

# Attitudes Towards the Physically Challenged (ATPC): Reliability and Validity Study of a Japanese Version of ATPC-Form O

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**Abstract.** This study focuses on the reliability and validity of a Japanese version of the “attitudes towards the physically challenged” (ATPC) Form O. Form O measures the affective attitude component of the views towards the physically challenged and contains 20 statements to be responded to in a six-point range. A convenience sample of 154 physiotherapists in Fukui Prefecture participated in this mailed survey. The reliability of Form O was assessed as homogeneity, and its validity as construct validity. The rate of return was 47.5%. All but 1 of the 20 items were found to have significant item-total correlations. Cronbach’s alpha coefficient for Form O was 0.76 with some evidence for construct validity, which explained 30.9% of the variance. The obtained factors were labelled as “prejudice”, “differing view” and “self-concept” with the rate of contribution (Cronbach’s alpha) being 20.27% (0.73), 6.41% (0.66), and 4.25% (0.69), respectively. Evidence for construct validity was demonstrated in Form O’s ability to differentiate between genders and also between physiotherapists who preferred treating clients with conditions or diseases that would lead to permanent disability and those who preferred treating clients with conditions or diseases that would lead to a full recovery. Convergent validity, as a form of construct validity, was also supported for Form O. The results show that Form O can be considered a reliable and valid measure of documenting trends of importance in regards to the physically challenged.

**Key words:** Attitudes towards the physically challenged (ATPC)-Form O, Reliability, Validity

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*(This article was submitted Apr. 24, 2006 and was accepted Jun. 19, 2006)*

## INTRODUCTION

The number of the physically challenged in Japan increased from 3.44 million in 1991 to approximately 4.45 million in 2003<sup>1)</sup>. Accompanying this trend, we are also seeing an increase in society’s awareness of the physically challenged. This culminated in the enactment of legislation concerning support for the independence of the physically challenged in April

2006. In order for the physically challenged to achieve a quality of life it is important not only for they themselves to make an effort, but also for the public to collaborate, together with an appropriate attitude towards them. Studies on attitudes towards the physically challenged (ATPC) have involved the use of a variety of measuring instruments developed by several researchers<sup>2-4)</sup>. Yunker et al. in the United States of America (U.S.) developed a

Likert-type scale because of the need for a reliable method to objectively measure attitudes towards the intellectually and physically challenged, which could be calculated and interpreted with relative ease<sup>2</sup>). They developed three different forms (A, B, and O) for the measurement of the ATPC<sup>2</sup>), with the former two having 30 statements each and the latter 20. This latter form, or the ATPC-Form O (Form O), is a general form, not specific to any particular disability. Further, it is also considered to have the highest validity amongst the three scales and, consequently, is the most widely used<sup>2</sup>).

Attitudes are conceptualised as feelings, knowledge and readiness to act, all of which are amenable to change. These concepts are considered important when applied to professional practice and in the education of physiotherapists. It is a well-known fact that psychometric measures must possess high reliability and validity. In addition, precision instruments must be standardised and proven viable to enable evidence-based study of ATPC to be carried out.

The Japanese version of Form O has been available since 1999<sup>5</sup>). Although studies on the ATPC using the Japanese version of this scale have already been carried out<sup>5-8</sup>), there has not, until now, been any verification on its reliability and validity. Hence, an attempt was made to test the Japanese version of Form O and verify its use. This was accomplished through recruitment of physiotherapy clinicians in answer to a mailed survey. Verification of the Japanese version of Form O obtained through this study would, therefore, be conducive to future research on the physically challenged.

## METHODOLOGY

### *Instrumentation*

A questionnaire, the Japanese version of Form O, was employed in the survey. The survey was a descriptive, cross-sectional study of the attitudes of physiotherapy clinicians towards the physically challenged. This method was chosen because it was the most practical way to accomplish the objective. What is shown to be implicit in the design of the ATPC and methods of scoring can be read in detail elsewhere<sup>7</sup>).

Included in the questionnaire was a column on demographic data that was used to collect information on the professional background and

personal characteristics of the respondents: their age, gender, and number of years of professional experience. The respondents were also asked whether they preferred treating clients with conditions that would lead to permanent disability or whether they preferred treating clients with conditions that would lead to a full recovery.

### *Participants and procedures*

Out of the total membership of 350 of the Fukui Physical Therapy Association, 324 clinicians were selected from the 2005 membership directory. The inclusion criteria for participants was physiotherapists engaged in active rehabilitation of clients in hospitals and clinics, and the physiotherapists who were excluded from this study were as follows: 11 inactive members, six teachers, six employed in local government offices and three employed in nursing homes.

Surveys were mailed to the individual respondents with a letter of explanation concerning the purpose of the study, together with a stamped addressed reply envelope. The respondents were asked to return the questionnaire within two weeks of receiving it. The returned questionnaires were anonymous. The instructions to respondents included a guarantee of confidentiality, the need to respond to every item and the absence of a right or wrong answer. The survey took approximately 15 min to complete.

### *Statistics*

Reliability was assessed as correlations between the scores for each item and the whole scale using Spearman's rank correlation coefficient. This was followed by the calculation of Cronbach's alpha ( $\alpha$ ) reliability estimates to further verify the internal consistency of the scale.

As for construct validity, the responses to all of the 20 statements were submitted to a factor analysis, in this case, a principal component analysis with varimax rotation. The number of factors was determined by using the factor scree plot. The authors then carried out a second-order factor analysis using the obtained factors from the first-order factor analysis. This was followed by an estimation of Cronbach's  $\alpha$  in order to verify the internal consistency of each of the individual factors. In regard to construct validity, we proposed *hypothesis one*: the score for the respondents who preferred treating clients with conditions that would

lead to permanent disability would be high. This hypothesis was made in view of the fact that greater patience and perseverance may be required to treat such clients, hence a more positive ATPC of such respondents. Accordingly, the difference in the mean scores was calculated using Student's *t* test with significance determined as  $p < 0.05$ .

An attempt was also made to address convergent validity by using the multiple regression analysis on the respondents' background information as independent variables and Form O as the dependent variable. Thus, using the two-tailed Mann-Whitney U test, the mean scores for these variables were calculated with significance determined as  $p < 0.05$ . Three further hypotheses were proposed in addition to *hypothesis one*. *Hypothesis two*: the women respondents would score higher than the men respondents would. This hypothesis was based on the fact that women have a more positive ATPC than men<sup>2, 5</sup>). *Hypothesis three*: the highest scores would be for the participants in the 30's age group, followed by those in their 20's, 40's and >50's. This hypothesis was based on the fact that the ATPC of Japanese citizens in the City of Kanazawa and its vicinity, which is in the prefecture neighbouring Fukui, where the participants resided, had been proven to be positive in the aforementioned age order<sup>7</sup>). *Hypothesis four*: respondents with 5 years or more of professional experience would score higher than those with less than 5 years' experience. This hypothesis was based on the assumption that the acquisition of professional experience may lead to a more positive ATPC.

The data were analysed with the Statistical Package for the Social Sciences and Microsoft Excel computer software for Windows 2000.

## RESULTS

One hundred and fifty-four questionnaires were collected without any reminder being necessary, resulting in a rate of return of 47.5%. We did, however, have to eliminate four of the returned questionnaires, for three or more of the statements had not been answered. Accordingly, the final sample for analyses consisted of 150 (46.3%) respondents. The number of men and women was 83 (55.3%) and 67 (44.6%), respectively. Concerning the respondents' ages, the number (percentage) in their twenties was 70 (46.7), thirties 52 (34.7), forties 21 (14.0) and fifties and over 7

(4.7). The number (percentage) of the respondents who preferred treating clients with conditions that would lead to permanent disability was 32 (21.3) and those who did not 104 (69.3). As for the calculation for the multiple regression analysis and Student's *t* test, 14 questionnaires were eliminated from the final sample because no answer at all was given regarding information concerning treatment preference.

### Reliability

The homogeneity of Form O is displayed in Table 1 showing correlations between each statement and the whole scale. The correlation coefficients for all but one (statement 3) of the 20 statements were statistically significant. The statements with a correlation coefficient smaller than 0.4 were 1, 2, 3, 6, 7, 8, 9 and 10, and those that were larger than 0.4 were 5, 11, 13, 14, 15, 16, 17, 18 and 20. Cronbach's  $\alpha$  for the whole scale was estimated at 0.76, but when we excluded statements with a correlation coefficient of less than 0.4, it was 0.81.

### Validity

First-order factor analysis explained 30.9% of the total variances, thus, supporting construct validity to some degree, which could be interpreted in a meaningful way (Table 2). In the second-order factor analysis, one factor was obtained that explained 13.1% of the variances. This factor consisted solely of Factor 2 (labelled *Differing View*) from the first-order factor analysis. The result of Student's *t* test revealed that the mean ATPC score for the respondents who preferred treating clients with conditions that would lead to permanent disability was significantly higher than that for those who did not (80.3 vs. 75.0;  $p < 0.05$ ). Thus, *hypothesis one* was supported.

The result of the multiple regression analysis demonstrated that the coefficient of determination ( $R^2$ ) for the variables *treatment preference*, *gender*, *age*, and *years of professional practice* was 0.094. It was found that the total score was strongly influenced by two variables, *treatment preference* and *gender*, and their standard coefficients and *p*-values are shown in Table 3. The mean ATPC score for women was significantly higher than that for men (79.8 vs. 74.1;  $p < 0.05$ ), thus, supporting *hypothesis two*. There were no significant differences found in the ATPC scores amongst the age groups: 79.0 for the 20's, 74.7 for the 30's, 76.5

**Table 1.** Spearman's rank correlation coefficients for the individual statements for the Japanese version of ATPC-Form O ( $N=150$ )

Statement	Main content	$R_s$
1	Parents of disabled children should be less strict than other parents.	-0.365*
2	Physically disabled persons are just as intelligent as non-disabled ones.	-0.388*
3	Disabled people are usually easier to get along with than other people.	-0.010
4	Most disabled people feel sorry for themselves.	-0.476*
5	Disabled people are the same as anyone else.	-0.539*
6	There shouldn't be special schools for disabled children.	-0.306*
7	It would be best for disabled persons to live and work in special communities.	-0.345*
8	It is up to the government to take care of disabled persons.	-0.192**
9	Most disabled people worry a great deal.	-0.389*
10	Disabled people should not be expected to meet the same standards as non-disabled people.	-0.303*
11	Disabled people are as happy as non-disabled ones.	-0.575*
12	Severely disabled people are no harder to get along with than those with minor disabilities.	-0.409*
13	It is almost impossible for a disabled person to lead a normal life.	-0.627*
14	You should not expect too much from disabled people.	-0.591*
15	Disabled people tend to keep to themselves much of the time.	-0.565*
16	Disabled people are more easily upset than non-disabled people.	-0.561*
17	Disabled persons cannot have a normal social life.	-0.643*
18	Most disabled people feel that they are not as good as other people.	-0.641*
19	You have to be careful of what you say when you are with disabled people.	-0.442*
20	Disabled persons are often bad-tempered.	-0.525*

\* $p<0.05$ ; \*\* $p<0.01$ 

for the 40's, and 67.6 for the >50's. Thus, *hypothesis three* was rejected. However, there was a significant difference in the ATPC scores between the respondents whose professional experience ranged from 2.1 to 5 years and those whose professional experience was over 10.1 years (82.6 vs. 73.6;  $p<0.05$ ). There was, however, no significant difference in the mean ATPC scores for the respondents with >2 years and those between 5.1 and 10 years of professional experience (75.2 vs. 76.3). Thus, *hypothesis four* was rejected.

## DISCUSSION

### Reliability

Spearman's rank correlation coefficient in the Japanese version of Form O in this study ranged from -0.643 to -0.010, averaging -0.445, whereas that in the original U.S. version ranged from 0.660 to 0.890, averaging 0.730<sup>2)</sup>. The reason for this higher coefficient in the U.S. version may be due to the fact that the level of American people's concern for, and positive attitudes towards, the physically challenged was already at a high level in the 1960's compared to our respondents' level of attitude in 2005.

There were eight items whose correlation coefficients were below 0.4. These included statements 1, 2, 3 and 9 that portrayed how the physiotherapists perceived their clients through their day-to-day professional contact and life experience with them. The remaining four items, statements 6, 7, 8 and 10, were those concerning the status of the physically challenged in society. The fact that there was hardly any correlation with statement 3 implies that many respondents felt comfortable in getting along with the physically challenged. The reason for this may be because the participants of this study were physiotherapists who were already familiar with the physically challenged.

There were nine items that demonstrated strong correlation, that is, with a coefficient of correlation larger than 0.5. Of these, statements 5, 11, 15, 16 and 18 concerned the mental aspect of the physically challenged. Further, statements 13, 17 and 18 also showed a very strong correlation. This implied that the physiotherapists in Fukui Prefecture considered *the physically challenged led a social life comparable to that of the non-physically challenged, and the physically challenged themselves felt that they were on an equal basis with other*

**Table 2.** Factor loadings after varimax rotation for the Japanese version of ATPC-Form O ( $N=150$ )

Statement	Factor 1 ( <i>Prejudice</i> )	Factor 2 ( <i>Differing View</i> )	Factor 3 ( <i>Self-Concept</i> )
16	0.592		
15	0.588		
17	0.575		
14	0.471		
20	0.402		
12		0.553	
5		0.529	
11		0.507	
10		0.434	
13		0.432	
17		0.416	
18			0.750
4			0.601
11			0.421
9			0.416
Contribution	20.27%	6.41%	4.25%
Cronbach's $\alpha$	0.73	0.66	0.69

**Table 3.** Multiple regression analysis of the scores for the Japanese version of ATPC-Form O ( $N=136$ )

Explanatory variables	Standardised coefficients	$p$
Treatment preference	-0.179	0.037
Gender	0.185	0.042
Age	-0.068	0.580
Years of professional experience	-0.059	0.612

people.

With the application of Form O the homogeneity was sufficient for group-level comparison with a Cronbach's  $\alpha$  of 0.76. Therefore, Form O can be judged to contain a group of statements that can measure its attributes. Thus, the authors determined that the reliability of this scale was satisfactory for the current study group.

#### Validity

The factor structure demonstrated in this study reflects both negative and positive views of the respondents on the physically challenged. Specifically, a very strong correlation was shown especially for the statements 15, 16 and 17, deriving factor 1 (labelled *Prejudice*). Factor 2 reflected differing views of the respondents towards the physically challenged, and it contained positive statements 5, 11 and 12 with a strong correlation.

Factor 3 (labelled *Self-Concept*) consisted of statements 4 and 18, which showed very strong correlations, concerning the characteristics of the physically challenged. These three factors explained almost 31% of variances in the three-factor solution, thereby supporting, to a certain extent, construct validity for Form O.

Differentiation was evident between men and women, and between the respondents who preferred treating clients with conditions that would lead to a permanent disability and those who did not. Therefore, construct validity was further supported for Form O.

Although  $R^2$  was small, the alpha level was 0.013 following the calculation by analysis of variance, so the regression formula would be suitable for prediction of the total score: i.e., women and the physiotherapists who prefer treating clients with conditions that lead to a permanent disability would

have a positive ATPC. The fact that women have positive ATPC compared to men has been proven by Yuker et al.<sup>2)</sup>. Thus, to a certain extent, convergent validity was also supported for Form O. However, the age and years of professional experience of physiotherapists in Fukui Prefecture did not prove suitable as predictors of their ATPC. In regards to the age *vis-à-vis* ATPC, this finding was not in agreement with Speakman's result that showed one's ATPC becomes consistent from an age of 30 onwards<sup>9)</sup>. Thus, ATPC of the physiotherapists in Fukui Prefecture may have already been established at a certain level either through familiarity, their work experience or education.

#### ACKNOWLEDGMENTS

The authors express gratitude to the members of the Fukui Physical Therapy Association for their participation in this study. The author's appreciation is also addressed to Associate Professor Mr. Katsumi Inoue, BSc, MSc, for his advice on the statistical analysis.

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