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Filipino Attitudes to Disability Scale (Fil-ADS(D)): Factor Structure Validation and an Assessment of Filipino Attitudes

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Purpose: This study aimed to evaluate the cross-cultural validity of the Filipino version of the Attitude to Disability Scale Physical Disability (Fil-ADS(D)) forms and to describe Filipinos' disability attitudes and its correlations with sociodemographic factors.

Methods: Personal and general Fil-ADS(D) forms were distributed to Filipino persons with disability and general adult population, respectively, for self-administration. Confirmatory factor analysis was used to assess cross-cultural validity of Fil-ADS(D). Fil-ADS(D) score correlations with age, education, and financial situation were explored through Spearman rank correlation analysis; correlations with sex, employment, and health and disability status were explored through point-biserial correlation analysis.

Results: Factor structure of the original ADS was retained in the Fil-ADS(D) forms making it cross-culturally valid. The forms are valuable for generating information for improving attitudinal barriers and for cross-cultural comparisons. Positive attitudes among respondents and significant yet weak correlation with age and occupation were found.

Keywords: inclusion; discrimination; participation; quality of life; cross-cultural validity; factor analysis

Introduction

Disability is a social issue. It is a combination of various physical, mental, or sensory issues, which interact with social and environmental factors that hinder participation in society (WHO 2001). It is estimated that 15%, or over 600 million, of the global population aged 18 and above comprises persons with disabilities (UNESCAP 2019; WHO & World Bank 2011). This estimate, which includes adults with physical disabilities (UNESCAP 2019) and difficulties with functioning (WHO & World Bank 2011), is expected to increase as the population ages and injuries rise because of industrialization and natural disasters (UNESCAP 2019). In the Philippines, the estimated prevalence of disability according to the 2011 World Report on Disability is at 28.8% (WHO & World Bank 2011). A more recent national disability prevalence survey in 2016 showed that among its respondents aged 15 years and older ($n = 10,240$), 12% experienced severe disability and 47% experienced moderate disability (Bersales 2019). These estimates suggest that many Filipinos may be experiencing limited participation in essential societal functions.

Social barriers hinder full integration of persons with disability into society. These societal conditions negatively affect how people grow, live, learn, and work (CDC 2019). Persons with disabilities experience social barriers including limited access to medical services and opportunities for employment and education. These factors can result in lower income, as well as worsening of health and overall quality of life (Gatchalian et al. 2014; Loprest & Maag 2007; Marella et al. 2016).

However, the most basic hindrances to the societal participation of persons with disabilities, which also reinforces other barriers, are attitudinal in nature (Brostrand 2006; CDC 2019). These barriers, such as stereotypes, stigma, prejudice, and discrimination, facilitate the exclusion of persons with disabilities from social participation and restrict them from developing their potential and overall well-being (Brostrand 2006; CDC 2019). The negative attitudes persons with disabilities may have towards their own disability and their lack of knowledge about their rights may further hinder their integration (Gatchalian et al. 2014; Yap et al. 2009). These negative attitudes need to be identified and addressed to facilitate better social integration and quality of life among persons with disabilities (Toritsyn & Kabir 2013).

The Filipino Attitudes to Disability Scale (Fil-ADS) was developed to measure attitudes of Filipino persons with disabilities and the general population towards disability. The Fil-ADS is a Filipino adaptation of the Attitudes to

Disability Scale (ADS) by the WHO Quality of Life Group (WHOQOL Group) (Perez et al. 2016). The ADS was designed for cross-cultural use as it involved simultaneous development across 14 countries and has demonstrated cross-cultural validity (Power et al. 2010). It has four versions. Two versions are for measuring attitudes towards physical disabilities: the ADS-D (G), which is for measuring attitudes of the general population, and the ADS-D (P), which is for measuring attitudes of persons with disabilities towards their own disabilities. The other two versions are for measuring attitudes towards intellectual disabilities: the ADS-ID (G), which is for measuring attitudes of the general population, and the ADS-ID (P), which is for measuring attitudes of persons with disabilities towards their own intellectual disabilities (Power et al. 2010). All four versions include 16 similar items, which only differed in phrasing. In the general forms, phrasing of these items is in the third person to refer to disability in general. On the other hand, these items are stated in the first person in the personal forms to refer to their own disability. Attitude towards disability is measured by this tool through a 5-point Likert scale that determines one's extent of agreement with each item statement (e.g., strongly agree is 5 and strongly disagree is 1). Sample statements are presented in **Table 1**.

The cultural adaptation of an instrument permits its use in cultures other than where it was originally generated by ensuring content and conceptual equivalence between the target versions and the original instrument (Beaton et al. 2000). When equivalence is established, multinational studies using the adapted tools or comparison of data across cultures may be performed (Beaton et al. 2000; Huang & Wong 2014). To use the ADS among Filipinos, the ADS was culturally adapted using guidelines suggested by Beaton and colleagues (2000) and the WHO (n.d.) (Perez et al. 2016). The adaptation involved 1) a forward translation of ADS to Filipino by two individuals who were fluent in English but considered Filipino as their mother tongue; 2) synthesis of the forward translations into one version of Filipino translation; 3) backward translation of the Filipino version to English by two individuals who were fluent both in English and Filipino; 4) review of all translations by an expert committee consisting of linguists, advocates of persons with disabilities, and all translators; 5) pre-testing among target respondents to ensure content validity; and 6) refinement of the final Fil-ADS version using the pre-test results. To ensure technical appropriateness and conversational Filipino translation of the forms, the forward translators consisted of one who is informed about ADS and its nature and another who is uninformed about ADS and has no background in disability. Whenever ambiguities in the ADS were noted by the expert committee, one of the developers of ADS was consulted to clarify them. A more detailed description of the cultural adaptation procedures can be found in another study (Perez et al. 2016).

As psychometric properties of the source instrument are not guaranteed after cultural adaptation, adapted versions need to be evaluated for reliability and validity to further establish equivalence and to assess their usability in the new context (Beaton et al. 2000). Internal consistency of the Fil-ADS physical disability forms (i.e., the general Fil-ADS(D-G) and personal Fil-ADS(D-P) forms), collectively called Fil-ADS(D), was evaluated among Filipino persons

Table 1: ADS-D domains, item themes, and sample items (Power et al. 2010).

Domain	Items	Sample items per domain*
Inclusion	1 Relationships	Item 2: "People with disability (Because of my disability, I) have problems getting involved in society."
	2 Inclusion or Participation	
	5 Burden to society	Item 5: "People with disability are (Because of my disability, I feel I am) a burden to society."
	6 Burden to family	
Discrimination	3 Ridicule	Item 3: "People often make fun of (my) disabilities."
	4 Exploitation	
	11 Irritation	
	12 Ignorance	
Gains	7 Emotional strength	Item 9: "Some people (I) achieve more because of their (my) disability."
	8 Maturity	
	9 Achievement	
	10 Determination	
Prospects	13 Sexuality	Item 16: "People with a disability (Because of my disability, I) have less to look forward to than others."
	14 Underestimation	
	15 Optimism	
	16 Future prospects	

* Note: Sample items are from the ADS-D (G); phrasing used in ADS-D (P) are in parentheses.

with disabilities and adults without disability (Perez et al. 2016). Both forms were found to have acceptable internal consistency with Cronbach's alpha (α) = 0.81 for Fil-ADS(D-P) and Cronbach's α = 0.78 for Fil-ADS(D-G) (Perez et al. 2016), which are comparable to the original ADS (Cronbach's α = 0.79) (Power et al. 2010). To establish the cross-cultural validity of Fil-ADS(D), its factor structure needs to be assessed. A factor structure of an instrument represents the underlying dimensions of the construct being measured (Price 2017). Assessing the factor structure of Fil-ADS(D) determines whether it retained the dimensionality of the original ADS and how its measured variables relate with latent constructs (Huang & Wong 2014; Mokkink et al. 2010). A series of factors analyses of the original ADS revealed a 4-factor correlated model with higher order with the following fit indices: comparative fit index (CFI) = 0.914, normed fit index = 0.908, root mean square error of approximation (RMSEA) = 0.060, and chi square (χ^2) = 2817.0, degrees of freedom (df) = 198, $p < 0.001$ (Power et al. 2010). These four factors were labelled *Inclusion*, *Discrimination*, *Gains*, and *Prospects*, reflecting different aspects of attitude towards disability (Power et al. 2010). **Table 1** shows the themes of the items under each factor.

The primary aim of this study was to evaluate the cross-cultural validity of the Fil-ADS(D) forms by determining whether these were able to retain the factor structure of the ADS. This can provide information as to whether the construct behind attitudes towards disability, as reflected in the factor structure of the ADS, applies to the Fil-ADS(D) and, hence, the Filipino context.

This study also aimed to describe the attitudes of Filipino adults and persons with disabilities towards physical disability using the Fil-ADS(D) forms, and to explore potential association of attitudes with socio-demographic factors including age, sex, employment status, education, financial situation, and health and disability status. Socio-demographic factors are argued to influence attitudes towards disability (Chan et al. 2009; Forlin, Fogarty & Carroll 1999; Livneh 1982; Strohmer, Grand & Purcell 1984; Zheng et al. 2016) and can be potential targets of initiatives towards better societal inclusion of persons with disabilities. For example, education (Chan et al. 2009; Strohmer, Grand & Purcell 1984; Zheng et al. 2016) and socioeconomic status (Chan et al. 2009; Zheng et al. 2016) were found to be positively associated with disability attitudes, while evidence is conflicting with regards to the relationship between gender and attitudes towards disability (Chan et al. 2009; Livneh 1982; Zheng et al. 2016). On the other hand, a non-linear relationship is found between age and disability attitudes wherein children and younger adults have more positive attitudes compared to adolescents and older adults (Chan et al. 2009; Livneh 1982; Strohmer, Grand & Purcell 1984). Determining Filipinos' attitudes towards disability and the factors associated with it can help better understand this construct and inform potential interventions to improve it.

Materials and Methods

Research design and materials

This is an exploratory study designed to evaluate the factor structure of the Fil-ADS(D) forms, to measure Filipino attitudes towards disability using these forms, and to determine the association of attitudes with selected sociodemographic factors. Respondents were instructed to consider their thoughts and feelings about disability and persons with disability when completing the Fil-ADS(D) forms. Each Fil-ADS(D) form has 16 items and a 5-point Likert-type scale ranging from 'strongly disagree', scored as 1, to 'strongly agree', scored as 5. Scoring is reverse coded for negatively stated items, specifically items 1 to 6 and 11 to 16. The maximum total score for each Fil-ADS(D) form is 80 (midpoint score of 40), and the maximum score for each domain is 20 (midpoint score of 10). Included in both forms is a demographics survey that asks about the participant's age, sex, employment status, marital status, living circumstances and support, education, perception about own health, perception about own disability, and financial income.

Respondents

Convenience sampling was used to recruit at least 160 Filipino respondents for each Fil-ADS(D) form. This was to satisfy the 10:1 respondent-to-item ratio to allow factor analysis (Bentler & Chou, 1987). Potential respondents for the Fil-ADS(D-G) and Fil-ADS(D-P) were recruited if they were at least 18 years old and able to understand Filipino. For Fil-ADS(D-P), respondents were recruited only if they were living with a physical disability, which was defined for this study as a total or partial loss of a body function, such as gross and fine motor skills, or total or partial loss of a body part, such as due to amputation, affecting a person's mobility and participation in society (Australian Network on Disability n.d.; CDC 2019). Persons with intellectual disabilities and/or cognitive deficits were excluded from the study.

Respondents for the Fil-ADS(D-P) were recruited from clinical and community-based rehabilitation sites. Respondents for the Fil-ADS(D-G) were also recruited from these clinical sites (e.g., caregivers of clients), as well as from public and private educational institutions, government and private offices, and church and community groups within Metro Manila and nearby regions in the Philippines. Fil-ADS(D-G) respondents were primarily recruited from the authors' and research assistants' professional and personal networks. To gain access to some clinics, offices, and community groups, a letter requesting to allow recruitment of participants were sent. As the data collectors (research assistants AMSB and JKLR, and authors MLSI and KECP) were also physical therapists by profession, they used their clinical judgement and the study's operational definition of physical disability in determining whether one has met the inclusion criteria of having a physical disability prior to being invited to answer the Fil-ADS(D-P).

Procedure

Ethical clearance was acquired from the University of the Philippines Manila Research Ethics Board (UPMREB 2017-239-01) prior to study implementation. Data collection commenced after obtaining a written informed consent from recruited respondents. Fil-ADS(D) forms were distributed by the researchers to consenting respondents in person. Respondents were tasked to accomplish the form according to their own understanding of the contents. For respondents who were unable to read and/or write, another person was allowed to read the contents to them and/or write their responses for them; however, they were not allowed to answer on behalf of the recruited respondents or interpret the contents for them.

Data analysis

Responses were encoded in a Microsoft Excel spreadsheet. Forms that had missing values in the Fil-ADS(D) forms were not included in the analysis of data. Respondent characteristics and item responses were summarized using descriptive statistics through frequency distributions, means, standard deviations (SD), and 95% confidence intervals (95%CI). Mean difference between Fil-ADS(D-G) and Fil-ADS(D-P) responses were assessed using t-test for independent samples.

Confirmatory factor analysis (CFA) (Brown 2015) was performed using International Business Machines Statistical Package for the Social Sciences Statistics (IBM SPSS) Amos 25.0 (Arbuckle 2017) to determine whether the Fil-ADS(D) forms were able to retain the 4-factor-correlated model (with higher order) of the ADS. As shown in **Table 1**, ADS items 1, 2, 5, and 6 are loaded under the factor *Inclusion*; items 3, 4, 11, and 12 are under *Discrimination*; items 7 to 10 are under the factor *Gains*; and items 13 to 16 are under the *Prospects* (Power et al. 2010). Separate CFA analyses were done for the Fil-ADS(D-G) and Fil-ADS(D-P) data sets. Cross-loadings, which is allowing items to load in other factors, were also done, albeit sparingly, to see improvements in model fit. Developers of the ADS also allowed some cross-loadings in determining the factor model of the ADS (Power et al. 2010).

Two measures of model fit were used: (1) absolute fit indices and (2) comparative fit indices. Measures of absolute fit include the chi-square (χ^2), root mean square error of approximation (RMSEA) statistic with 90% confidence interval (90% CI), and standard root mean square residual (SRMR). Lower χ^2 values and non-significant p-values ($p < 0.05$) suggest good absolute fit. Because the χ^2 statistic will almost always suggest model misfit with large sample sizes, RMSEA and SRMR were utilized to supplement the information. RMSEA and SRMR values of at most 0.08 suggest good absolute fit (Schreiber et al. 2006). Measure of comparative fit used is the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI). CFI and TLI values of at least 0.90 are required for a model to be acceptable, while ≥ 0.95 CFI and TLI suggest good fit (Hopwood & Donnellan 2010).

To determine correlations, Spearman rank correlation coefficient (r_s) was used to explore associations between Fil-ADS(D) total and domain scores and socio-demographic data that were in ratio or ordinal level of measurement; these are age, educational attainment, and financial situation. Point-biserial correlation coefficient (r_{pb}) was used to explore correlation of Fil-ADS(D) total and domain scores with sex, employment status, and health and disability status, which were in the nominal scale (Portney 2020). Magnitude of correlation coefficients were interpreted as follows: >0.9 – very strong, 0.70 – 0.89 – strong, 0.40 – 0.69 – moderate, 0.10 – 0.39 – weak, <0.10 – negligible correlation (Schober, Boer & Schwarte 2018). Descriptive statistics and correlation analyses were performed using Stata/IC 15.0 (StataCorp 2017).

Results

A combined total of 1,100 respondents consented to accomplishing the Fil-ADS(D) forms: 576 respondents for Fil-ADS(D-G) and 524 respondents for Fil-ADS(D-P). After dropping 47 data sets because of missing Fil-ADS values, the final number of data sets analyzed was 1,053–541 for Fil-ADS(D-G) and 512 Fil-ADS(D-P) respondents. Total number of respondents included in the analysis of demographics statistics and correlations varied because of missing data. Number of respondents included in these analyses are indicated in **Tables 2, 4, and 5**.

Table 2 shows a summary of the respondents' demographic characteristics. Respondents' mean age was 39 years (SD = 13.75), and a majority were female (58%). Most either finished high school (34%) or a vocational course (36%), were part of the workforce (71%), and perceived their income to be average (63%). Most Fil-ADS(D-G) respondents saw themselves free from any health condition (87%) and disability (92%), while most Fil-ADS(D-P) perceived themselves as having a disability (53%) but without illnesses (59%).

Confirmatory factor analysis

Results of the confirmatory factor analyses of the Fil-ADS(D) forms confirm that both the personal and general forms retained the same dimensionality of the ADS (i.e., having the same four domains and the same items subsumed under each domain). This is verified by the various fit indices resulting from the analysis. The resulting fit indices for the Fil-ADS(D-P) (i.e., $\chi^2 = 263.793$, $df = 95$, $p < 0.001$, RMSEA = 0.059 (90%CI = 0.051–0.067), SRMR = 0.048, CFI = 0.953, TLI = 0.941) were all within acceptable limits, which validate its four-factor structure. For the Fil-ADS(D-G), some items needed to be cross-loaded or subsumed under more than one domain to produce improved fit indices. Cross-loading of an item is applied when this item is shown to be loaded or subsumed under more than one factor or domain (Brown 2015). As indicated by the modification indices produced from the factor analysis, there are several possible cross-loadings that may be applied for Fil-ADS(D-G). The decision of which cross-loadings to allow was determined

Table 2: Summary of respondents' demographic characteristics.

Demographic information	Fil-ADS(D-G)	Fil-ADS(D-P)	Combined forms
Age (years)			
N (% missing values)	541 (0)	512 (0)	1053 (0)
Mean	34.48	43.70	38.96
Median	31	43	36
Range (minimum–maximum)	18–77	18–91	18–91
SD	13.75	15.87	15.51
Sex (n, %)			
N (% missing values)	541 (0)	509 (0.6)	1050 (0.3)
Male	167 (30.87)	269 (52.85)	436 (41.52)
Female	374 (69.13)	240 (47.15)	614 (58.48)
Educational attainment (n, %)			
N (% missing values)	536 (0.9)	508 (0.8)	1044 (0.8)
None	1 (0.19)	3 (0.59)	4 (0.38)
Special Education	3 (0.56)	11 (2.17)	14 (1.34)
Primary school	26 (4.85)	117 (23.03)	143 (13.70)
Secondary school	194 (36.19)	164 (32.28)	358 (34.29)
Vocational course (e.g., TESDA)	251 (46.83)	126 (24.80)	377 (36.11)
College/university	39 (7.28)	32 (6.30)	71 (6.80)
Other (postgraduate)	22 (4.10)	55 (10.83)	77 (7.38)
Perceived health status (n, %)			
N (% missing values)	538 (0.6)	510 (0.4)	1048 (0.5)
Presence of illness/health condition	80 (14.87)	207 (40.59)	287 (27.39)
Absence of illness/health condition	458 (85.13)	303 (59.41)	761 (72.61)
Perceived disability status (n, %)			
N (% missing values)	536 (0.9)	512 (0)	1048 (0.5)
Self-perceived as having a disability	48 (8.96)	273 (53.32)	321 (30.63)
Self-perceived as having no disability	488 (91.04)	239 (46.68)	727 (69.37)
Employment status (n, %)			
N (% missing values)	536 (0.9)	510 (0.4)	1046 (0.7)
Unemployed	98 (18.28)	207 (40.59)	305 (29.16)
Employed	438 (81.72)	303 (59.41)	741 (70.84)
Financial situation (n, %)			
N (% missing values)	534 (1.3)	507 (1.0)	1041 (1.1)
Well above average	5 (0.94)	12 (2.37)	17 (1.63)
Slightly above average	97 (18.16)	59 (11.64)	156 (14.99)
Average	354 (66.29)	298 (58.78)	652 (62.63)
Slightly below average	56 (10.49)	96 (18.93)	152 (14.60)
Well below average	22 (4.12)	42 (8.28)	64 (6.15)

through a consensus among the researchers and evidence from the literature that the items were indeed related to the domains onto which these were cross-loading. Items 2 and 5 of the *Inclusion* domain and item 3 subsumed under the *Discrimination* domain were allowed to cross-load to the *Prospects* domain, and item 16 of the *Prospects* domain was allowed to cross-load to the *Inclusion* domain (items are shown in **Table 1**). These produced the following fit indices for

the Fil-ADS(D-G): $\chi^2 = 245.417$, $df = 93$, $p < 0.001$, $RMSEA = 0.055$ (90%CI = 0.047–0.064), $SRMR = 0.063$, $CFI = 0.934$, $TLI = 0.915$, which verify the four-factor structure of the Fil-ADS(D-G).

Attitudes of Filipinos towards disability

The mean Fil-ADS(D) score of all respondents was 56.83 (SD = 9.15), which indicates a relatively positive attitude towards disability as it is above the scale midpoint score of 40. When viewed separately, mean total score from either Fil-ADS(D-G) (mean = 55.02, SD = 7.12) or Fil-ADS(D-P) (mean = 58.74, SD = 10.45) still implies positive attitudes among the general adult population and persons with disabilities, respectively. Domain mean scores were also above the midpoint score of 10, implying favorable attitudes. Among the domains, *Inclusion* was scored the highest in both the Fil-ADS(D-G) (mean = 14.83, SD = 2.81) and Fil-ADS(D-P) (mean = 15.24, SD = 3.42) forms. *Discrimination* (mean = 12.56, SD = 3.11) and *Gains* (mean = 14.19, SD = 3.41) had the lowest scores among the domains for Fil-ADS(D-G) and Fil-ADS(D-P), respectively. **Table 3** shows a summary of the Fil-ADS(D) and domain descriptive statistics.

Results from t-test show that respondents of the personal form (i.e., persons with disabilities) scored higher than the general adult population who answered the Fil-ADS(D-G) (mean difference = -3.69, standard error = 0.56, 95%CI = -4.79 to -2.59, $t = -6.61$, $df = 899.065$, $p < 0.001$). Comparison of domain scores also shows that scores of respondents of the personal form are statistically higher for all domains, except for the *Prospects* domain. **Table 3** shows the mean difference between domain scores.

Correlation

Tables 4 and **5** summarize the correlations between Fil-ADS(D) total and domain scores and socio-demographic factors. Several factors were found to have statistically significant correlation with Fil-ADS(D) total or domain scores; however, the magnitude of most correlations was negligible. The highest correlation found was between age and Fil-ADS(D-G) *Prospects* score ($r_s = -0.312$, $p < 0.001$). Closely following this is the correlation between employment status and total

Table 3: Fil-ADS(D) total and domain descriptive statistics.

	Fil-ADS(D-G) (n = 541)			Fil-ADS(D-P) (n = 512)			Combined forms (n = 1053)			t-test	
	Mean	SD	95%CI	Mean	SD	95%CI	Mean	SD	95%CI	Mean diff.	p value
Total	55.04	7.21	54.43–55.65	58.73	10.51	57.82–59.64	56.83	9.15	56.28–57.39	-3.69	<0.001
Inclusion	14.83	2.81	14.59–15.07	15.24	3.42	14.94–15.54	15.03	3.13	14.84–15.22	-0.41	0.036
Discrimination	12.56	3.11	12.30–12.82	14.83	3.50	14.53–15.14	13.67	3.50	13.45–13.88	-2.27	<0.001
Gains	13.29	2.70	13.06–13.52	14.19	3.41	13.89–14.48	13.73	3.10	13.54–13.91	-0.90	<0.001
Prospects	14.36	3.29	14.08–14.63	14.47	3.59	14.16–14.78	14.41	3.44	14.20–14.62	-0.11	0.592

SD – standard deviation, 95%CI – 95% confidence interval, mean diff. – mean difference between general and personal form.

Table 4: Correlation of total and domain scores with socio-demographic factors using Spearman correlation coefficient.

Fil-ADS(D-G) (n = 541)	Age (n = 541)	Education (n = 536)	Financial Situation (n = 534)
Inclusion	-0.004	0.113*	-0.028
Discrimination	0.081	0.072	-0.035
Gains	-0.096*	-0.060	-0.069
Prospects	-0.312*	0.029	-0.196*
Total	-0.154*	0.065	-0.127*
Fil-ADS(D-P) (n = 512)	Age (n = 512)	Education (n = 508)	Financial Situation (n = 507)
Inclusion	-0.115*	0.116*	-0.137*
Discrimination	-0.041	0.005	-0.132*
Gains	-0.119*	0.042	-0.069
Prospects	-0.167*	0.086	-0.145*
Total	-0.147*	0.078	-0.169*

* $p \leq 0.05$.

Table 5: Correlation of total and domain scores with socio-demographic factors using Point-biserial analysis.

Fil-ADS(D-G)	Sex (n = 541)	Health status (n = 538)	Disability status (n = 536)	Employment status (n = 536)
Inclusion	0.038	0.083	0.105*	0.072
Discrimination	-0.048	0.115*	0.074	0.131*
Gains	-0.097*	-0.036	-0.071	-0.088*
Prospects	0.060	0.159*	0.141*	0.156*
Total	-0.015	0.141*	0.110*	0.123*
Fil-ADS(D-P)	Sex (n = 509)	Health status (n = 510)	Disability status (n = 512)	Employment status (n = 510)
Inclusion	-0.053	0.197*	0.125*	0.232*
Discrimination	-0.064	0.105*	0.134*	0.172*
Gains	-0.083	0.035	0.065	0.208*
Prospects	-0.062	0.214*	0.106*	0.265*
Total	-0.087	0.183*	0.143*	0.291*

* $p \leq 0.05$.

Fil-ADS(D-P) score ($r_{pb} = 0.29$, $p < 0.001$). Employment status also significantly correlated with some Fil-ADS(D-G) domain scores and all of Fil-ADS(D-P) domain scores, albeit with smaller correlation scores ($r_s = -0.09$ to 0.26).

Discussion

Fil-ADS(D) factor structure

The factor structure of the original ADS, which is a 4-factor correlated model with higher order, was retained after its cultural adaptation to Filipino. This established that the Fil-ADS(D) is cross-culturally valid and that the dimensions of attitudes towards disability as reflected in the ADS also apply in the Filipino context. The trend of the fit indices of Fil-ADS(D) is comparable to that of the ADS, particularly with how cross-loadings were able to improve the model's goodness of fit. Between the two Fil-ADS(D) forms, the personal form showed better fit indices, which is consistent with the CFA results of the ADS (Power et al. 2010). Cross-loadings improved the fit indices and consequently resulted in an acceptable model fit for the general form. However, this was not necessary to achieve an acceptable model fit for the Fil-ADS(D-P).

In this study, cross-loadings were performed based on modification indices and the authors' judgement of the essence of each item and, hence, their potential contribution to the domain to which these were cross-loaded. For Fil-ADS(D-G), items 2, 3, and 5 were cross-loaded to *Prospects*, and item 16 was cross-loaded to *Inclusion*. These items are shown in **Table 1**. The researchers agreed that the public's perceptions on the ability of persons with disabilities to participate in society (item 2), them being a subject of ridicule (item 3), and them being a burden to society (item 5) can affect the public's perceptions on the potentials and prospects in life of persons with disabilities (*Prospects* domain). It would follow that the public's perceptions on the opportunities that persons with disabilities could hope for (item 16) can also contribute to perceptions about the extent to which persons with disabilities could be included or integrated in society (*Inclusion* domain). These inferences are supported by literature that suggests negative stereotypes and prejudices about persons with disabilities influence the predisposition of employers, family members, teachers, students, and other members of society (Gatchalian et al. 2014; Hannon & NDA n.d.; Marella et al. 2016; Nota et al. 2014) towards allowing persons with disabilities to participate in work and other social activities. This consequently limits opportunities to develop their potential.

The presence of a higher order in the resulting model allows summation of scores from all items. Scores from items that loaded in each factor could also be summated into domain scores. However, in interpreting domain scores for Fil-ADS(D-G), consideration should be given to the items that cross-loaded on other factors, hence, contributing to two domain scores. For example, scores for items 2, 5, and 16 should be counted in both the *Inclusion* and *Prospects* domains.

The Fil-ADS(D) forms offer a simple, quantitative approach to assessing attitudes towards disability. In recognition of the complexity and multidimensionality of *attitudes* and *disability* as a social construct, a supplemental qualitative probing is also recommended to allow for a more in-depth understanding of a population's attitudes towards disability. In relation to this, the authors also recognize that although respondents were specifically instructed to consider their feelings and thoughts about disability and persons with disability in completing the Fil-ADS(D) forms, perceiving the items from a different perspective was still possible. This may in turn suggest other latent constructs that have not been previously accounted for. Further examination of the factor model of the Fil-ADS(D) forms is recommended to explore this.

Attitudes of Filipinos towards disability

Results suggest that, in general, persons with disabilities and the general adult population in this study had positive attitudes towards physical disability. Our results are comparable to the findings of a study by Zheng and colleagues (2016) done in Guangzhou, China, which also found its ADS respondents of around 3,700 Chinese persons with disabilities, caregivers, and members of the public to have positive attitudes towards disability as shown by their total ADS scores being above midpoint (Zheng et al. 2016). The positive attitude of Filipinos will be a valuable influence to improving the inclusion and participation of persons with disabilities in society and furthering their opportunities for a better quality of life. It could translate to improved opportunities for education, employment, and better access to services (CDC 2019; Gatchalian et al. 2014; Loprest & Maag 2007).

Another similarity found between the results of this current study and that of Zheng and colleagues (2016) is that persons with disabilities were found to have more positive attitudes compared to the members of the general population. Having first-hand experience of a disability may have helped persons with disabilities develop a more positive sense of what disability means and what they can gain and look forward to in life. Their understanding and acceptance of their disability could be associated with having more positive attitudes towards disability (Snead & Davis 2002).

Despite their relatively positive Fil-ADS scores, there is still room for improving Filipinos' attitudes towards disability, especially in terms of reducing discrimination against persons with disabilities, which was scored the lowest among the general public. Factors contributing to their discrimination, such as stigma and ignorance (Brostrand 2006; CDC 2019), may be targeted by policies and programs advocating for better quality of life for them. Efforts are also needed towards further cultivating positive attitudes among persons with disabilities, especially in terms of the domains they scored lowest (i.e., their perspectives about their prospects and what they think they could gain from their disability). The Fil-ADS(D) forms could be used to measure outcomes of such efforts.

Some policies that could help this cause are already in place in the Philippines. One is the Magna Carta for Disabled Persons, which is a law providing for the rehabilitation, self-development, self-reliance, and social integration of persons with disabilities in the country. It mandates the State to 'exert all efforts to remove all social, cultural, economic, environmental and attitudinal barriers that are prejudicial to disabled persons' (Republic of the Philippines 1992). Continued enforcement and strengthening of the implementation of this law need to be ensured and monitored to further foster positive attitudes towards disability, particularly towards reducing discrimination against persons with disabilities and to promote their active participation in mainstream society. The country's Accessibility Law (Republic of the Philippines 1982) can also be strongly reinforced, brought up to date, and monitored to address physical and societal barriers and consequently to increase independence and a sense of satisfaction among persons with disabilities, which can ultimately improve their own attitudes towards what they can achieve in life.

Correlation with socio-demographic factors

This study also explored the correlation of attitudes with socio-demographic factors, particularly sex, age, employment status, educational attainment, financial situation, and health and disability status. Although several pairings showed statistically significant relationships, only two pairings showed considerable correlations: 1) between the general form respondents' age and the *Prospects* domain ($r = -0.31$) and 2) between the employment of persons with disabilities and total Fil-ADS(D-P) score ($r = 0.29$).

The negative correlation between age and *Prospects* among the general Filipino population suggest that older persons have less positive perceptions about what persons with disabilities can look forward to in life. Similar results were also found in the study by Zheng and colleagues (2016) wherein they found an inverse correlation between age and ADS scores not just among the general Guangzhou public but among the persons with disabilities and caregivers as well. These are likewise similar to findings of other studies (e.g., Barr & Bracchitta (2012) and Goreczny et al. (2011)), which found that younger individuals have less negative attitudes towards persons with disabilities or have a greater tendency to change misconceptions towards them upon meeting them compared to older adults. These may suggest the need to target the older population more in interventions to change attitudes, such as provision of information and opportunities for interaction with persons with disabilities (Daruwalla & Darcy 2005). Positive media representation of persons with disabilities may likewise aid in changing negative perceptions about them.

The positive, albeit relatively weak, correlation between employment and the overall attitudes of persons with disabilities towards disability suggest that having an occupation relates to more positive attitudes, which is similar to the ADS results of Zheng and colleagues (2016). This relationship is parallel to evidence of positive effects of occupation to overall self-perception. Having an occupation positively affects the perspective of persons with disabilities about their disability and helps provide structure to their daily lives (Johansson & Tham 2006). It also provides them a continued sense of self and an opportunity for self-development (Johansson & Tham 2006; White, Lentin & Farnworth 2013). These suggest the need for programs and policies to focus on strongly promoting employment of persons with disabilities.

It is also worth noting that some factors that had correlated significantly with attitudes in other studies, for example, education (Au & Man 2006; Kaur et al. 2015; Zheng et al. 2016), financial situation (Kaur et al. 2015; Zheng et al. 2016), and gender (Goreczny et al. 2011; Zheng et al. 2016), did not result in a significant correlation with attitudes in this

study. In the study by Zheng and colleagues (2016), persons with disabilities in Guangzhou, China, who were male, had higher educational levels, and higher income had a more positive attitude towards disability. The study by Au and Man (2006) among Hong Kong health care professionals and students also found a statistically significant positive relationship between education level and knowledge about and attitudes towards disability. The study by Kaur and colleagues (2015) among persons with disabilities in Malaysia likewise showed a positive association between attending higher or special education and their level of acceptance of their own disability. This study also showed that respondents who were earning a moderate income had higher ratings of personal acceptance of disability (Kaur et al. 2015). Finally, in the study by Goreczny and colleagues (2011) among persons with and without disabilities in the State of Pennsylvania in the US, women were found to have more positive attitudes towards individuals with disabilities. Studies in the Philippines may be needed to further explore these associations as information about this could assist with decision-making about programs and policies aimed to improve societal attitudes towards disability.

Attitudes and disability are understood within the context of a society, particularly through the social, political, environmental, and cultural factors that determine these. It would benefit the scholarly discourse about disability and attitudes towards disability if data from the cross-cultural ADS and other cultural adaptations of it, such as the Fil-ADS, could be compared, as done here, to understand the variability in attitudes towards disability between cultures and societies.

Limitations of the study

There are some limitations to this study. Despite the relatively large sample size, respondents were mainly from the National Capital Region (NCR) and nearby areas, which may not be representative of the entire Filipino population. The demographic characteristics of the sampled population is also mostly skewed towards a particular characteristic (e.g., females, high school and vocational course graduates, and average income earning individuals), which may have limited the inferences made on the less endorsed characteristics. Studies in other regions, especially far-flung and rural areas which have less access to available programs for disability, while also ensuring adequate representation per demographic characteristic, may be warranted to improve the generalizability of results. Studies may also be needed to further explore the nature of the correlations identified in this study and potential causalities as information here only signifies possible associations.

Conclusions

This study confirms that the factor structure of the ADS was retained in its Filipino adaptation, which establishes the cross-cultural validity of the Fil-ADS(D) forms. These instruments will be valuable in gathering information about Filipinos' attitudes towards physical disability, which can in turn inform policies and programs aimed at improving the inclusion and participation of persons with disabilities into mainstream society. The information gathered here about Filipinos' positive attitudes and the correlations found between age, occupation, and attitude can serve as preliminary information and baseline measures from which interventions could be based. This information, though, needs to be supplemented with further measures of attitudes in other regions of the country to improve its generalizability.

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Competing Interests

The authors have no competing interests to declare.

Author Contributions

All authors contributed to this work and approved the final version of the manuscript. YYP conceptualized the research and its design, developed the study protocol, oversaw the implementation of the research, analyzed the data, and drafted and finalized the manuscript. MLSI carried out the study protocol and contributed to the drafting of the manuscript; RKM analyzed the data and reviewed the manuscript; KECP contributed to the collection of data and manuscript review; FRML contributed to protocol development, oversaw the implementation of the research, and reviewed the manuscript.

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