up with new ways to do my work
I often suggest work improvement ideas to others	I often suggest to my co-workers new ways about how to improve work [for LTC add: on the unit]
I often suggest changes to unproductive rules or policies	I often suggest ways to improve rules or policies
I often change the way I work to improve efficiency	I often change how I work to get more done in the time I have

Note: HCA = Health care aid; LTC = long-term care; OCB = organizational citizenship behavior.

has been used with 5-, 6-, and 7-point agreement response scales. We used the 7-point scale for consistency with our other measures. We measured turnover intention (e.g., "I frequently think of quitting this job") with a 3-item scale (Alexander, Lichtenstein, Oh, & Ullman, 1998) widely used in health care; items used a 7-point agreement scale, alpha = .83 in previous work (Alexander et al., 1998). Demographic information on age, gender, HCA tenure, organizational tenure, Canadian born, and ESL was also captured.

Analysis

Together, convergent and discriminant validity support construct validity. Items that should be related are related (convergent) and items that should not be strongly related are not related (discriminant). CFA can provide evidence of convergent validity (Brown & Moore, 2012). We began with maximum likelihood CFA models for each construct, WEng, PE, and OCB-O, to link latent variables (our three constructs) and observed measures (items for each construct; Byrne, 2009)—essentially we examined whether the items for each construct are converging on the same latent variable (Trochim, 2006). Consistent with the original measures, we examined a three-factor model for WEng, a four-factor model for PE, and a one-factor model for OCB-O.

We used several indices of fit in all CFA models. Our main two-index strategy (Hu & Bentler, 1999) suggests that models with standardized root mean squared residual (SRMR) values <0.08 and Comparative Fit Index (CFI) values >0.95 or root mean squared error of approximation (RMSEA) values <0.06 indicate good model fit. We rely more on CFI than RMSEA, which over-rejects models with small sample sizes such as ours (Hu & Bentler, 1999). A nonsignificant χ^2 ($p > .05$) suggests adequate model fit. Further, the Relative / Normed χ^2 value (the χ^2 to *df* ratio) depends less on sample size; values less than two (Ullman, 2001) or three (Kline, 2010) indicate good fit.

Normality assessment data are presented in Supplementary File 4. Potential multivariate outliers were identified using Mahalanobis distance. Observations with $p < .001$ were examined and, although some scores were low, they were still valid responses and therefore did not warrant removal from the data set. We used listwise deletion of cases with missing data because the very structure of the items is the main point of the analysis. However, because a large proportion of cases were lost in the discriminant validity analyses, we also ran our final models using full information maximum likelihood estimation, which estimates means and intercepts.

The initial three-factor WEng model and four-factor PE model fit poorly. Modified models with fewer items were tested (described in *Results*). Because we removed items not well accounted for by the model, we obtained a separate (cross-validation) sample (Van Prooijen & Van Der Kloot, 2001) that included data from 550 HCAs working in 17 LTC in Western Canada (the sample comes from a related research program several of the authors are involved in).

Discriminant validity was established with CFA models that included pairwise tests of theoretically related constructs, WEng, OCB-O, and job satisfaction (Vogus & Sutcliffe, 2007). We compared four models to see whether OCB-O and job satisfaction items are distinct from WEng items. The first model loaded all WEng, job satisfaction, and OCB-O items on a single factor. The second model loaded one factor with WEng and OCB-O items and the second with job satisfaction items. The third loaded one factor with WEng and job satisfaction items and the second with OCB-O items. The fourth specified three factors, with WEng, job satisfaction, and OCB-O as separate latent variables. If the last model provides the best fit, we can conclude that WEng is distinct from job satisfaction and OCB-O. Change in goodness of fit between nested models was evaluated using the χ^2 difference test.

For evidence of concurrent validity (a measure's ability to distinguish between groups that it should theoretically be able to distinguish) in PE, we used independent samples *t* tests to compare mean scores for HCAs on the *Impact* and *Self-determination* dimensions. Given the somewhat autonomous nature of their work, workers in HCC were expected to score higher than those in institutional LTC on *Self-determination* and lower on *Impact*. Predictive validity was examined using Spearman's rank-order correlations between WEng and PE (scale means) and three

variables they predict in other work settings: job satisfaction, turnover intention, and OCB-O. Cronbach's alpha assessed scale reliability. An alpha of .70 is acceptable but .80 or higher is preferred for established scales such as we used (Nunnally & Bernstein, 1994). IBM SPSS and AMOS version 22 (SPSS, Inc, Chicago, IL) were used for all analyses.

Results

Respondents

In Ontario, 306 HCAs returned a completed survey, 58 of 180 in LTC (32%) and 248 of an estimated 3,736 in HCC (6.6%; Response rate for HCC is a conservative estimate assuming that all 10 organizations opening the survey link also distributed it to their HCA staff. We cannot verify this.). Fifty completed surveys were paper (16.3%) and 256 were eSurveys (83.7%). Our cross-validation sample comprised data collected in September and October 2014 from 550 HCAs working in 17 LTC facilities in Western Canada (demographic characteristics and scale scores in Table 2). Cross-validation sample data were collected by computer-assisted personal interview (CAPI; Squires et al., 2012). Model ns are provided in Table 3.

Construct Validity and Reliability

Convergent Validity

The OCB-O measurement model fits the data well (Table 3, *OCB-O Model 1*), but the initial three-factor WEng model demonstrated poor fit (Table 3, *WEng Model 1*). We explored two modified WEng models, one-factor and three-factor models. Standardized residuals and fairly high correlations between the three factors favor a one-factor model for WEng (model comparisons provided in Supplementary File 2). We removed three WEng items poorly accounted for in the one-factor model. Two removed items were complex even after item simplification (Phase 1): "At my job, I feel strong and vigorous" and "I am very engaged in my work." The third item removed seemed peripheral to the *Dedication* dimension: "I am proud of the work that I do." The reduced 6-item, one-factor WEng model fits the data well in the main (Table 3, WEng Model 2) and cross-validation samples (Table 3, *WEng Model 2 crossval*). All factor loadings were statistically significant.

The initial four-factor PE model fit poorly (Table 3, *PE Model 1*). We removed one item with high standardized residuals from the *Impact* dimension, "My work makes a big difference [for LTC add: on my unit]". The 11-item, four-factor PE model fits the data well in the main (Table 3,

Table 2. Respondent Characteristics and Scale Scores

	Total sample	LTC sample	HCC sample	Cross-validation sample
	Mean (*SD*),	Mean (*SD*),	Mean (*SD*),	
	N = 306	N = 58	N = 248	
Respondent characteristics				
Age (years)				
Younger than 20	1.0%	1.9%	0.8%	0.0%
20–29	11.5%	18.5%	8.6%	8.3%
30–39	15.1%	16.7%	14.8%	23.4%
40–49	22.9%	22.3%	23.0%	29.3%
50–59	36.7%	33.4%	37.5%	28.2%
60 and older	13.8%	7.5%	15.2%	10.8%
Female	94.7%	96.5%	94.3%	89.0%
Canadian born	54.5%	63.2%	52.5%	Not known
ESL	37.1%	14.0%	42.6%	51.9%
Tenure in the organization (years)	2.53 (1.3)	2.82 (1.6)	2.46 (1.2)	5.36 (5.51)
Tenure as an HCA (years)	2.76 (1.3)	3.27 (1.6)	2.65 (1.2)	11.9 (9.26)
Scale Scores				
Work engagement	4.96 (1.03)	5.04 (0.96)	4.64 (1.23)	5.5 (0.67)
PE-Competence	6.21 (0.82)	6.06 (1.11)	6.25 (0.74)	4.53 (0.46)[a]
PE-Meaning	6.25 (0.96)	6.29 (1.08)	6.24 (0.92)	4.59 (0.47)[a]
PE-Self-determination	5.02 (1.31)	4.73 (1.69)	5.14 (1.15)	4.01 (0.76)[a]
PE-Impact	3.58 (1.4)	4.05 (1.56)	3.47 (1.37)	3.40 (0.87)[a]
OCB-O	4.61 (0.85)	4.59 (1.01)	4.61 (0.79)	3.71 (0.61)[a]

Notes: ESL = English as a second language; HCA = health care aid; HCC = home and community care; LTC = long-term care; OCB = organizational citizenship behavior; PE = psychological empowerment.

[a]These measures used a 5-point agreement scale in the cross-validation sample.

Table 3. Confirmatory Factor Analysis Results

Confirmatory factor analysis model	χ^2	CFI	RMSEA	SRMR	Relative χ^2
Convergent validity models					
OCB-O Model 1	4.71	0.985	0.073	0.027	2.358
$n = 254^b$	$df = 2, p = .095$				
PE Model 1	272.68	0.879	0.141	0.179	5.614
$n = 236$	$df = 48, p = .000$				
PE Model 2	61.21	0.986	0.051	0.043	1.611
$n = 236^b$	$df = 38, p = .010$				
PE Model 2	126.78	0.974	0.066	0.042	3.336
Cross-validation sample	$df = 38, p = .000$				
$n = 544$					
WEng Model 1	112.10	0.948	0.118	0.044	4.671
$n = 266$	$df = 24, p = .000$				
WEng Model 2	19.30	0.989	0.066	0.023	2.145
$n = 266^b$	$df = 9, p = .023$				
WEng Model 2	34.39	0.966	0.072	0.036	3.822
Cross-validation sample	$df = 9, p = .000$				
$n = 547$					
Discriminant validity models					
One-factor[a]	354.80	0.792	0.143	0.106	5.458
$n = 220$	$df = 65, p = .000$				
Two-factor model A[a]	196.01	0.905	0.097	0.087	3.063
$n = 220$	$df = 64, p = .000$				
Two-factor model B[a]	256.78	0.862	0.117	0.084	4.012
$n = 220$	$df = 64, p = .000$				
Three-factor model[a]	88.73	0.981	0.044	0.049	1.431
$n = 220^b$	$df = 62, p = .015*$				

Notes: CFI = Comparative Fit Index; OCB = organizational citizenship behavior; PE = psychological empowerment; RMSEA = root mean squared error of approximation; SRMR = standardized root mean squared residual; WEng = work engagement.

[a]The one-factor model has all WEng, OCB-O, and job satisfaction items loading on a single factor; two-factor model A has WEng and OCB-O on one factor and job satisfaction on the second factor; two-factor model B has WEng and job satisfaction on one factor and OCB-O on the other factor; and the three-factor model has WEng, OCB-O, and job satisfaction items loading on their own factors.

[b]We also ran the final models making use of all 306 cases (using full information maximum likelihood estimation). Similar levels of fit were achieved.

*Three-factor model provides a significantly better fit than the one- and two-factor models using the chi-square difference test.

PE Model 2) and cross-validation samples (Table 3, *PE Model 2 crossval*). All factor loadings were significant (measurement models with factor loadings are provided in Supplementary File 3).

Discriminant Validity

χ^2 difference tests (pairwise model comparisons) indicate that the three-factor model (with job satisfaction, OCB-O, and WEng items loading on separate factors) fits the data better than the one-factor model or either two-factor model (Table 3, discriminant validity models). Only the three-factor model achieves good fit ($\chi^2 = 88.73$, $df = 62$, $p = .015$, SRMR = .049, CFI = 0.98, RMSEA = 0.044, relative $\chi^2 = 1.43$).

Concurrent Validity

HCAs working in HCC score higher than HCAs working in institutional LTC on the *Self-determination* dimension of PE (HCC mean = 5.14, *SD* = 1.15; LTC mean = 4.73, *SD* = 1.69, *t* = 2.128, *p* = .034) and lower than LTC workers on the *Impact* dimension (HCC mean = 3.47, *SD* = 1.37;

LTC mean = 4.05, *SD* = 1.56, *t* = 2.75, *p* = .006). This suggests that the PE measure can distinguish between groups that it should theoretically be able to distinguish.

Predictive Validity

Table 4 shows significant correlations between WEng, PE, and three variables predicted by WEng and PE in settings outside of health care (OCB-O, job satisfaction, and turnover intention) providing some predictive validity support. The only exception is the correlation between the *Competence* dimension of PE and turnover intention, which is not significant. Regression results (not shown) provide additional evidence of predictive validity. WEng and PE together explain 52% of variance in job satisfaction (adjusted R^2 = .52, $F(4, 177) = 17.93$, $p < .001$), 28% of variance in turnover intention (adjusted R^2 = .28, $F(4, 162) = 2.66$, $p < .05$), and 25% of variance in OCB-O (adjusted R^2 = .25, $F(4, 154) = 4.76$, $p = .001$), after controlling for respondent demographics (age, HCA tenure, organizational tenure, Canadian born, and ESL). Alphas for dimensions supported by our final

Table 4. Scale Means, Spearman Correlations, and Alphas

	n	Mean (SD)	1.	2.	3.	4.	5.	6.	7.	8.
1. Work engagement	291	5.00 (1.02)	0.91							
2. PE-Competence	288	6.19 (0.82)	.36**	0.80						
3. PE-Meaning	281	6.23 (0.95)	.46**	.58**	0.91					
4. PE-Self-determination	282	5.07 (1.30)	.34**	.40**	.38**	0.87				
5. PE-Impact	271	3.59 (1.43)	.17**	.16*	.15*	.39**	0.92			
6. OCB-O	254	4.61 (0.85)	.22**	.27**	.22**	.34**	.32**	0.70		
7. Job satisfaction	295	5.70 (1.02)	.53**	.34**	.44**	.41**	.37**	.29**	0.80	
8. Turnover intention	266	2.82 (1.47)	–.41**	–.12	–.28**	–.21**	–.25**	–.14**	–.54**	0.87

Notes: Alphas appear in the diagonals. OCB = organizational citizenship behavior; PE = psychological empowerment.
$*p < .05.$ $**p < .01.$

models (diagonal of Table 4) support scale reliability. The alpha for OCB-O = .70; alphas for all other scales range from .80 (PE-Competence) to .92 (PE-Impact).

Discussion

We validated three key work attitude measures for HCAs: WEng, PE, and OCB-O. WEng and PE reflect modifiable psychological states that, in other settings, explain variance in key organizational outcomes such as effectiveness and turnover intention. OCB-O is linked to organizational effectiveness and innovation. The 4-item OCB-O measure that we adapted for use with HCAs mirrors Choi's (2007) original construct definition and provides evidence of validity and reliability. The 11-item, four-factor PE measure from our analyses mirrors initial items and dimensions measured by Spreitzer (1995); convergent and concurrent validity results support its construct validity. We expected lower scores for LTC workers on the PE *Self-determination* dimension because LTC is a low-autonomy work setting. Similarly, we expected lower PE *Impact* dimension scores for HCC workers because daily HCC work is more removed from an organization. We found significantly different means for LTC and HCC workers in both dimensions in the expected directions.

Our results support a one-factor measure of WEng that is slightly better than a three-factor measure, although both models fit acceptably (results in Supplementary File 2). These results are consistent with the literature described earlier that suggests that the dimensionality of WEng is unclear (Halberg & Schaufeli, 2006; Schaufeli & Bakker, 2003; Viljevac et al., 2012). With HCAs, calculating a single WEng scale or separate scales for each factor may be appropriate based on study context. For example, an intervention study targeting WEng overall may find the one-factor scale sufficient, whereas a study targeting *Dedication*—but not *Vigor*—could utilize separate measures for the three WEng dimensions.

Discriminant validity results strongly suggest that OCB-O and job satisfaction are distinct from WEng. However, correlations among constructs suggest that, like many other occupational groups, WEng predicts job satisfaction and OCB for HCAs. Results of our convergent, discriminant, concurrent, and predictive validity analyses support construct validity of our final measurement models

for WEng, PE, and OCB-O among HCAs. Our alphas support reliability (internal consistency) of these measures.

Our findings raise questions about broader operationalization of WEng and PE with HCAs and other occupational groups. Is being "proud of the work that I do" an accurate operationalization of the WEng *Dedication* dimension and does it reflect work engagement more broadly? Is *Impact* the most suitable name for this dimension of PE? The *Impact* item most closely aligned with the concept ("My work makes a big difference on my unit") is not well accounted for by the model in either our main or cross-validation samples, suggesting that this is not a context- or setting-specific problem. The remaining two *Impact* items ("I have a lot of control over what happens in my unit" and "I have a lot of influence over what happens in my unit") seem more linked to control over work than impact on work environment. For HCAs, given the nature and constraints of their work roles/scope, the notion of being impactful *beyond* the HCA–resident/client dyad may simply be inappropriate. These points merit further theoretical consideration and study.

The best data collection method for HCAs is unclear as they are an understudied workforce with relatively high rates of ESL and lower English literacy levels. We explored three approaches to administering surveys: paper and online surveys in the main sample and CAPI in the cross-validation sample. Results will in part inform future administration of a more ambitious survey to a large number of HCAs across Ontario. We experienced 1.4% missing data on paper surveys, 6.1% on online surveys, and 1.4% on CAPI surveys. CAPI is costly, requiring trained interviewers, and is not an option in many studies, but it improves response rates and reduces missing data for longer surveys (Estabrooks, Squires, Cummings, Teare, & Norton, 2009). Both online and CAPI surveys enable added wording for challenging questions. Although it is unclear whether use of these three different methods of data collection affected our results, the CAPI approach introduces a potential interviewer effect not present with paper and online surveys. However, we are reassured by the fact that model fit in our cross-validation sample was good. Nonetheless, the optimal data collection method for this respondent group requires further research.

This study has limitations. First, the small number of paper surveys excludes measuring the methods effects of three different data collection approaches. One item (q18—*At my job, I feel strong and vigorous*) had alternate wording available to CAPI survey respondents but not on the paper or online surveys. This item did not function better in the CFA of the CAPI data, but its complex wording may or may not explain why the initial WEng CFA model did not account for it well.

Second, our main study uses a convenience sample of LTC and HCC respondents. The HCC sector's response rate is a conservative but fairly coarse estimate and is low. Although this prevents us from generalizing results on levels of WEng, PE, and OCB-O (e.g., our mean scores), sampling or nonresponse bias should not affect relationships *among the survey items* on which we base our validation analyses.

Third, our main sample comprises largely HCAs working in HCC, whereas our cross-validation sample is exclusively HCAs working in institutional LTC. Respondent demographics were similar with one exception—our main sample's 58 LTC respondents had significantly lower rates of ESL than HCC respondents and LTC respondents in the cross-validation sample. Sector differences and ESL differences within our main sample and between the main and cross-validation samples, however, may be a strength of this study because close model fit was achieved despite sample differences. As noted in our concurrent validity results, two PE scale scores differed significantly between LTC and HCC, and HCC staff also provided significantly higher ratings of WEng than LTC respondents. Future studies could further explore sector differences and might also conduct multigroup CFAs to test whether our final measurement models are invariant to sector, ESL status, and survey administration method.

Conclusion

HCAs are an understudied group providing most care to elderly LTC residents and HCC clients. Their work environment is challenging, with high rates of aggression from LTC residents and isolated, sometimes risky, HCC settings. Our results support using measures of WEng, PE, and OCB-O with these HCAs for reliable and valid estimates of these three important constructs. Data on WEng, PE, and OCB-O reflect key HCA work attitudes that influence behaviors and outcomes including turnover intention and burnout. Knowledge of HCA work attitudes can inform recruitment programs, incentive systems, and retention and training strategies for this vital group of LTC and HCC workers.

Supplementary Material

Supplementary material can be found at: http://gerontologist.oxfordjournals.org.

Funding

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