

# Psychometric Validation of Adapted Inventory of Virtues and Strengths

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Jeong Han Kim<sup>1</sup> , Jae Hoon Lee<sup>2</sup>, Taryn V. Richardson<sup>1</sup> ,  
Dong-Hun Lee<sup>3</sup>, Brian T. McMahon<sup>4</sup>, Hyeyoung Kim<sup>5</sup>,  
and Rebecca Sametz<sup>1</sup> 

## Abstract

The purpose of this study was to validate the Adapted Inventory of Virtues and Strengths (AIVS). AIVS is a unique instrument that operationalizes virtues in terms of character traits that are specially designed for psychosocial adaptation and rehabilitation. Data were collected from 464 individuals with disabilities and analyzed via the combination of exploratory ( $n = 256$ ) and confirmatory analyses ( $n = 208$ ). Although the results suggest dropping some items, the original five-virtue structure was supported and confirmed via both analyses. The construct validity of AIVS was further analyzed via correlation analyses between AIVS and other measures including Values in Action Inventory of Strengths 72-Item, Satisfaction with Life Scale, Connor-Davison Resilience Scale, and General Self-Efficacy Scale. The results suggest that with continuing research to document reliability and validity, AIVS has potential in the context of rehabilitation research. Further discussion on psychometric information of AIVS and future implications were presented.

## Keywords

adjustment to disability, positive psychology, acceptance of disability, health and well-being

One of the earlier conceptualizations of psychosocial adaptation to chronic illness and disabilities (CID) is the value changes model (Dembo et al., 1975). This perspective viewed disability as a misfortune. To cope with this misfortune, an emphasis was given to four value changes including (a) appreciation of values other than those presumed lost due to disability onset; (b) subordination of physique relative to other values; (c) limiting the spread effect of disability to a possession, not a definition of personhood; and (d) transformation of disability as an asset or opportunity.

The value changes model has a natural congruence with rehabilitation philosophy. The Acceptance of Disability Scale (ADS) was one of the outcome measures developed based on this model (Linkowski, 1971). Linkowski's original ADS was a unidimensional measure of disability acceptance and included 50 items. The value changes model and development of ADS were landmarks in the growth of psychosocial adaptation research in rehabilitation counseling. However, this progress was not without shortcomings because the constructs of disability acceptance and adaptation as well as the need for an operational definition to promote value-based adaptation research were still lacking (Keany & Glueckauf, 1999). Keany (1993) argued replicability of ADS was limited due to the unclear operational definitions between factors.

As operational definitions became a critical component of scale development, various efforts (e.g., Rokeach, 1973) were made to redefine values in rehabilitation research. There

has been little progress, especially concerning psychosocial adaptation to disability, despite these efforts. To some extent, more attention began with a paradigm shift to the biopsychosocial model of disability. However, applications were limited to non-value constructs (e.g., stress and coping, resilience, life satisfaction, denial vs. acceptance, overall functioning, and post-traumatic growth). Accordingly, there remained no value-related outcome measure of psychosocial adaptation (Livneh et al., in press).

Virtue-Based Psychosocial Adaptation Model (V-PAM; Kim, McMahon, et al., 2016) extends the value changes model suggested by Wright and her colleagues. In particular, it provides an operational definition of values by providing theoretical linkage among value, virtue, and character traits to

<sup>1</sup>Texas Tech University Health Sciences Center, Lubbock, USA

<sup>2</sup>Texas Tech University, Lubbock, USA

<sup>3</sup>Sungkyunkwan University, Seoul, South Korea


<sup>4</sup>Virginia Commonwealth University, Richmond, USA

<sup>5</sup>University of California, Los Angeles, USA

## Corresponding Authors:

Jeong Han Kim, Department of Clinical Counseling and Mental Health,  
Texas Tech University Health Sciences Center, Lubbock, TX 79430, USA.  
Email: jeonghan.kim@ttuhsc.edu

Dong-Hun Lee, Department of Education, Sungkyunkwan University,  
Seoul, South Korea.

Email: dhlawrence05@gmail.com 

the understanding of disability adaptation. V-PAM explicates one's psychosocial adaptation process in terms of five virtue constructs, including Courage (i.e., ability to execute one's will to initiate an action), Integrity (i.e., ability to act in a genuine and sincere way consistent with one's moral and ethical standards, thus promotes health intra- and interpersonal relationship), Practical Wisdom (i.e., ability to use knowledge and experience to make an informed decision relevant to one's situation), Committed Action (i.e., ability to generate one's dedication to delivering a constant effort to accomplish a goal despite obstacles), and Emotional Transcendence (i.e., ability to infuse new hope into life and transform experiences into insights and renewal, even in the face of adversities). Virtue is a universal construct that describes the constant pursuit of excellence (Adams, 2006; Fowers, 2005), and these virtues can be developed via collaborative rehabilitation counseling (Kim, Hawley, et al., 2018).

### *Adapted Inventory of Virtues and Strengths*

Adapted Inventory of Virtues and Strengths (AIVS; Kim, Reid, et al., 2016) is a measure that operationalizes V-PAM virtue constructs in terms of corresponding character traits. Virtue in modern psychology—in comparison to the values one may consider important but do not necessarily practice in everyday life—refers to a person's pursuit to live upon the values that they believe to be important (i.e., values in action; Peterson & Seligman, 2004). For example, when an individual's daily practices are consistent with their values, these values evolve just as an individual's character, which represents the nature of a person. Honesty is a value that most people deem as important (i.e., honesty as a value). However, not every individual is honest. A person who continually practices honesty is an honest person, and by extension, honesty becomes part of one's character, nature, and reputation. Thus, it follows that character traits are behavioral manifestations of one's virtue.

AIVS is composed of five virtue subscales, devised in terms of a 7-point semantic differential scale. To construct AIVS, 385 adjectives and 270 corresponding antonyms were first devised and condensed into 67 items according to a review of face validity by six research teams, which also occurred on the field test. Next, the item-pool was condensed into 63 items after an expert panel review for content validity. The final 63 items were tested using exploratory factor analysis (EFA), producing 46 items with a five-factor structure. Since then, construct validity of AIVS has been further examined in relations with other measures such as resilience, life satisfaction, general and social self-efficacy, self-esteem, perceived stress, depression inventory, hope and hopelessness (Kim, 2017).

### **Purpose of the Study**

The utility and applicability of AIVS were welcomed in the field, however, there also has been follow-up research need,

concerning the replicability of AIVS factor structure established from the previous exploratory factor analyses and the examination of AIVS construct validity through the use of confirmatory approach. In addition, convergent and discriminant validity examination via correlation analysis with other outcome measures of psychosocial adaptation as AIVS is a relatively new measure in the field. Finally, the original AIVS includes 46 items and the applicability of AIVS for people with severe disabilities can be strengthened by reducing the numbers of testing items. Research questions for the present study are listed below.

### *Research Questions*

**Research Question 1 (RQ1, Study 1):** To what degree, is the original V-PAM structure derived from previous exploratory factor analyses replicable?

**Research Question 2 (RQ2, Study 2):** Is it possible to condense the numbers of AIVS items without weakening the model fit via confirmatory approach and further strengthen its applicability for people with severe CIDs?

**Research Question 3 (RQ3):** What levels of convergent and divergent (discriminant) validity does AIVS demonstrate in relation to other psychosocial adaptation outcome measures such as values in action, life satisfaction, resilience, and self-efficacy?

### **Method**

A quantitative research design that employed EFA with parallel analysis, CFA, and correlational analyses were used in this study. EFA seeks to uncover the factor structure of measured variables, while CFA seeks to determine whether the data set can conform to pre-theoretically established factor structures. The first step was to identify an optimal factor structure using enhanced EFA techniques to test replicability of AIVS factor structure. The second step was to examine AIVS construct validity using CFA methods. Although EFA helps determine the dimensionality of the instrument, it only provides evidence of a theoretical factor structure. Consequently, CFA methods using a separate sample were used to endorse the factor structure and provide further evidence of construct validity (Fabrigar & Wegener, 2012). CFA is a type of structural equation model (SEM). Validity is evaluated through the model-data fit which indicates the extent to which the postulated network of relations among variables is plausible. Anderson and Gerbing (1988) suggested that when proposing a theory, it is better to establish a model by EFA and verify the model or modify the model by CFA.

EFA and CFA, as research methods, are two integral parts of factor analysis which is a practical method to evaluate construct validity. The integration of EFA and CFA is very important for human behavior research. Construct validity of a certain measure is also examined by correlating

AIVS with measures of other relevant constructs and discussing the associations and relationships in theoretically predictable ways.

### Sample

Data were extracted from two psychosocial research studies conducted with people with disabilities. The first set included 256 college students with disabilities and the second set included 208 adults with disabilities, totaling 464 individuals with disabilities. The inclusion criteria for both samples were: (a) age of 18 to 64 years and (b) have a chronic illness (6-month or longer) and disability. Intellectual disability was addressed with cautionary note because of the lack of theoretical refinement issues relevant to intellectual disability that emphasizes cognitive and reflective functioning (e.g., Practical Wisdom, Emotional Transcendence). For the first sample set, disability student office personnel determined the severity of intellectual disability (if any) of their student members. For the second sample set, sampling was open to all members of the sampling agency, but inquired to disclose their disability diagnosis. No intellectual disability was reported. Upon receiving Institutional Review Board (IRB) approval, samples for the first study were recruited from the disability support services of 10 U.S. universities. Samples for the second study were recruited via Amazon mTurk, a crowdsourcing marketplace that facilitates participant recruitment.

Concerning gender composition, 59.9% were female ( $n = 278$ ), 39.6% were male ( $n = 184$ ), and 0.5% were transgender ( $n = 2$ ). Racial composition indicated that Non-Hispanic, White population was the majority (82.8%), followed by Asian (6.3%), African American (4.5%), Hispanic/Latino (3.4%), Multiracial (2.2%) and American Indian or Alaska Native (.4%). Congenital versus acquired disability ratio was 37.9% and 60.2%, respectively. Almost three quarters (74.1%) of the total participants reported mental and/or emotional issues associated with CID such as depression, low self-esteem, mood swings, pain/fatigue, anxiety/panic attacks, and distraction/focusing issues. There were 20.7% of participants who reported receipt of disability benefits. Functional limitation associated with disabilities include (a) work tolerance ( $n = 138$ , 29.7%), (b) self-care ( $n = 75$ , 16.2%), (c) interpersonal/acceptance ( $n = 72$ , 15.5%), (d) work skills ( $n = 79$ , 17%), (e) communication ( $n = 79$ , 17%), (f) self-direction ( $n = 53$ , 11.4%), and (g) work tolerance ( $n = 191$ , 41.2%). Sample characteristic breakdown of each dataset was further summarized in Table 1.

### Data Collection

For the first data set, an online survey was created in Survey Monkey. Next, the link was sent to the participating disability student offices for the distribution to qualifying students

with three reminders at 10, 20, and 30 days following the initial contact. The survey site for the second data set was established in Qualtrics, then advertised via the mTurk system. Both survey sites included informed consent and the research questionnaire. Furthermore, no identifying information was collected to ensure anonymity and confidentiality. Contact information of the Principle Investigator (PI) and the PI's university IRB office were provided.

### Instruments

In addition to Adapted Inventory of Virtues and Strengths, four more measures often used in the context of psychosocial adaptation and life flourishing were included in the present study to examine convergent and divergent validity of AIVS. These include Values in Action Inventory of Strengths (VIA-IS), Satisfaction with Life Scale (SWLS), Connor-Davidson Resilience Scale (CDRISC), and General Self-Efficacy Scale (GSES). Basic information of the instruments was provided below, and association between AIVS virtue constructs and these outcome measures were addressed in the discussion section.

*Adapted inventory of virtues and strengths.* AIVS (Kim, Keck, et al., 2018) is a 46-item measure with five subscales that operationalizes five virtue factors of V-PAM (i.e., courage, integrity, practical wisdom, committed action and emotional transcendence) in terms of corresponding character traits. Utilizing a 7-point semantic differential scale with pairs of opposing adjectives or short phrases anchoring the two extremes, AIVS can be administered in 10-15 minutes. To reduce response-bias, polarities of some items are reversed and the higher score of each item indicates positive self-perception on the testing item (e.g., coward—bravery). Reported alphas of AIVS in previous studies range from .70 to .90, indicating acceptable to strong reliability (Kim et al., 2014; Kim, Keck, et al., 2018; Kim, Reid, et al., 2016). The alpha coefficients of AIVS factors in the current samples ranged from .77 to .86.

*Values in action inventory of strengths 72-item.* Values in Action Inventory of Strengths 72 (VIA-IS 72) was used to examine the construct validity of AIVS as it is a gold standard in the field of positive psychology especially in terms of operationalizing six virtues in terms of 24 character traits, including appreciation of beauty, bravery, creativity, curiosity, fairness, forgiveness, gratitude, honesty, hope, humility, humor, judgment, kindness, leadership, love, love of learning, perseverance, perspective, prudence, self-regulation, social intelligence, spirituality, teamwork, and zest. According to the virtues and character strengths classification theory (Peterson & Seligman, 2004), these character strengths are categorized into six virtues, which are wisdom and knowledge, courage, humanity and love, justice, temperance, and transcendence.

**Table 1.** Demographic Characteristics ( $N = 464$ ). [AQ: 2]

	Study 1		Study 2		Total	
	Frequency	%	Frequency	%	Frequency	%
<b>Gender</b>						
Male	85	33.2	99	47.6	184	39.6
Female	170	66.4	108	51.9	278	59.9
Transgender	1	0.4	1	0.5	2	0.5
Total	256	100	208	100	464	100
<b>Race/ethnicity</b>						
White (Non-Hispanic)	218	85.1	166	79.8	384	82.8
Hispanic/Latino	13	5.1	3	1.4	16	3.4
Asian	3	1.2	26	12.5	29	6.3
Black/African American	9	3.5	12	5.8	21	4.5
American Indian or Alaska Native	1	0.4	1	0.5	2	0.4
Multiracial	10	3.9			10	2.2
No Answer	2	0.8			2	0.4
Total	256	100	208	100	464	100
<b>Disability type</b>						
Congenital	139	54.3	37	17.8	176	37.9
Acquired	108	42.2	171	82.2	279	60.2
No Answer	9	3.5			9	1.9
Total	256	100	208	100	464	100
<b>Mental/emotional issues</b>						
Yes	136	53.1	208	100	344	74.1
No	116	45.3	0		116	25
No Answer	4	1.6			4	0.9
Total	256	100	208	100	464	100
<b>Functional limitation</b>						
Mobility	99	38.7	39	18.80%	138	29.7
Self-Care	55	21.5	20	9.6	75	16.2
<b>Interpersonal skills/acceptance</b>						
Work Skills	54	21.1	18	8.7	72	15.5
Communication	62	24.2	17	8.2	79	17
Self-Direction	69	27	10	4.8	79	17
Work/Physical Tolerance	47	18.4	6	2.9	53	11.4
	93	36.3	98	47	191	41.2
<b>Disability benefit</b>						
Yes	76	29.7	20	9.6	96	20.7
No	177	69.1	188	90.4	365	78.7
No Answer	3	1.2			3	0.6
Total	256	100	208	100	464	100

The original VIA-IS developed by Peterson and Seligman (2004) includes 240 items, taking 1 to 2 hr to complete the survey. In the present study, the 72-item version was used due to participants' stamina issues associated with chronic health conditions. As VIA-IS only provide 24-character strengths subscales score without a virtue subscale, in the present study, 24-character strengths scores were purposely computed to produce six virtue scores. Reported alphas of VIA-IS 72 ranges from .60 to .87.

**Satisfaction with Life Scale.** Satisfaction with Life Scale (SWLS; Diener et al., 1985) is a five-item scale measured on a 7-point Likert-type scale (1 = *strongly disagree*, 7 = *strongly agree*),

assessing subjective satisfaction of life. Higher scores indicate better life satisfaction. Alpha coefficients in previous studies fall between  $\alpha = .79-.89$ , indicating very good internal consistency (Pavot & Diener, 2008). Test-retest reliability coefficients were found between  $\alpha = .54-.84$ . SWLS is significantly related to a single-item global life satisfaction measure indicating convergent validity (van Beuningen, 2012). The alpha coefficient in the present study for two data sets was .90 and .92.

**Connor-Davison Resilience Scale.** Connor-Davison Resilience Scale (CD-RISC; Connor & Davidson, 2003) contains 25 items that operationalize one's resilience (e.g., able to adapt

to change) utilizing a 5-point rating scale (0 = *not true at all*, 4 = *true nearly all of the time*). The total score of CD-RISC ranges from 0 to 100, a higher score indicating greater resilience. Normative studies, including factor analyses, indicated that CD-RISC is a reliable and valid measure with alpha coefficient generally over .80. In the present sample, the alpha was .92 for both data sets.

**General Self-Efficacy Scale.** General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995) is a 10-item measure and operationalizes self-efficacy—an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments (Bandura, 1997)—utilizing a 4-point rating scale (1 = *not at all true*, 4 = *exactly true*). The total score of GSE ranges from 10 to 40, with a higher score indicating stronger self-efficacy. Reported alphas of GSE in the previous study falls between .76 and .90, indicating good reliability. GSE scores were only presented in the second data set, and the alpha coefficient in the present sample was .90.

### Data Analysis

Concerning the missing cases for the first sample set (Study 1), the replacement with the series mean procedure was applied for the cases that responded to more than 70% of the items for all instruments. For the first sample set, 327 students participated and, after the data cleaning procedure, 256 cases were retained (78% of response rate). Concerning the second sample set (Study 2), 215 individuals with disabilities were agreed with participation, but, for seven participants who did not completed the survey in its entirety, listwise deletion was applied to address missing cases as seven cases was very small number and there was no significant value to use mean-replacement method. All variables then were inspected in terms of distribution, central tendency, and dispersion of the data with skewness ( $\leq |2.0|$ ) and kurtosis ( $\leq |4.0|$ ) at a level not exceeding the standard values.

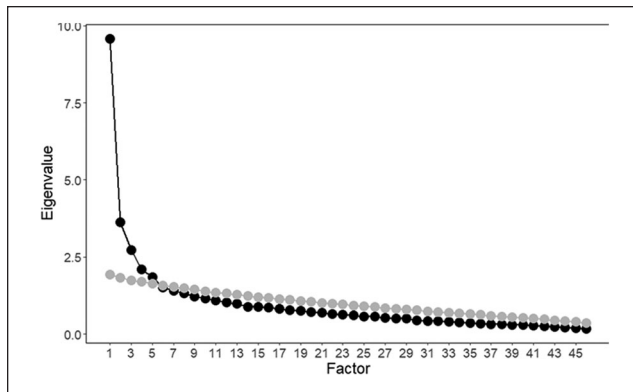
Further data analysis proceeded in three stages. First, EFA followed by the parallel analysis (Study 1) identified the number and nature of latent constructs (factors) that demonstrate the associations (i.e., correlations) among the initial pool of 46 items. Next, CFA (Study 2) assessed the final set of 25 items selected from the preceding EFA in terms of (a) item reliability, (b) alignment with hypothesized factor structure, and (c) discriminant validity. The data from the first sample ( $n = 256$ ) were utilized for EFA providing the basis for specifying a CFA model that was fit to the data from the second sample ( $n = 208$ ; see Fabrigar et al., 1999). EFA and CFA analyses were completed using *R* (R Core Team, 2013) and *Mplus* 7.0. Finally, correlation analyses between AIVS virtue factors and measures of life

satisfaction, resilience, values in action, and self-efficacy were completed using SPSS 25.

**Study 1: Exploratory factor analysis.** Replicability of factors was examined by the maximum likelihood (ML) factor analysis paired with parallel analysis, in addition to more conventional methods—scree test (Cattell, 1966) and eigenvalue greater than 1 (K1) criterion (Kaiser, 1960). Parallel analysis (Hayton et al., 2004) typically generates several random data sets and then compares the average eigenvalues calculated from the random data against those from real data. Factors that produce a *real* eigenvalue equal to or less than a *random* (average) eigenvalue are considered to explain no more than sampling variability in the real data and they are excluded. Accordingly, only factors that account for the “meaningful” variance of the data being examined are retained (Humphreys & Montanelli, 1975). The validity of parallel analysis has been evidenced in various studies—it consistently outperforms other retention techniques (e.g., Thompson & Daniel, 1996).

In the current study, parallel analysis involving 46 random eigenvalues averaged more than 200 random data sets. These were compared with 46 real eigenvalues (i.e., 46 items in the initial pool) where the first random (average) eigenvalue was compared to the first real eigenvalue, the second random eigenvalue to the second real eigenvalue, and so on. Once the number of factors to be retained was decided, an EFA model was fitted to unfold the nature of the extracted factors and their indicators (i.e., items). Those items with a factor loading equal to or greater than 0.40 were considered to be representative of the corresponding factor (Backhaus et al., 2006).

**Study 2: Confirmatory factor analysis.** A CFA model was developed based on the findings from the preceding EFA (i.e., 5 factors/32 selected items). The analysis proceeded as follows. First, factor loadings were evaluated as a test for item reliability. An item that had a standardized loading (in absolute value) less than 0.50 was considered to lack reliability because 75% ( $= 1 - 0.50^2$ ) or more variance of responses (Kline, 2005). Second, model fit was evaluated in terms of both absolute and comparative fit as measured by relative/normed model chi-square ( $\chi^2/df$ ), root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), comparative fit index (CFI), and Tucker–Lewis index (TLI). In general, acceptable  $\chi^2/df$  values range from 2 to 5 (Tabachnick & Fidell, 2007), while lower values indicate a better fit. RMSEA/SRMR values equal to or less than .08 (Browne & Cudeck, 1992), and a CFI/TLI value equal to or greater than .90 (Hoyle & Panter, 1995) are deemed acceptable, though lower RMSEA/SRMR values ( $\leq .06$ ) and higher CFI/TLI values ( $\geq .95$ ) are generally preferred (Hu & Bentler, 1999).



**Figure 1.** Eigenvalues from real data and random data.  
Note. Black dots represent eigenvalues obtained from real data, and red dots represent eigenvalues averaged across 200 random data sets.

Finally, the discriminant validity of the instrument was scrutinized. Factor correlations less than .85 were considered to support discriminant validity for the set of factors (Kline, 2005). An empirical test was then performed comparing the hypothesized CFA model against a series of nested models where the factor correlations were constrained to 1 each in turn (i.e., perfect collinearity; Anderson & Gerbing, 1988). Significant results of the likelihood-ratio test (LRT) indicated that the hypothesized model is favored over the alternative models, thus discriminant validity can be inferred.

**Correlation analyses.** Construct validity “the extent to which a set of items reflect a content domain, is an essential component of scale development and refinement (DeVellis, 2012, p. 59). The present study employed bivariate correlation analysis to establish validity based on the relationship between AIVS subscales and SWLS, VIA-IS 72, CD-RISC, and GSE.

## Results

### Study 1: Exploratory Factor Analysis

Parallel analysis suggested that five factors are optimal, as the first five eigenvalues from the real data (9.57–1.85) are larger than the parallel, average eigenvalues derived from 200 random data sets (1.92–1.63) (see Figure 1). Also, a stiff “cliff” between the fifth and sixth (real) eigenvalues ( $\Delta = 0.35$ ) followed by a shallow “scree” provided additional support for five factors. K1 criterion suggested more than five factors. In fact, 12 factors had an eigenvalue greater than 1. Nonetheless, K1 criterion serves as a somewhat *upper bound* for factor retention to mitigate the risk of overfactoring (Hayton et al., 2004). Thus, it was finally decided to reserve five factors.

The 5-factor EFA solution, using via maximum likelihood (ML) estimation and quartimax oblique rotation, the

5-factor EFA solution was inspected to identify salient indicators (items) for each factor. From the 46 items in the initial pool, 14 had factor loadings smaller than 0.40 and thus were excluded from further analyses. Table 2 shows the 32 items reserved at this exploratory stage, which characterize the following five constructs (factors): *Committed Action*, *Emotional Transcendence*, *Practical Wisdom*, *Integrity*, and *Courageousness*.

### Study 2: Confirmatory Factor Analysis

In a preliminary CFA, seven items were found to have an absolute standardized loading less than 0.50 and they were further removed, resulting in a final set of 25 items chosen for inclusion in the instrument. Figure 2 depicts the factor structure hypothesized in the final CFA model. The factor loadings of all 25 items were significant at .001 alpha level (see Table 2). In terms of standardized loading, the items in the *Integrity* subscale provided greater predictability (4 items; median = .71, range = .66–.79) followed by *Committed Action* (9 items; median = .70, range = .62–.85), *Courageousness* (4 items; median = .68, range = .57–1.0), *Emotional Transcendence* (4 items; median = .67, range = .61–.70), and *Practical Wisdom* (4 items; median = .57, range = .54–.57) subscales. The  $\chi^2/df$  of 1.76 = (379.01/215) indicated a good fit of the final CFA model. Both the RMSEA values of .06 (90% confidence interval = .05–.70) and SRMR value of .07 suggested a close fit of the model to the data. In addition, the model’s comparative fit was satisfactory—CFI = .94 and TLI = .91. CFA Factor Structure is illustrated in Figure 2.

Table 2 presents the correlations between the five constructs. All the factor correlations were smaller than .85, suggesting adequate discriminant validity of the instrument (see Kline, 2005). Significant LRT results ( $\Delta\chi^2 = 10.32-81.78$ ,  $\Delta df = 1$ , all  $p < .001$ ) provided additional support for the discriminant validity. One exception involved diminished discrimination between the *Emotional Transcendence* (median = .67, range = .61–.70), and *Practical Wisdom* constructs ( $r = .93$ ;  $\Delta\chi^2 = 1.77$ ,  $\Delta df = 1$ ,  $p = .18$ ). In summary, the CFA results support AIVS’ ability to measure virtues and character traits in a reliable and valid manner for persons with disabilities.

### Correlation Analysis

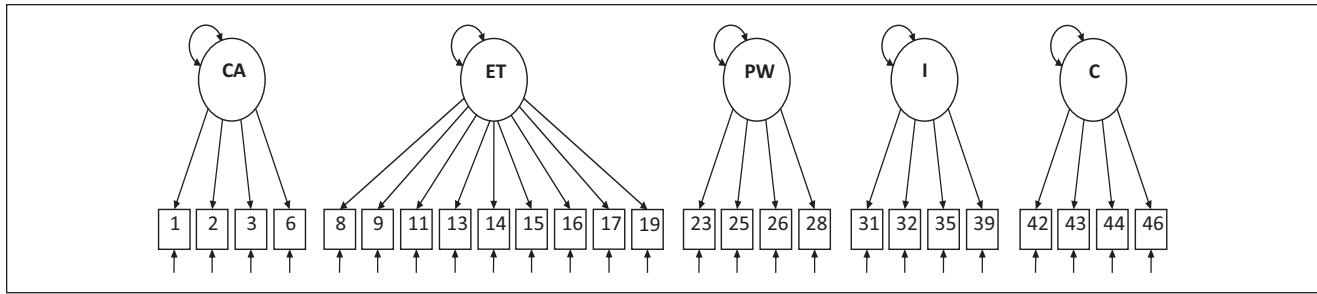
The construct validity of the revised AIVS after the CFA was established by correlating AIVS subscale scores to other relevant measures, including VIA-IS 72, SWLS, CD-RISC, and GSE. AIVS subscale scores shows somewhat lower correlation with the life satisfaction measure ( $1.9 < r < .40$ ) and moderate correlation with resilience, general self-efficacy, and most VIA virtue factors ( $.3 < r < .7$ ). A strong correlation (i.e., alpha coefficient over .7) was

**Table 2.** Factor Loadings from Exploratory and Confirmatory Factor Analyses. **[AQ: 3]**

Item		Exploratory factor analysis					Confirmatory factor analysis			
		F1	F2	F3	F4	F5	Estimate	SE	Standardized	
1	Lazy—Hardworking	<b>0.57</b>	0.17	0.00	0.00	0.00	1.03***	0.11	0.64	<i>Committed Action</i>
2	Self-disciplined—Undisciplined	<b>0.52</b>	0.11	-0.12	0.00	0.00	0.95***	0.11	0.62	
3	I give up easily—Persistent	<b>0.59</b>	0.13	0.00	0.00	0.16	1.24***	0.11	0.76	
4	Unscholarly—Scholarly	<b>0.45</b>	0.00	0.26	0.00	0.00	—	—	—	
5	Uninterested—Interested	0.35	0.21	0.11	0.00	0.00	—	—	—	
6	I appreciate excellence—I disregard excellence	<b>0.63</b>	0.00	0.15	0.00	0.00	1.36***	0.11	0.85	
7	Perseverant—I quit easily	0.29	0.32	0.23	0.00	0.00	—	—	—	<i>Emotional Transcendence</i>
8	Hateful—Loving	0.00	<b>0.54</b>	0.15	0.13	0.00	0.83***	0.08	0.70	
9	I believe life has a meaning—I believe life is meaningless	0.16	<b>0.67</b>	-0.21	0.00	0.00	1.12***	0.12	0.62	
10	Unforgiving—Forgiving	0.00	<b>0.53</b>	0.12	0.00	-0.16	—	—	—	
11	Energetic—Lifeless	0.24	<b>0.45</b>	0.00	-0.13	0.20	0.91***	0.10	0.61	
12	I disregard beauty—I admire beauty	-0.13	0.35	0.18	0.00	0.00	—	—	—	
13	Optimistic—Pessimistic	0.16	<b>0.47</b>	0.21	0.00	0.00	1.19***	0.13	0.63	<i>Practical Wisdom</i>
14	Thankful—Unthankful	0.00	<b>0.67</b>	-0.16	0.00	0.00	0.91***	0.08	0.69	
15	Affectionate—Unaffectionate	0.00	<b>0.56</b>	0.14	0.00	0.00	1.04***	0.09	0.70	
16	Grateful—Ungrateful	0.00	<b>0.54</b>	0.00	0.13	0.00	0.83***	0.08	0.65	
17	Unenthusiastic—Enthusiastic	0.13	<b>0.52</b>	0.11	-0.12	0.15	1.09***	0.10	0.69	
18	Unspiritual—Spiritual	0.00	<b>0.42</b>	-0.10	0.20	0.00	—	—	—	
19	Caring—Uncaring	0.00	<b>0.47</b>	0.00	0.25	0.00	0.90***	0.09	0.67	
20	Curious—Apathetic	0.14	0.00	0.37	0.00	0.15	—	—	—	
21	Unfunny—Funny	0.00	0.12	0.29	0.35	0.27	—	—	—	
22	Uninventive—Inventive	0.13	0.00	<b>0.49</b>	0.00	0.19	—	—	—	
23	I am receptive to new ideas—I am not receptive to new ideas	0.00	0.18	<b>0.45</b>	0.00	-0.12	0.85***	0.10	0.57	
24	Biased—Unbiased	0.12	-0.11	<b>0.41</b>	0.16	0.00	—	—	—	
25	Prejudiced—Valuing Equality	0.00	0.00	<b>0.45</b>	0.24	-0.18	0.81***	0.10	0.56	
26	Open minded—Close minded	0.00	0.00	<b>0.74</b>	0.00	0.00	0.86***	0.10	0.57	
27	Playful—Serious	-0.27	0.21	0.39	0.00	0.24	—	—	—	
28	Lighthearted—Somber	-0.12	0.26	<b>0.43</b>	0.11	0.00	0.81***	0.11	0.54	
29	Humorous—Humorless	0.00	0.00	0.29	0.19	0.11	—	—	—	
30	Creative—Uncreative	0.00	0.00	<b>0.50</b>	0.00	0.11	—	—	—	
31	Honest—Dishonest	0.00	0.00	0.00	<b>0.67</b>	0.00	0.80***	0.08	0.69	<i>Integrity</i>
32	Unfair—Fair	0.00	0.20	0.16	<b>0.41</b>	0.00	0.90***	0.08	0.74	
33	Modest—Arrogant	0.15	0.17	0.00	0.21	-0.36	—	—	—	
34	Sensible—Nonsensical	0.25	0.22	0.00	0.24	0.00	—	—	—	
35	Trustworthy—Untrustworthy	0.00	0.00	0.00	<b>0.66</b>	0.00	1.00***	0.08	0.79	
36	Boastful—Humble	0.16	0.12	0.00	0.13	-0.37	—	—	—	
37	Imprudent—Prudent	0.30	0.00	0.00	0.31	-0.11	—	—	—	
38	Incautious—Cautious	0.00	0.00	-0.17	0.38	-0.27	—	—	—	
39	Loyal—Disloyal	-0.10	0.00	0.00	<b>0.67</b>	0.16	0.80***	0.08	0.66	
40	Careless—Careful	0.31	0.00	0.00	<b>0.49</b>	-0.16	—	—	—	
41	Impulsive—Self-controlled	0.38	0.00	-0.17	0.33	-0.21	—	—	—	
42	Bold—Timid	0.00	0.00	0.13	0.00	<b>0.75</b>	0.93***	0.13	0.57	<i>Courage</i>
43	Submissive—Commanding	0.00	0.00	-0.23	0.00	<b>0.68</b>	0.96***	0.15	0.64	
44	Courageous—Cowardly	0.18	0.17	0.11	0.00	<b>0.46</b>	1.60***	0.15	1.03	
45	Fearful—Brave	0.26	0.13	0.00	0.00	0.37	—	—	—	
46	Follower—Leader	0.21	0.00	0.00	0.00	<b>0.62</b>	1.13***	0.15	0.72	
AIVS CFA Factor Correlation										
	<b>Factor</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	—	—	—	—
	<i>Committed Action</i>	1.00	—	—	—	—	—	—	—	—
	<i>Emotional Transcendence</i>	0.79***	1.00	—	—	—	—	—	—	—
	<i>Practical Wisdom</i>	0.71***	0.93***	1.00	—	—	—	—	—	—
	<i>Integrity</i>	0.56***	0.69***	0.78***	1.00	—	—	—	—	—
	<i>Courageous</i>	0.52***	0.50***	0.53***	0.31***	1.00	—	—	—	—

Note. The salient factor loadings (i.e., > 0.40) of the representative items for each construct are given in boldface. AIVS = adapted inventory of virtues and strengths; CFA = confirmatory factor analysis.

\*p < .05. \*\*p < .01. \*\*\*p < .001. **[AQ: 4]**



**Figure 2.** Factor structure of final CFA model.

Note. In the CFA model, 25 AIVS items (boxes) are loaded on five virtue factors (circles), as indicated by the single-headed arrows between them. The single-headed arrow attached to each box represents variance due to measurement error. The numbers in boxes indicate the item numbers in original 46-item AIVS. The model also included correlations between each pair of the five virtue factors but they are omitted in this figure for the sake of parsimony. CFA =; CA = committed action; ET = emotional transcendence; PW = practical wisdom; I = integrity; C = courageousness.

observed between AIVS Committed Action and VIA-IS 72 Courage ( $r = .75, p < .01$ ) as well as AIVS Emotional Transcendence and VIA-IS 72 Humanity ( $r = .74, p < .01$ ) and Transcendence ( $r = .75, p < .01$ ). A negative correlation was found between AIVS Courage and VIA-IS 72 Temperance factors ( $r = -.029$ ). Correlation matrix is provided in Table 3.

## Discussion

### Comparison Between the Original AIVS and the Revised

The original AIVS' five-factor structure was replicable, but total items were condensed to 32 items after the EFA replicability examination, and further reduced to 25 items with a good-fit in all indicators, including Committed Action from 7 to 4 items, Emotional Transcendence from 12 to 9 items, Practical Wisdom from 11 to 4 items, Integrity from 11 to 4 items, and Courage from 5 to 4 items. The result was a more noticeably, efficient instrument saving assessment time and related costs. Items deleted are summarized in Table 2. Of importance, this was achieved while increasing the fit and construct validity of the model, which is helpful for people with severe health issues.

Although a substantial body of literature supports the factor structure achieved herein, careful adherence to factor analytic guidelines necessitated the removal of previously salient factors. For example, Stuntzner and Dalton (2015) suggested that forgiveness may be beneficial in reducing negative emotions. Thus, forgiveness—which reflects one's capacity to alleviate negative emotions—was included in the initial item pool under the Emotional Transcendence with a factor loading of 0.53. But other items that strongly loaded on this same factor may have overlapping interpretations in terms of individual character assets (e.g., loving), thus resulting in an overall non-significant factor in the CFA.

In addition, one issue concerning discriminant validity between AIVS factors identified from CFA is that the correlation between Practical Wisdom and Emotional Transcendence is high (.93). In general, the correlations below .85 indicate a discriminatory nature between factors. Therefore, the convergent and divergent validity of AIVS should and will be further confirmed by future research with more diverse samples. However, because AIVS is a relatively new instrument and one might expect virtues to be highly correlated from a theoretical perspective, removed AIVS items may still be used as filler items until further confirmation is achieved.

### Construct Validity Estimate Between AIVS Virtue Subscales

According to Campbell and Fiske (1959), convergent validity is the degree of confidence that a construct is well measured by its indicators, whereas discriminant validity is the degree to which measure of different traits are unrelated. Although, it is not always possible to define convergent-divergent validity in terms of specific cutoff; a general consensus is that moderate correlation ( $.31 < r < .70$ ) indicates adequate convergent validity and high correlation ( $.70 < r < .9$ ) is interpreted as excellent convergent validity. Factor correlation coefficient below .3 is viewed as constructs share both similarity and dissimilarity at the same time, indicating discriminant validity (Post, 2016). Convergent validity is expected between AIVS factors in that they are designed to measure the construct of life flourishing, thus theoretically similar. As summarized in Table 2, *AIVS Factor Correlation section*, results show adequate to excellent ( $.31 < r < .79$ ) convergent validity in most cases of comparisons. One exceptional case is the high factor correlation (.93) between Emotional Transcendence and Practical Wisdom, lacking discriminant validity between factors (i.e., correlation alpha over .85; Kline, 2011).



**Table 3.** Correlation Matrix.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
01. AIVSCA	1	—	—	—	—	—	—	—	—	—	—	—	—	—
02. AIVSET	.663**	1	—	—	—	—	—	—	—	—	—	—	—	—
03. AIVSPW	.460**	.693**	1	—	—	—	—	—	—	—	—	—	—	—
04. AIVSIT	.520**	.545**	.512**	1	—	—	—	—	—	—	—	—	—	—
05. AIVSCO	.379**	.387**	.367**	.162*	1	—	—	—	—	—	—	—	—	—
06. SWLS	.304**	.404**	.186**	0.131	.284**	1	—	—	—	—	—	—	—	—
07. RIS	.627**	.675**	.500**	.342**	.518**	.567**	1	—	—	—	—	—	—	—
08. GSE	.645**	.583**	.506**	.341**	.522**	.345**	.736**	1	—	—	—	—	—	—
09. VIAWI	.623**	.551**	.553**	.402**	.435**	.293**	.571**	.617**	1	—	—	—	—	—
10. VIACO	.750**	.690**	.556**	.444**	.478**	.423**	.712**	.682**	.731**	1	—	—	—	—
11. VIAHO	.513**	.736**	.624**	.448**	.389**	.394**	.633**	.596**	.632**	.651**	1	—	—	—
12. VIAJU	.524**	.605**	.617**	.515**	0.116	.234**	.424**	.411**	.512**	.557**	.693**	1	—	—
13. VIATE	.500**	.392**	.361**	.334**	-0.029	.137*	.324**	.338**	.459**	.503**	.419**	.637**	1	—
14. VIATR	.601**	.752**	.547**	.412**	.359**	.491**	.698**	.530**	.611**	.719**	.710**	.594**	.448**	1

Note. AIVSCA = IVS committed action; AIVSET = AIVS emotional transcendence; AIVSPW = AIVS practical wisdom; AIVSIT = AIVS integrity; AIVSCO = AIVS courage; WL = satisfaction with life; RIS = resilience; GSE = General Self-Efficacy Scale; VIAWI = VIA-IS wisdom, VIACO = VIA-IS courage; VIAJU = VIA-IS justice; VIATE = VIA-IS temperance; VIATR = VIA-IS transcendence.

\*Correlation is significant at the .05 level (two-tailed). \*\*Correlation is significant at the .01 level (two-tailed).

From a theoretical perspective, relatively higher correlation between AIVS Practical Wisdom and Emotional Transcendence indicates the need of theoretical refinement of the model. In terms of virtue ethic, the theoretical basis of V-PAM, practical wisdom is viewed as a master virtue. It is a status that an individual can reach through a constant practice of virtue in various different setting, thus acquired mastery to apply virtue situationally appropriate. According to Masala and Webber (2016), it means an individual who is able to cultivate various virtues through participation in several practices. This mastery prepares an individual for future growth.

In AIVS, however, the practical wisdom was reconceptualized in terms of cognitive function that enables situational decision making relevant to behavioral (e.g., courage and committed action), relational (e.g., integrity), and emotional and reflective aspects (e.g., emotional transcendence) of human functioning. Detail discussion on the theoretical aspects of V-PAM goes beyond the scope of this article (see Kim et al., 2016), but the results show the need for theoretical refinement and distinction between Emotional Transcendence and Practical Wisdom. **[AQ: 5]**

One weak correlation between AIVS Integrity and Courage (.162) is another important finding. According to virtue ethic, courage and integrity are similar in that both are contributing to one's virtuous growth, however, the dissimilarity is also obvious from theoretical standpoint as courage is an executive virtue, an example of "strength of will" (Hinman, 2013), while integrity is a moral and static virtue (i.e., relatively lacking in movement and action). The weak correlation between courage and integrity is also can be interpreted in relation to the function of autonomy in

lowering social and interpersonal well-being (Miller & Kim, 2016). However, it is important to note that the correlation in Table 3 was computed based on scale scores rather than factor scores (Table 2 factor correlation matrix), thus it carries relatively more estimation errors. **[AQ: 6]**

### *AIVS Construct Validity via Correlation Analyses With Other Measures*

To examine AIVS convergent and divergent validity, a series of correlation analyses between AIVS and other measures including Values in Action Inventory of Strengths (VIA-IS) 72-item version, Satisfaction with Life Scale, Connor-Davidson Resilience Scale, and General Self-Efficacy Scale were performed.

*AIVS and values in action inventory of strengths.* Similarity between AIVS and VIA-IS in regard that both are operationalizing virtue in terms of character traits and designed to examine life flourishing in the context of personal growth is demonstrated by excellent and adequate correlations between subscales of two instruments. Strong correlations demonstrate convergent validity between (a) AIVS Committed Action and VIA-IS Courage (.75), and (b) between AIVS Emotional Transcendence and VIA-IS Humanity (.736) and Transcendence (.752). Adequate correlations for convergent-divergent validity ( $.3 < r < .7$ ) were also found in most of the other comparisons.

AIVS and VIA-IS, however, are also different indicated by low and negative correlations found between AIVS Courage and VIA-IS Justice (.116) and Temperance (-.029). First of all, between VIA-IS Justice and AIVS Courage

factor, Justice in VIA-IS is defined as a “civic strengths that underlie healthy community life” (Peterson & Seligman, 2004, p. 30). In AIVS, however, civic and communal aspects of one’s life is conceptualized as Integrity (Kim, McMahan, et al., 2016). VIA-IS Justice and AIVS Courage are also different in terms of character traits that operationalize the construct. VIA-IS Justice virtue is conceptualized in terms of fairness, leadership, and teamwork. In AIVS, fairness is an Integrity item and leadership is a Courage item. There is no exact matching character trait for the VIA-IS teamwork, but it can be viewed in relation to AIVS Integrity items of trustworthy, sensible, and loyal. Thus, the difference is supported by the low correlation between VIA-IS Justice and AIVS Courage, but theoretical similarity is supported by the moderate correlation between VIA-IS Justice and AIVS Integrity (.515).

Negative correlation between AIVS courage and VIA-IS Temperance is another evidence of divergent validity of AIVS in comparison to VIA-IS. VIA-IS Temperance factor is comprised of character strengths of forgiveness, humility, prudence, and self-regulation and these traits are dispersed across AIVS factors. In AIVS, prudence is sorted under Integrity, and self-regulation is classified under Committed Action. This aspect is supported by moderate correlations between VIA-IS Temperance factor and AIVS Committed Action (.50), and Integrity (.334). Furthermore, Temperance in VIA-IS is defined as a “strength to protect against excess” (Peterson & Seligman, 2004, p. 30). Simply striving to be more patient to protect against excess is not viewed as a constructive way to cope with disability in V-PAM. In other words, Courage is an “action” factor in AIVS, while Temperance in VIA-IS is a “patience” factor. And, two VIA-IS Temperance items (forgiveness and humility) were dropped from CFA, thus there is no matching AIVS construct to VIA-IS Temperance, possibly resulting in negative correlation. In sum, these results support convergent-divergent validity aspects of AIVS in comparison to VIA-IS.

*AIVS and Satisfaction with Life Scale.* Virtuous life is translated into a flourishing and thriving life in modern psychology (Fowers, 2005). Although both are often addressed as outcome measures in psychosocial adaptation study, they are not identical from a theoretical perspective. Flourishing emphasizes to have optimal body functioning. Flourishing individuals experience positive emotion shows enthusiasm for their life and actively contribute to developing their life (Keys, 2007). In rehabilitation context especially with a chronic health and disability condition, it is viewed as having constructive human functioning even after the onset of disability.

There also have been various definitions for the life satisfaction. According to Veenhoven (1996), life satisfaction is the degree to which a person positively evaluates the overall quality of life as a whole.” In Buetell (2006), it is

defined as “an overall assessment of feeling and attitudes about one’s life at a particular point in time ranging from negative to positive.” Life satisfaction is similar to flourishing life in that various research results revealed positive correlation between life satisfaction and positive personal growth (Sun & Sheck, 2011), but also dissimilar in that flourishing places more emphasis on a state of optimal and constructive mental health and living rather than merely feeling good (Satici et al., 2013). Fowers (2005) stated “. . . a good life has to be broader and richer than individual outcomes such as subjective well-being, creativity, productivity, and longevity” (p.10).

From a theoretical standpoint of V-PAM, Courage, Practical Wisdom and Integrity is the precursor of the function of Committed Action and Emotional Transcendence (see Kim, McMahan et al., 2016). Courage is a virtue to determine a certain action to cope with life adversity. Once a decision is made, an individual is encouraged to look through and understand their unique life situation (i.e., Practical Wisdom) with the consideration of inter- and intrapersonal relationship (i.e., Integrity). An individual delivers actions established based on this contextual understanding (i.e., Committed Action), and any challenge during the process of accomplishing goals is transformed to infuse hope and new insight for future growth (i.e., Emotional Transcendence). Thus, Committed Action and Emotional Transcendence are more involved in future and ideal life that an individual is imagining, and other factors of Courage, Practical Wisdom and Integrity are more actively used to understand situational barriers that needs to be improved. This is a critical consciousness from a social psychology perspective to improve awareness, and critical consciousness is an anxiety provoking in its nature (Pitner & Sakamoto, 2005). This similarity and difference between life satisfaction and life flourishing is reflected in adequate correlation between SWLS and AIVS Committed Action and Emotional Transcendence, and weak correlations between SWLS and AIVS Courage, Practical Wisdom and Integrity factors.

*AIVS and self-efficacy and resilience measures.* Unique aspects of the virtue construct are also reflected in the correlations between AIVS and measures of resilience and self-efficacy. Resilience is often reported in posttraumatic stress literature, and, in rehabilitation, it refers to one’s ability to adapt and navigate through challenges in the face of a chronic illness and disability (Kim, Hawley, et al., 2018). Resilience construct is often examined in rehabilitation counseling context to explain why some people do not succumb even under overwhelming situation, but rather more forward with greater success. Resilience is an important factor concerning positive emotions, purpose of life, impulse control, humor and self-acceptance, and supportive relationship (Kim, McMahan, et al., 2018; Neenan, 2009; Wu et al., 2013). Self-efficacy refers to one’s belief and confidence in his or

her capacity to execute behavior to achieve a goal (Bandura, 1997). According to Rogowska and colleagues (2020), self-efficacy also refers to one's judgment on the capability of mastering a situation and plays an important role in exerting behavioral effort via cognitive process. Self-efficacy refers to individuals' belief in their capacity to execute behaviors (Bandura, 1997). Thus, it is an important concept to the understanding what make an individual become able to act, and it has been viewed as a significant predictor of general well-being. In that virtue is defined as values in action relevant to overall well-being (Milam et al., 2019), there is theoretical relationship between two constructs.

Despite such a theoretical similarity between resilience, self-efficacy and virtue in relation to psychosocial adaptation after the onset of disabilities, the nature of resilience and self-efficacy constructs are relatively more static (i.e., less behavioral) in comparison to virtue. According to Livneh and Martz (2016), virtue perspective goes beyond one's belief or perception. It adds an action-oriented component that emphasizes the importance of behavior efforts and will-power to grow from a disability experience. The results (i.e., mostly moderate correlations ranging from .506 to .675) indicate that constructs of virtue, resilience, and self-efficacy are similar in that they are all common outcome measures of adaptation to illness and disability, yet different in terms of the nature of constructs (i.e., relatively more action-oriented), thus complementing each other.

## Limitation

Concerning the integration of EFA and CFA in a cross-validation study when the data set is sufficiently large enough, there is a general consensus that cases can be randomly divided into two different set, one set to be analyzed by EFA and the other part by CFA. In the present study, however, two samples were not combined and no random splitting procedure was applied. Rather, EFA and CFA were independently employed with a different sample set. It was because the primary purpose of the study is to examine the replicability of EFA results and to test the applicability of EFA result in a different sample set via CFA. While a general integration method between EFA and CFA is more effective in improving generalizability of the result, the current approach also meets the need of the present study in that no artificial intervention of the data is applied in testing applicability of the result (Brown, 2015). However, it is important to note that it is not an often used cross-validation standard, thus readers use the result of the present study with a cautionary note.

## Conclusion

Construct validation of AIVS was empirically established. Face and content validity have been strictly followed

ensured through the item development process (see Kim, Keck, et al, 2018). Using a combination of EFA with parallel analysis and CFA procedures paired together, AIVS was reduced to 25 items with an improvement of model-fit. Convergent and divergent validity were also inspected via correlation analyses by using both factor and scale scores. The results support that virtue in comparison to other constructs often used in the context of rehabilitation counseling such as self-efficacy, resilience, life satisfaction and values in action adds unique values to the understanding of psychosocial adaptation to chronic illness and disability.

Earlier in rehabilitation literature, the foundation of psychosocial adaptation research was established. However, clinical applications floundered because changes in values do not translate automatically to changes in lifestyle or behavior. V-PAM and AIVS have moved the needle by strengthening the behavioral aspects of adaptation, thus allowing for their measurement. Such instruments as V-PAM and AIVS fit nicely into some theoretical counseling approaches which have gained enormous momentum in the past two decades. These include but are not limited to integrative and positive psychology approaches, contemplative and mindfulness approaches, motivational interviewing, acceptance and commitment approaches, and behavioral activation. The validation of Virtue-Based approaches is far from complete, but the efficiency and integrity of these constructs and their assessment call for even greater investment going forward.

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## ORCID iDs [GQ: 3]

Jeong Han Kim  <https://orcid.org/0000-0001-8377-6151>

Taryn V. Richardson  <https://orcid.org/0000-0003-2387-5478>

## References

- Adams, R. M. (2006). *A theory of virtue: Excellence in being for the good*. Oxford University Press.
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*(3), 411–423. <https://doi.org/10.1037/0033-2909.103.3.411>
- Bachhaus, K., Erichson, B., Plinke, W., & Weiber, R. (2006). *Multivariate analysis methods: An application-oriented introduction*. Springer.

- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). Guilford Press.
- Browne, M. W., & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods and Research*, 21(2), 230–258. <https://doi.org/10.1177/0049124192021002005>
- Buetell, N. J. (2006). Life satisfaction. *Sloan Network Encyclopedia Entry*. [https://www.researchgate.net/publication/259486067\\_Life\\_Satisfaction\\_in\\_Relation\\_to\\_Work\\_and\\_Family](https://www.researchgate.net/publication/259486067_Life_Satisfaction_in_Relation_to_Work_and_Family)
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56(2), 81–105. <https://doi.org/10.1037/h0046016>
- Cattell, R. B. (1966). The scree-test for the number of factors. *Multivariate Behavioral Research*, 1(2), 245–276. [https://doi.org/10.1207/s15327906mbr0102\\_10](https://doi.org/10.1207/s15327906mbr0102_10)
- Connor, K. M., & Davidson, J. R. (2003). Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, 18(2), 76–82. <https://doi.org/10.1002/da.10113>
- Dembo, T., Leviton, G. L., & Wright, B. A. (1975). Adjustment to misfortune: A problem of social-psychological rehabilitation. *Rehabilitation Psychology*, 22(1), 1–100. <https://doi.org/10.1037/h0090832>
- DeVellis, R. (2012). *Scale development theory and applications*. SAGE.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49(1), 71–75. [https://doi.org/10.1207/s15327752jpa4901\\_13](https://doi.org/10.1207/s15327752jpa4901_13)
- Fabrigar, L. R., & Wegener, D. T. (2012). *Understanding statistics: Exploratory factor analysis*. Oxford University.
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4(3), 272–299. <https://doi.org/10.1037/1082-989X.4.3.272>
- Fowers, B. J. (2005). *Virtue and psychology: Pursuing excellence in ordinary practice*. American Psychological Association.
- Hayton, J. C., Allen, D. G., & Scarpello, V. (2004). Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. *Organizational Research Methods*, 7(2), 191–205. <https://doi.org/10.1177/1094428104263675>
- Hoyle, R. H., & Panter, A. T. (1995). Writing about structural equation models. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 158–176). SAGE.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Humphreys, L. G., & Montanelli, R. G. (1975). An investigation of the parallel analysis criterion for determining the number of common factors. *Multivariate Behavioral Research*, 10(2), 193–206. [https://doi.org/10.1207/s15327906mbr1002\\_5](https://doi.org/10.1207/s15327906mbr1002_5)
- Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 20(1), 141–151. <https://doi.org/10.1177/001316446002000116>
- Keany, K. C. M.-H. (1993). *Disability and value change: A review of the adjustment to misfortune theory and the development of the Acceptance of Disability Inventory* (Unpublished masters' thesis). Indiana University–Purdue University at Indianapolis, Indianapolis, IN.
- Keany, K. C. M.-H., & Glueckauf, R. L. (1999). Disability and value change: An overview and reanalysis of Acceptance of Loss theory. In P. M. Robert, & E. D. O. Arthur (Eds.), *The psychological social impact of disability*. Springer. **[AQ: 7]**
- Keys, C. L. M. (2007). Promoting and protecting mental health as flourishing: A complementary strategy for improving national mental health. *American Psychologist*, 62(2), 95–108. <https://doi.org/10.1037/0003-066X.62.2.95>
- Kim, J. H. (2017, August 4–7). *Psychosocial adaptation from virtue and character strengths perspective*. Paper presented at the 2017 Annual Meeting of the American Psychological Association, Division 22: Rehabilitation Psychology. **[AQ: 8]**
- Kim, J. H., Hawley, C., Gonzalez, R., Vo, A. K., Barbir, L., McMahon, B. T., Lee, D. H., Lee, J. H., & Lee, Y. W. (2018). Resilience from a virtue perspective. *Rehabilitation Counseling Bulletin*, 61(4), 195–204. <https://doi.org/10.1177/0034355217714995>
- Kim, J. H., Keck, P., McMahon, M. C., Vo, A., Gonzalez, R., Lee, D. H., Barbir, L., & Maree, K. (2018). Strengths based rehabilitation assessment: Adapted Inventory of Virtues and Strengths. *Work: Journal of Prevention, Assessment & Rehabilitation*, 61(3), 421–435. <https://doi.org/10.3233/WOR-182807>
- Kim, J. H., Kim, S. S., Lee, D. H., & Ham, K. A. (2014). Validation of K-adapted virtue inventory of strength. *Korean Journal of Rehabilitation Psychology*, 21(3), 433–453.
- Kim, J. H., McMahon, B., Hawley, C., Brickham, D., Gonzalez, R., & Lee, D. H. (2016). Psychosocial adaptation to chronic illness and disability: A virtue based model. *Journal of Occupational Rehabilitation*, 26(1), 45–55. <https://doi.org/10.1007/s10926-015-9622-1>
- Kim, J. H., Reid, C., McMahon, B., Gonzalez, R., Lee, D. H., & Keck, P. (2016). Measuring the virtues and character traits of rehabilitation client: The Adapted Inventory of Virtues and Strengths. *Journal of Occupational Rehabilitation*, 26(1), 32–44. <https://doi.org/10.1007/s10926-015-9619-9>
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). Guilford Press.
- Kline, R. B. (2011). *Principles and practice of structural equation modeling*. Guilford Press.
- Linkowski, D. C. (1971). A scale to measure acceptance to disability. *Rehabilitation Counseling Bulletin*, 14(4), 236–244.
- Livneh, H., & Martz, E. (2016). Psychosocial adaptation to disability within the context of positive psychology: Philosophical aspects and historical roots. *Journal of Occupational Rehabilitation*, 26(1), 13–19. <https://doi.org/10.1007/s10926-015-9601-6>
- Livneh, H., McMahon, B. T., & Rumrill, D. (in press). The durability of human experience: Perspectives from psychosocial adaptation to chronic illness and disability—Historical views and theoretical models. *Rehabilitation Counseling Bulletin*. <https://doi.org/10.1177/0034355218800790> **[AQ: 9]**

- Masala, A., & Webber, J. (2016). *From personality to virtue*. Oxford University Press.
- Milam, L. A., Cohen, G. L., Mueller, C., & Salles, A. (2019). The relationship between self-efficacy and well-being among surgical residents. *Journal of Surgical Education*, 76(2), 321–328. <https://doi.org/10.1016/j.jsurg.2018.07.028>
- Miller, D., & Kim, J. H. (2016). Character strengths and virtues in relation to well-being in gay and lesbian individuals. *Mental Health in Family Medicine*, 12, 156–164. <https://doi.org/10.25149/1756-8358.1201001>
- Neenan, M. (2009). *Developing resilience: A cognitive behavioral approach*. Routledge.
- Pavot, W., & Diener, E. (2008). The Satisfaction With Life Scale and the emerging construct of life satisfaction. *Journal of Positive Psychology*, 3(2), 137–152. <https://doi.org/10.1080/17439760701756946>
- Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. American Psychological Association.
- Pitner, R. O., & Sakamoto, I. (2005). The role of critical consciousness in multicultural practice: Examining how its strengths becomes its limitation. *American Journal of Orthopsychiatry*, 75(4), 684–694. <https://doi.org/10.1037/0002-9432.75.4.684>
- Post, M. W. (2016). What to do with “Moderate” reliability and validity coefficients? *Achieves of Physical Medicine and Rehabilitation*, 97(7), 1051–1052. <https://doi.org/10.1016/j.apmr.2016.04.001>
- R Core Team. (2013). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. <http://www.R-project.org/>
- Rogowska, A. M., Zmaczynska-Witek, B., Mazurkiewics, Z., & Kardasz, Z. (2020). The mediating effect of self-efficacy on the relationship between health locus of control and life satisfaction: A moderator role of movement disability. *Disability and Health Journal*, 13(4), Article 100923. <https://doi.org/10.1016/j.dhjo.2020.100923>
- Rokeach, M. (1973). *The nature of human values*. The Free Press.
- Satici, S. A., Uysal, R., & Akin, A. (2013). Investigating the relationship between flourishing and self-compassion: A structural equation modeling approach. *Psychologica Belgica*, 53(4), 85–99. <https://doi.org/10.5334/pb-53-4-85>
- Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy Scale. In J. Weinman, S. Wright, & M. Johnston (Eds.), *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35–37). Nfer-Nelson.
- Stuntzner, S., & Dalton, J. (2015). Forgiveness and disability: Reconsideration of forgiveness as a vital component of the rehabilitation counseling profession. *Journal of Applied Rehabilitation Counseling*, 46(3), 35–42. <https://doi.org/10.1891/0047-2220.46.3.35>
- Sun, R. C. F., & Sheck, D. R. L. (2011). Positive youth development, life satisfaction and problem behavior among Chinese adolescents in Hong Kong: A replication. *Social Indicator Research*, 105(3), 541–559. <https://doi.org/10.1007/s11205-011-9786-9>
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Allyn & Bacon.
- Thompson, B., & Daniel, L. G. (1996). Factor analytic evidence for the construct validity of scores: A historical overview and some guidelines. *Educational and Psychological Measurement*, 56, 197–208. <https://doi.org/10.1177/0013164496056002001>
- van Beuningen, J. (2012). *The Satisfaction With Life Scale examining construct validity* (Discussion paper). Den Haag: Statistics Netherlands, CBS, The Hague.
- Veenhoven, R. (1996). The study of life satisfaction. In W. E. Saris, R. Veenhoven, A. C. Scherpenzeel, & B. Bunting (Eds.), *A comparative study of satisfaction with life in Europe* (pp. 11–48). Eotvos University Press.
- Wu, G., Feder, A., Cohen, H., Kim, J. J., Calderson, S., Charney, D. S., & Mathe, A. A. (2013). Understanding resilience. *Frontiers in Behavioral Neuroscience*, 7(10), 1–15. <https://doi.org/10.3389/fnbeh.2013.00010>