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Assessing Perceived Success in Valued Living in Individuals With Long-Term Physical Health Conditions

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Abstract

Objective: To evaluate the reliability and validity of a brief measure of successful aging in a sample of adults with long-term health conditions. **Method:** The brief (eight-item) version of the valued living scale (VLS) and measures of pain intensity, pain interference, and depression were administered to 1,457 adults aging with one of four long-term health conditions. **Results:** Analyses indicated that the VLS items assessed two types of valued living domains: (a) a social and relational domain and (b) a health and productivity domain. The findings also supported the construct validity for the VLS items, in that both domains were associated significantly (and negatively) with the measures of pain intensity, pain interference, and depression. **Discussion:** The results provide preliminary support for the reliability and validity of the VLS items for assessing two important domains of successful aging in individuals with long-term health conditions.

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Introduction

For many individuals with chronic physical health conditions, disability tends to persist or worsen over the long term (Campbell, Sheets, & Strong, 1999; Cook, Molton, & Jensen, 2011; Jensen, Hoffman, & Cardenas, 2005; Molton et al., 2014). Moreover, individuals with chronic physical health conditions often have comorbid symptoms (e.g., pain, fatigue, depression) that can further exacerbate disability (Baylor, Yorkston, Jensen, Truitt, & Molton, 2014; Jensen et al., 2012; Latimer et al., 2017; McNalley et al., 2015; Moharic, 2017). At the same time, traditional views of successful aging have often included a *lack* of physical disability and physical symptoms as being important components of successful aging (Depp & Jeste, 2006; Phelan & Larson, 2002; Rowe & Kahn, 1998). While maintaining health and avoiding disability are clearly important to people when they think about successful aging (Phelan, Anderson, LaCroix, & Larson, 2004), if successful aging always requires maintenance of health (for many people, this involves the avoidance of symptoms, although "health" is subjective and personal) and avoiding disability, then ultimately few, if anyone, will age successfully.

A more nuanced and emerging view includes the recognition that successful aging is a multidimensional construct that includes a variety of quality of life domains (Carver & Buchanan, 2016; Cosco, Prina, Perales, Stephan, & Brayne, 2014; Tesch-Romer & Wahl, 2017). One of those domains is the extent to which the aging individual can live his or her life consistent with personally meaningful values and goals. For example, in a large-scale survey study, Phelan and colleagues found that "being able to act according to my own inner standards and values" was rated by 81% of aging Japanese Americans and 92% of White Americans as an important component of successful aging (Phelan et al., 2004). This domain was also emphasized recently in a focus group study on this topic in a sample of individuals aging with long-term disabilities, which concluded that successful aging in individuals with disabilities involved being able to use ". . . psychological, social support, and healthcare resources to live a life *consistent with personal values* [emphasis added] in the context of disability" (Molton & Yorkston, 2017, p. 296). Moreover, learning strategies for living one's life consistent with one's values is perhaps a more viable treatment target than a reduction or elimination of disability or symptoms in individuals with chronic health conditions.

Although there are a number of measures of valued living (e.g., Jensen, Vowles, Johnson, & Gertz, 2015; McCracken & Yang, 2006; Wilson, Sandoz, Kitchens, & Roberts, 2010), to our knowledge no research has examined the reliability and validity of such measures in individuals with long-term physical health conditions. Research to evaluate the psychometric properties of these measures in individuals with chronic health conditions would be an important first step for examining their relevance in understanding successful aging in these populations. Therefore, the purpose of the current analyses was to evaluate the psychometric properties of the brief version of the valued living scale (VLS) in a sample of adults aging with long-term physical disabilities. The VLS asks respondents to indicate the extent to which they believe they have been successful in maintaining their goals with respect to eight-value domains. Consistent with studies in chronic pain samples (Jensen et al., 2015), we hypothesized that the VLS items would yield a two-factor structure reflecting (a) the degree to which respondents believe that they are living successfully with respect to their social and relational goals (i.e., a "Social and Relational" Factor) and (b) the degree to which they are living successfully with respect to their goals related to health and productivity (i.e., a "Health and Productivity" factor). We also hypothesized that the VLS subscales would evidence construct validity, as indicated by significant negative associations with three validity criteria (depression, pain interference, and pain intensity), replicating what has been found when administering a longer version of the VLS in a sample of individuals with chronic pain (Jensen et al., 2015).

Method

Participants

The study participants were recruited as part of an ongoing national longitudinal study of individuals with long-term health conditions including multiple sclerosis (MS), spinal cord injury (SCI), neuromuscular disease (NMD), or postpolio syndrome (PPS; Alschuler et al., 2012; Jensen et al., 2014; Molton, Goetz, Jensen, & Verrall, 2012; Silverman, Molton, Alschuler, Ehde, & Jensen, 2015). Yearly surveys have been administered to participants in the primary study. Data used for the current analyses were collected in the 6th year of this study ($N = 1{,}457$). Most of this sample was comprised of individuals who were involved in the study from its inception; however, 5 years into the study, a "refresher" sample of participants ($n = 196$) was recruited to account for attrition. Participants were recruited through the following methods: condition-specific registries (i.e., University of Washington Research

Participant Pool and University of Rochester Muscular Dystrophy Registry), other ongoing studies at the University of Washington (i.e., Northwest Regional Spinal Cord Injury System and University of Washington Center on Outcomes in Rehabilitation Research), and web and print advertisements. All participants were 18 years of age or older, able to read and understand English, and reported a physician-confirmed diagnosis of MS, NMD, SCI, or PPS. An eligibility screen was completed over the telephone, and all participants provided written consent. Participants received questionnaires by mail. Participants were provided US$25 as compensation for their participation in the study. All study procedures were reviewed and approved by the University of Washington Institutional Review Board.

Measures

Brief version of the VLS. The VLS was developed as a measure to assess goal importance, success, and confidence with respect to eight value domains and 26 specific values-related goals (Jensen et al., 2015). A brief version of the measure includes eight items specific to the eight global value domains including (a) keeping healthy, (b) feeling good, (c) parenting, (d) spirituality, (e) marriage/partnership, (f) friendship, (g) productivity, and (h) community citizenship. These items specifically measure the degree to which individuals view themselves as successfully living in accordance with their values in each domain (e.g., "Being the kind of parent I want to be" and "Being productive in the way I want to be"). With these items, respondents were asked to rate how successful they have been at maintaining each goal over the past week on an 11-point scale from 0 (*not at all successful*) to 10 (*extremely successful*). Participants could also indicate if the item was not applicable to them. The eight VLS items examined in this study are listed in Table 1.

Pain intensity. Pain intensity was assessed with a single item asking participants to rate their pain at its average in the past week on an 11-point numerical rating scale (NRS) that ranged from 0 (*no pain*) to 10 (*pain as bad as you can imagine*). The reliability and validity of using an NRS for assessing pain intensity assessment in adults has been established through a robust body of research (Jensen & Karoly, 2011).

Patient-reported outcome measurement information system (PROMIS) pain interference short form. Pain interference was assessed using a short-form measure from PROMIS, which was developed for use in individuals with a range of chronic medical conditions (see www.nihpromis.com for detailed information on these scales; Cella et al., 2010). Reliability and validity were initially

Table 1. VLS items used in the current analyses.

Item number	Item
How successful have you been at maintaining each of these goals in the past week?	
1	Keeping healthy (for example, by eating the right amounts of healthy food, maintaining appropriate exercise and activity, letting myself get the sleep I need).
2	Feeling good (for example, by minimizing pain and fatigue, being content and feeling calm and relaxed).
3	Being the kind of parent I most want to be.
4	Being the kind of spiritual person I most want to be.
5	Being the kind of spouse or partner I most want to be.
6	Being the kind of friend I most want to be.
7	Being productive in the way I want to be (for example, by working full or part time for income, or by completing projects or chores at work or at home).
8	Being the kind of community citizen I most want to be (for example, by engaging in volunteer work or by voting or other activities to influence laws).

Note. Instructions for the VLS read as follows. "This questionnaire lists a number of life goals. For each of these goals, please rate on 0 to 10 scales how much success you have had at achieving or maintaining this goal in the past week (0 = *not at all successful*; 10 = *extremely successful*). You are free to also indicate 'NA' if the goal is not applicable to you at all."
VLS = valued living scale.

established for a large item bank of pain interference items (Amtmann et al., 2010). The short-form version of pain interference items used in the present study included four items assessing the degree to which, over the past 7 days, pain interfered with four specific life domains (i.e., day-to-day activities, work around the home, social activities, and household chores). With these items, respondents are asked to rate interference associated with each activity on a scale from 1 (*not at all*) to 5 (*very much*). PROMIS scores are converted to *t* scores, which represent a mean of 50 and standard deviation of 10 in the normative sample. The PROMIS pain interference items have been used for comparing pain interference across participants of various chronic conditions and ages, including in studies with the current sample (Cook, Bamer, Amtmann, Molton, & Jensen, 2012).

PROMIS depression short form. Depression was assessed using a short-form measure from the PROMIS scales (Pilkonis et al., 2011). The six items used here ask respondents to rate the frequency with which they had experienced

different feelings associated with depression (e.g., hopeless, worthless, depressed, and like a failure) over the past 7 days. All items were rated on a scale from 1 (*never*) to 5 (*always*). The items were summed and then converted to *t* scores. Prior work has found that this PROMIS short-form measure can be used for comparing depression across participants of various chronic conditions and ages, including when assessing the current sample at an earlier time point (Cella et al., 2010).

Statistical Analyses

We first computed descriptive statistics of the demographic variables to describe the sample. We then computed the skew and kurtosis, and the rate of extreme responses to the eight VLS items to ensure that they had adequately normal distributions.

Next, we performed a confirmatory factor analysis (CFA) of the eight VLS items to test the two-factor model found in the initial scale development sample (Jensen et al., 2015). CFA is a statistical technique in which a prespecified factor structure within a measure is tested via construction of latent factors, representing subscales within the measure. As compared to exploratory factor analysis (EFA), CFA requires prespecification of which items belong to which factor, which error terms are allowed to correlate, and requires a detailed and identified initial model (Bollen, 1989).

Our CFA approach followed three steps. First, we tested the degree to which the originally specified two-factor model fit the observed data. Quality of model fit was established using a multiple fit index approach following guidelines suggested by Hu and Bentler (1999), including a standardized root mean square residual (SRMR) close to .08, a root mean square error of approximation (RMSEA) of close to .06 and a comparative fit index (CFI) close to .95 (Hu and Bentler, 1999). All paths were tested for significance using a *t* criteria of > 1.96 ($p < .05$).

Based on the quality of the initial fit, we then proceeded to model respecification (Step 2). This involved tailoring the model by examining places where items were either not loading onto any factor, loading onto the wrong factor, or equally loading onto both factors. We also examined any unanticipated high correlations among error variances (i.e., variance within items not explained by the latent factor). In Step 2, we considered both statistical approaches to improve model fit (e.g., the value of the Lagrange modifiers) and conceptual considerations of why items might be behaving differently than initially expected, based on item content.

Once our optimal two-factor model was established, we proceeded to Step 3, in which we compared our two-factor solution to a single factor alternative

model. We determined that a single factor solution would be superior if (a) the correlation among the two factors in the two-factor model was >.85, suggesting poor discriminant validity; (b) the CFI for the single-factor model was >.90; (c) all item loadings in the single-factor model were >.6; and (d) the χ^2/df difference test was significant between the two models.

All CFA analyses were conducted using the software program Mplus 6.1 (Muthen & Muthen, 2010). Mplus creates unbiased estimates of parameters using a full information maximum likelihood approach.

Once we had established our optimal model, we evaluated the construct validity of our identified subscales. Construct validity (i.e., the extent to which the resulting scales assess perceived success in achieving or maintaining success in valued goals) was evaluated by computing Pearson product–moment correlations between the VLS subscales and three validity criterion variables.

Results

Participant Characteristics

Table 2 presents the demographic characteristics of the sample, both as a whole and by diagnostic group. The final sample consisted of 1,457 participants. One individual was missing data on all VLS items; therefore, analyses were performed on a final sample size of 1,456 individuals. As can be seen, the gender breakdown for the entire sample was 35% male and 65% female. The gender distribution within each diagnostic group varied to some degree: NMD ($n = 173$) was 63% female, MS ($n = 372$) was 82% female, PPS ($n = 276$) was 72% female, and SCI ($n = 125$) was 36% female. The chi-square for sex differences by condition was significant, $\chi^2(3, 1453) = 199.870$, $p < .001$. The average age of the study sample was 62.54 years ($SD = 12.11$; range = 27-100) with significant between-group differences, $F(3, 1453) = 177.80$, $p < .001$; NMD = 59.27 ($SD = 11.30$); MS = 61.08 ($SD = 10.05$); PPS = 72.57 ($SD = 7.72$); SCI = 56.00 ($SD = 12.37$). Pairwise comparisons indicated that all groups significantly differed from one another on age, aside from individuals with MS and NMD (Table 2). The average time since health condition diagnosis was 21.69 years ($SD = 10.55$) with no significant between group-differences.

Initial Item Analysis

The individual VLS items were normally distributed with no evidence of significant skewness or kurtosis (all values < 3.0). None of the VLS items had 90% or more of responses at the extreme ends of the scale.

Table 2. Demographic Characteristics by Diagnosis.

	Entire sample (N = 1,457)	NMD (n = 274)	MS (n = 451)	PPS (n = 383)	SCI (n = 349)
Sex					
Male	511 (35%)	101_a (37%)	79_b (18%)	107_c (28%)	224_d (64%)
Female	946 (65%)	173_a (63%)	372_b (82%)	276_c (72%)	125_d (36%)
Age	62.54 ± 12.11	59.27_a ± 11.30	61.08_a ± 10.05	72.57_b ± 7.72	56.00_c ± 12.37
Race					
Black or African American	58 (4%)	2 (1%)	24 (5%)	5 (1%)	27 (8%)
Asian	11 (1%)	1 (<1%)	1 (<1%)	3 (1%)	6 (2%)
White	1,302 (90%)	261 (96%)	400 (89%)	350 (92%)	291 (84%)
Native American	8 (1%)	0	2 (<1%)	3 (1%)	3 (1%)
Pacific Islander	1 (<1%)	0	0	0	1 (<1%)
Other	39 (3%)	3 (1%)	13 (3%)	10 (3%)	13 (4%)
Ethnicity					
Hispanic/Latino	30 (2%)	5 (2%)	9 (2%)	9 (2%)	7 (2%)
Disability duration (in years)	21.69 ± 10.55	21.41_a ± 11.93	21.24_a ± 9.62	21.36_a ± 8.98	22.82_a ± 11.92

Note. Values are $M \pm SD$ or as n (%). Means (continuous variables) or numbers/rates (categorical variables) for the diagnostic groups that have different subscripts are significantly different from one another ($p < .05$). MS NMD = neuromuscular disease; = multiple sclerosis; PPS = postpolio syndrome; SCI = spinal cord injury.

CFA Analyses

Step 1: Testing the two-factor model. Model 1 was specified with two factors, per the original factor structure for this scale (Jensen et al., 2015). These were a health and productivity factor (Factor 1; Items 1, 2, and 7), and a social and relational factor (Factor 2; Items 2, 3, 4, 5, 6, and 8). Fit indices for Model 1 were marginal to poor ($\chi^2/df = 21.8$; RMSEA = .12; CFI = .92; SRMR = .05). Most indicators loaded significantly on their respective factors (all >.7), except for Item 8 ("Being the kind of community citizen I most want to be"), which loaded equally on both factors, significantly reducing overall model fit.

Step 2: Respecification. Closer examination of Item 8 revealed a strong similarity to the Factor 1 items. The examples provided in this item ("for example, by engaging in volunteer work, voting, or other activities to influence laws") appear to capture not only social and relational goals, but also productivity goals. Item 8 was also the only Factor 2 item that was followed by a parenthetical example. Given this conceptual overlap, equally strong loadings on both factors, and strong statistical indications that this item was performing poorly (Lagrange modifier = 100.5, E.P.C. = .61), Item 8 was deleted from the analysis. This resulted in a significantly improved fit for the two-factor solution (Model 2; $\chi^2/df = 12.8$; RMSEA = .09; CFI = .96; SRMR = .04). However, the fit was still marginal. Modification indices suggested a large correlated error variance between Items 5 and 6, which were both in Factor 2 (Lagrange modification index = 82.99). An examination of the content of these items revealed potential reasons for error correlation, in that Items 5 and 6 both referred to specific peer relationships ("Being the kind of friend I most want to be" and "Being the kind of spouse or partner I most want to be") as compared with the types of relationships featured in other items of Factor 2 ("Being the kind of parent I most want to be" and "Being the kind of spiritual person I most want to be"). We allowed these within-factor error terms to covary (Model 3), which further improved model fit ($\chi^2/df = 7.37$; RMSEA = .07; CFI = .98; SRMR = .03). Although not all fit indices for this model were optimal (ideally, RMSEA < .06), further improvements could not be made without atheoretical modifications, such as correlating additional unexplained error variances without clear rationale. We, therefore, considered Model 3 to be the best and final two-factor model.

For Factor 1 (health and productivity), the standardized loadings ranged from .72 to .82. For Factor 2 (social and relational), loadings ranged from .75 to .78 (Figure 1). The correlation between Factor 1 and Factor 2 was .81,

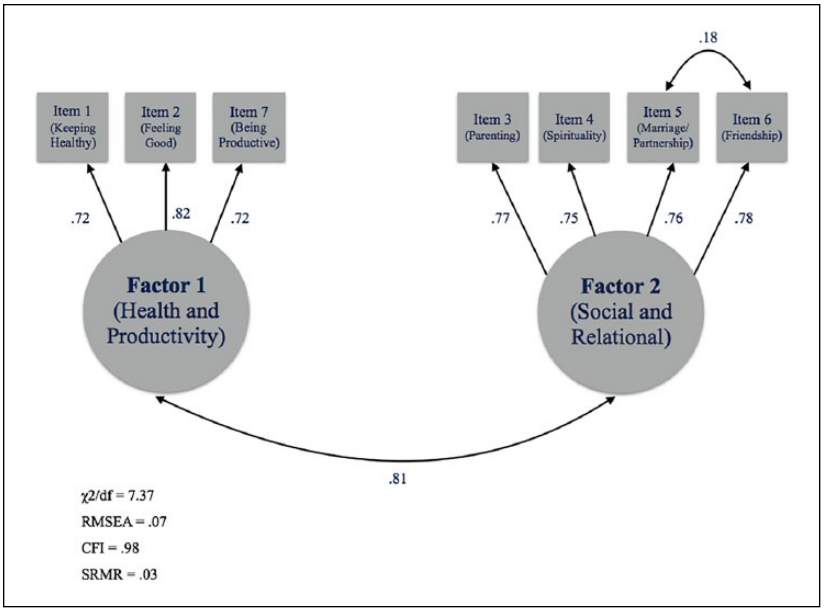

Figure 1. Confirmatory factor analysis of the VLS; final two-factor model (Model 3).
Note. RMSEA = root mean squared error of approximation; CFI = comparative fit index; SRMR = standardized root mean squared residual; VLS = valued living scale.

suggesting a large amount of content overlap as well as the existence of two distinct scales. Cronbach's alphas (which represent a scale's internal consistency, or the extent to which the items of a scale assess the same underlying construct, as evidenced by their association with one another) were adequate for Factor 1 ($\alpha = .79$) and good for Factor 2 ($\alpha = .87$).

Step 3: Comparison to a single-factor alternative model. In Step 3, we compared our final model (Model 3) to a single-factor alterative model. As expected, the single-factor model was a poor fit to the data ($\chi^2/df = 31.1$; RMSEA = .14; CFI = .88; SRMR = .06). A comparison of this model with the final two-factor model indicated a significant difference in χ^2/df (9.3, $p < .01$). Because the correlation between factors in the two-factor model was <.85, the CFI for the single-factor model was .88, the χ^2/df difference was statistically significant, and several items in the single-factor model loaded on the factor at <.6, we concluded that the two-factor model was superior to the single-factor alternative.

Descriptives for Self-Report Measures

Descriptive information for the self-report measures, across the entire sample and by diagnostic group, is presented in Table 3. One-way analysis of variance were performed to determine if the diagnostic groups significantly differed on any of these variables. There were significant differences in VLS subscale scores among the diagnostic groups for both the health and productivity subscale, $F(3, 1451) = 5.01$, $p = .002$, and social and relational subscale, $F(3, 1448) = 6.75$, $p < .001$. Pairwise comparisons with a Bonferroni correction were performed to examine group differences. On the health and productivity subscale, the PPS group endorsed significantly higher levels of valued living as compared with the MS and NMD groups. There were no other significant group differences on valued living for the health and productivity domain. On the social and relational subscale, the PPS group reported significantly higher levels of valued living than the SCI and NMD groups. There were no other significant between-group differences.

There were also significant differences among diagnostic groups for average pain intensity, $F(3, 1452) = 14.17$, $p < .001$, and pain interference, $F(3, 1434) = 9.43$, $p < .001$. For pain intensity, pairwise comparisons indicated that the PPS and SCI groups reported significantly higher average pain intensity than the NMD and MS groups. There were no other significant differences by condition. For pain interference, pairwise comparisons indicated that the PPS group reported significantly greater pain interference than the NMD and MS groups, but did not significantly differ from the SCI group. The SCI group reported significantly greater pain interference than the MS group. There were no other significant differences by condition. Depression did not significantly differ among the diagnostic groups, $F(3, 1452) = 1.97$, $p = .117$.

Construct Validity of the Subscales

The Pearson product–moment correlations between the VLS scales and the validity criterion variables across the entire sample and by diagnostic group are presented in Table 4. As hypothesized, scores on both subscales of the brief VLS were associated significantly with the measures of depressive symptoms (absolute r range = .50–.55, all ps $< .001$), pain interference (absolute r range = .22–.42, all ps $< .001$), and pain intensity (absolute r range = .17–.33, all ps $< .001$). For all correlations, relations were in the expected directions, with both subscales of the VLS showing negative associations with depression, pain interference, and pain intensity. The correlation between the two subscales of the VLS was .65 ($p < .001$) for the sample

Table 3. Descriptive Information for Self-Report Measures.

	Total (N = 1,457)	NMD (n = 274)	MS (n = 451)	PPS (n = 383)	SCI (n = 349)
Depression	51.49 ± 9.22	52.63_{a} ± 9.12	51.00_{a} ± 9.32	51.19_{a} ± 8.65	51.54_{a} ± 9.72
Pain interference	56.55 ± 9.58	55.71_{a} ± 9.63	$55.10_{a,\,b}$ ± 10.06	58.42_{c} ± 8.57	$57.07_{b,c}$ ± 9.58
Pain intensity	3.37 ± 2.49	2.99_{a} ± 2.45	2.93_{a} ± 2.52	3.70_{b} ± 2.30	3.87_{b} ± 2.54
VLS health and productivity	6.77 ± 2.02	6.51_{a} ± 2.09	6.67_{a} ± 2.00	7.08_{b} ± 1.85	$6.74_{a,b}$ ± 2.14
VLS social and relational	7.52 ± 1.87	7.26_{a} ± 1.93	$7.53_{a,b}$ ± 1.90	7.85_{b} ± 1.62	7.34_{a} ± 1.98

Note. Values are $M \pm SD$. Means for the diagnostic groups that have different subscripts are significantly different from one another. NMD = neuromuscular disease; MS = multiple sclerosis; PPS = postpolio syndrome; SCI = spinal cord injury; VLS = valued living scale.

Table 4. Correlations for VLS Subscales Across Entire Sample and by Diagnostic Group.

	VLS subscales		Patient functioning		
	Health and productivity	Social and relational	Depression	Pain interference	Pain intensity
Total (N = 1,457)					
Health and productivity	—	.65**	−.56**	−.42**	−.33**
Social and relational		—	−.50**	−.22**	−.17**
NMD (n = 274)					
Health and productivity	—	.69**	−.53**	−.42**	−.36**
Social and relational		—	−.51**	−.22**	−.21**
MS (n = 451)					
Health and productivity	—	.60**	−.56**	−.46**	−.40**
Social and relational		—	−.53**	−.24**	−.18**
SCI (n = 383)					
Health and productivity	—	.60**	−.52**	−.37**	−.30**
Social and relational		—	−.44**	−.21**	−.17**
PPS (n = 349)					
Health and productivity	—	.72**	−.60**	−.48**	−.34**
Social and relational		—	−.50**	−.26**	−.17**

Note. VLS = valued living scale; NMD = neuromuscular disease; MS = multiple sclerosis; SCI = spinal cord injury; PPS = postpolio syndrome.
**$p < .001$.

as a whole, suggesting some concordance, but not complete overlap. The same pattern of associations that was found across the overall sample held when examined within each diagnostic group separately.

Discussion

The key findings from the study analyses indicate that, as predicted, the VLS items assess two related but conceptually and statistically distinct valued living domains in a sample of individuals aging with long-term health conditions: One assessing a social and relational valued living domain, and the second assessing a health and productivity valued domain. The findings also support the construct validity for the VLS subscales in that they both were associated significantly (and negatively) with measures of domains that would be expected to be correlated with the extent to which people reported they were able to live their lives consistent with their values.

The concept of successful aging is acknowledged to be multidimensional (Carver & Buchanan, 2016; Cosco et al., 2014; Tesch-Romer &

Wahl, 2017); no single measure can adequately capture this construct. Of note, the domain of valued living has been identified as an important component of successful aging by both individuals who are aging in the community (Phelan et al., 2004) as well as by individuals aging with long-term physical conditions (Molton & Yorkston, 2017). The results of the current analyses indicate that the VLS items are able to reliably and validly assess this aspect of successful living in individuals aging with long-term physical conditions.

Although maintaining one's health and ability to function is commonly viewed by aging individuals as an important aspect of successful aging (Phelan et al., 2004), limiting the definition of successful aging only to this component is particularly problematic when studying successful aging in individuals with long-term health conditions. For such individuals, it may be important to understand the extent to which they are able to live their lives consistent with their values, because this component of successful aging can be targeted for treatment. The findings from the current study, which indicate that valued living is strongly negatively associated with depressive symptoms, provides even more support for the potential of targeting this aspect of successful aging with treatments as a way to improve the overall quality of life of individuals aging with long-term physical conditions.

The VLS items assess a number of specific valued living domains, including living one's life consistent with one's values of staying healthy, feeling good, being productive, parenting, spirituality, marriage/partnership, friendship, and being a community citizen. In this sample, seven of these items loaded together into two reliable subdomains of valued living: social and relational and health and productivity domains. This finding is largely consistent with the two valued living domains identified in a sample of individuals with chronic pain (Jensen et al., 2015). Although further research is needed to determine the extent to which these items factor into these two subdomains in other populations, the findings from these analyses indicate that it is possible to use the brief VLS items to efficiently assess perceived valued living in individuals aging with long-term physical conditions.

Although we did not have any a priori hypotheses regarding possible differences in the diagnostic groups studied here with respect to differences in valued living, we found, despite being older, individuals aging with PPS reported they were more able to live their lives consistent with their values than individuals with NMD in both valued living domains. This suggests that the VLS items could be useful for understanding between-group differences in this aspect of successful aging.

An important strength of the study was that it included a large number of individuals aging with four different health conditions; both the large sample size and the variety of conditions support the reliability and generalizability of the results. However, the study also has limitations that should be considered when interpreting the results. First, it should be noted that model-fit for this measure was not perfect, in that one index of fit (RMSEA) was slightly above the typical rule-of-thumb suggested for SEM (.07 vs. .06). However, particularly in CFA, rigid adherence to cut-off values for fit indices has been criticized as too restrictive (Perry, Nicholls, Clought, & Crust, 2015), and fit indices must always be interpreted in the context of other types of validity (Hopwood & Connellan, 2010). Given that this measure has now demonstrated acceptable construct validity and internal reliability in multiple samples and populations, and is generally a good fit to our observed data, we are confident in its use despite a less than perfect RMSEA value.

Related to this, we determined that a two-factor solution was superior to a single factor solution, based on a combination of conceptual and statistical considerations. However, the high degree of correlation between the two factors of this scale (.81) suggests that the two subscales have much in common, and further analysis using a bifactor approach in a new sample might determine whether a unified "orientation towards values" factor might explain additional important variance in scale scores.

One item that described community citizenship loaded equally on both factors, and as such was deleted from the final model. This is not to imply that community citizenship activities (described here as "engaging in volunteer work, voting, or other activities to influence laws") are unimportant for positive or successful aging. Rather, this item appears to capture both productivity and social/relational goals, and so does not lend itself well to a two subscale measure. Volunteering to influence laws likely contributes to both a sense of productivity and represents meaningful social activity, especially for older adults with disabilities. Further work might determine whether this item revised into two items that might better reflect the social and productivity elements of citizenship separately for measurement.

Another limitation is the use of a cross-sectional design. As a result, it was not possible to evaluate the sensitivity of the VLS scales to changes in perceived valued living over time. In addition, the use of a cross-sectional design meant that it was not possible to evaluate any causal associations. For example, it was not possible to determine if the strong association between depression and valued living was due to depression's effects on valued living, the effects of valued living on depression, or if these two factors influenced each other. Longitudinal and experimental research (e.g., examining the impact of a treatment designed to improve valued living in a controlled

trial on perceived valued living and subsequent changes in depression) is needed to evaluate these potential causal associations. The sample was also not racially or ethnically diverse; 90% of the sample identified as White. The extent to which the current findings generalize to other racial or ethnic groups is not known. Finally, this survey study used self-report measures only. While this made it possible to obtain data from a large number of participants, some of the associations between the VLS scales and the validity criterion variables may have been due to shared method variance. It would be useful to examine the associations between the VLS scales and observational measures of patient functioning.

Despite the study's limitations, however, the findings provide important new information regarding the psychometric properties of a domain of successful aging that has been identified as important by individuals aging with long-term physical disability. The findings provide preliminary support for the VLS as a measure of this aspect of successful or positive aging. Although additional research is needed to determine the extent to which this measure of valued living is responsive to change (e.g., with treatment) and to understand the causal role that valued living plays in the function of individuals with health conditions, the findings from this study indicate that the VLS items would be a valid and reliable measure which could be used in this research.

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