Development and validation of the human activity profile into Chinese language: Lessons in determining equivalence

Author

Bonner, A, Wellard, S, Kenrick, M

Published

2006

Journal Title

Nursing and Health Sciences

Version

Accepted Manuscript (AM)

DOI

10.1111/j.1442-2018.2006.00265.x

Rights statement

Downloaded from

Griffith Research Online

TITLE:

Development and Validation of the Human Activity Profile (HAP) into Chinese language: Lessons in Determining Equivalence.

AUTHORS

Dr. Ann Bonner PhD, MA, B.App.Sc(Nurs), RN, MRCNA
Senior Lecturer
School of Nursing Sciences
James Cook University
PO Box 6811
Cairns QLD 4870
Australia

Email: ann.bonner@jcu.edu.au
Telephone: +61 7 4042 1531
Fax: +61 7 4042 1590

Professor Sally Wellard PhD, MN, BA (SocSc), RN, FRCNA
Professor of Nursing
School of Nursing
University of Ballarat

Ms Marita Kenrick BA, GradDipPsych
Senior Research Assistant
Rehabilitation Nursing Research and Development Unit,
Royal Rehabilitation Centre Sydney

Short Title:

Human Activity Profile into Chinese

ABSTRACT

The Human Activity Profile (HAP) and associated dyspnea scale is a self-report instrument for assessing levels of human activity. Although it has been used in studies examining levels of activity in people, it is limited to people who are only able to understand English. This study sought to demonstrate the equivalence between the Chinese and English versions of the HAP and dyspnea scales**.** 35 bilingual university students completed both the Chinese and English versions of each questionnaire. There was 89% and 85% agreement between items across the HAP and dyspnea scale questionnaires respectively. While the psychometric evaluations suggested there was equivalence between the Chinese and English versions of both the HAP and dyspnea scale, lessons have been learnt between the different written forms of Chinese.

KEY WORDS

Activity
Australia
Chinese
Instrument
Translation

INTRODUCTION

Chronic diseases can lead to reduced levels of fitness and a reduced capacity to engage in regular activity (Brunier & Graydon 1993; Cade 1995; Johansen et al. 2000; Painter et al. 2000; Satta, 2000). Increasingly the promotion of activity has been argued as an integral component of rehabilitation programs towards the optimization of health (Chakravarthy et al. 2002; Oberley & Compton 1994; Painter et al. 1999; Speck & Harrell 2003). There have been some reports of successful increase in chronic illness patients' levels of activity (Cade 1995; Clark 2002; Eidemak et al. 1997; Painter et al. 2000; Shalom et al. 1984; Snyder 1989), but there has been little adoption of these interventions into routine care (Painter et al. 2004). One impediment to the adoption of activity interventions is the lack of suitable measures of activity for this population.

The Human Activity Profile (HAP) is a self-report tool for assessing levels of human activity (Fix & Daughton 1988). The tool has been validated and is used in many health related studies examining levels of activity in people over 20 years. It comprises of 94 self-report items of daily activity ordered according to metabolic demand (e.g. sitting, walking, dressing, running etc). Respondents indicate which activities they still undertake and those they have stopped doing. The accompanying eight item Dyspnea Scale was developed with the HAP to provide a measure of the level of activity when dyspnea occurs. The scores calculated from the HAP and dyspnea scale can be compared to age and gender normative data. However, these instruments are only available in English, and therefore exclude people whose only language is Chinese.

Whilst HAP has been demonstrated as a valid tool in Australia for assessing activity in people with chronic disease (Farrell et al. 1996; Wellard 2003), it is only available in English. This limits the level of understanding achievable in studying chronic disease populations in Australia, which reflect the same cultural diversity of the whole population (AIHW 2002; Disney 2002). There is considerable variation in the languages spoken at home in Australia, with 20% speaking a language other than English. Chinese language speakers (2.1%) are the largest group of Australians who speak languages other than English at home (ABS 2001)

The aim of this study was to determine the equivalence of a translated (Chinese) version of the HAP and dyspnea scale.

METHODS

Translation Procedures

Brislin's model or the back-translation approach (Brislin 1970; 1986) has been identified as the preferred method of translating instruments (Chang et al. 1999; Hilton & Skrutkowski 2002; Jones et al. 2001). The Brislin model requires one bilingual expert to translate the instrument from the source language into the target language and a second bilingual expert too blindly (without access to the original language version) back-translate it to the source language (Jones et al. 2001). The target language versions of the tool are then tested for reliability and validity with a bilingual sample of people (Chang et al. 1999; Lin et al. 2001; Mimura & Griffiths 2004).

The instrument items in the HAP and the dyspnea scale are related to everyday activity and were readily translated into Chinese. A professional translating service was contracted to provide qualified bilingual translators. Following the Brislin model, a first translator translated both the HAP and dyspnea scale into Chinese. The Chinese version was then supplied to a second translator who independently translated the Chinese HAP and dyspnea scale back into English. Any differences found in the back-translation by the author (AB) were clarified and corrected. The goal was to modify the Chinese version to ensure that there was agreement between both versions of the conceptual rather than literal meaning of each item.

Ethical Considerations

Approval was obtained from the appropriate institutional ethics committee prior to commencing the study. An information sheet explaining the purpose of the study was given to each participant. Participation in the study was voluntary and all participants were assured that their participation (or non-participation) had no effect on their progression (e.g. results) at the university. Anonymity of participants was preserved as no identifying data was collected.

Sample

Participants were drawn from the student body (undergraduate and postgraduate) attending a metropolitan university in Australia who are able to read both English and Chinese. All participants were over the age of 18 and had the capacity to give voluntary, informed consent. Recruitment strategies included advertisements placed on notice boards, and announcements during lectures inviting students who were bilingual to participate in the study. Recruitment occurred during August-November (spring semester) 2003.

Research Design

To minimize biases in participant selection and data collection, a systematic cross-over research design was employed. Each participant was randomly allocated to one of 2 groups. Group one completed the English (E) version first and then one week later the Chinese (C) version was posted to them with a reply paid envelope. Group two followed the same procedure except they completed the C version first then the E version.

In order to determine the equivalence between the newly translated Chinese HAP and dyspnea scales and the original English versions, the following statistical analyses were employed: mean scores; contingency tables; measures of agreement for categorical data; Cronbach's alpha reliability coefficients; Wilcoxon signed-ranks test; kappa to determine item to item agreement between English and Chinese versions; and intra-class correlation coefficient to determine equivalence between the E & C versions of the scales and total HAP scores.

RESULTS

Of the 69 Human Activity Profile (HAP) and dyspnea scales distributed the HAP produced 15 matched English (E) and Chinese (C) pairs while the dyspnea resulted in 16 viable E and C pairs, giving a response rate of 22% and 23% respectively. To enable comparison missing data was substituted by the mean when participants had answered at least three quarters (75%) of the questions on each scale. This procedure preserved the size and statistical power of the sample. Its use was further warranted as the original scale measured a single, well-defined domain on which each item's maximum and minimum score was the same (Dodeen 2003; Raymond 1987).

The percentage of answers displaying perfect agreement between E and C was calculated for each item on the HAP (refer Table 1) and dyspnea (refer Table 2). The mean percentage of equivalent answers across the 94 items for the HAP was 89% (SD= 8.7, Median= 93) and ranged from 67% to 100%. While the average level of agreement was 85% (SD= 10.6, Median= 85) and ranged from 63% to 93% for the eight item dyspnea scale.

Percentage agreement, however, ignores concurrence by chance. As such Kappa was conducted to measure chance corrected agreement between the E and C versions and a chi-square was conducted to measure association. Kappa is described as showing poor equivalence below .40, fair between .21 and .40, moderate between 0.41 and .60, substantial between .61 and .80 and a kappa larger than .80 shows excellent equivalence (Shrout & Fleiss 1979; Landis & Koch 1977). Chi square and Cohen’s kappa for each item are displayed in Table 1 and 2.

INSERT TABLE 1 AND 2

Nunnally (1978) suggests translation adequacy can be determined by comparisons of internal consistency coefficients and may be considered equivalent and a new scale with an alpha of $\geq$ 0.70. As such the scales were tested for internal consistency using Cronbachs alpha. The HAP’s internal consistency was found to be .98 for the E and .97 for the C while the Dyspnea scale revealed an alpha of .85 for both the E and C.

The Wilcoxon signed rank test assesses the difference between two populations using matched samples (Everit & Wykes 1999). It tests the null hypothesis that two related samples were drawn either from identical populations or from symmetric populations with the same mean (Howell 1995). It is used here to test for difference between the E and C versions and additionally to determine if the order of administration created carryover effects. In the first instance a significant effect would mean there was a difference between E and C versions, whereas in the second test a significant effect would mean completing the first version effected the responses to the second version. However, no significant differences were found between the E and C versions for both the HAP and Dyspnea scales, or between the different administration sequence groups (i.e. E-C v C-E) across all scales.

In addition, the E and C items on both the HAP and Dyspnea scale were summed to create an overall score for each participant. A Pearson's correlation was conducted for the HAP E and C $r=.95$ $p<.01$ and dyspnea scale $r=.96$ $p<.01$. Descriptive statistics are presented in Table 3 with the values for the item mean on HAP referring to (1) Still doing this activity, (2) Have stopped doing this activity and (3) Never did this activity and item average on the dyspnea scale referring to (0) No, not at all, (1) Yes, a little, (2) Yes, clearly noticeable and (3) Yes, severe shortness of breath.

INSERT TABLE 3

Finally, Bland–Altman plots for HAP and the Dyspnea Scale were constructed (see Figure 1 and 2). The *x*-axis shows the mean of the results of the E scale and C translation ([E + C]/2), whereas the *y*-axis represents the absolute difference between the two versions ([C - E]). The plot reveals the relationship between the differences and the averages identifies systematic bias and outliers.

INSERT FIGURE 1

DISCUSSION

This study sought to demonstrate that the Chinese translation of both the HAP and dyspnea scale were equivalent to the English versions. The high percentage level of agreement for the HAP (89%) and the dyspnea scale (85%) revealed that there was equivalence between the English and Chinese versions of both questionnaires. In order to further support the evidence of equivalence between the Chinese version and English version, Kappa and Chi squares were calculated for each. For the HAP, all items indicated fair or better change agreement. Ten items revealed a Cohen's kappa of 1.00

(100%) level of agreement and a further nine items had an excellent level of agreement (> 0.8 or 80%). Chi square calculations for the HAP indicated that all items were in agreement ($p \leq 0.5$) between the Chinese and English versions. The dyspnea scale also did not reveal significant differences between the Chinese and English versions for each item.

Further evidence of equivalence can be shown if there is similarity in scale reliability data. The English version of the HAP had a Cronbach alpha of 0.98. The translated scale had a Cronbach alpha of .97, indicating the internal consistency was high. Similarly the English version of the dyspnea scale had a Cronbach alpha of 0.85; the Chinese version's Cronbach alpha was 0.85. For both instruments, the alpha levels were similar and this provided further support of equivalence between the original and translated versions.

In order to use the Wilcoxon test fairly we require sufficient power. The low response rate to the questionnaires suggests that this research may not have sufficient power to reject the null hypothesis when it is in fact false. This is an important consideration for this research as a non-significant result promotes the agenda that the E and C versions are equivalent.

Lessons to be Learnt and Study Limitations

Translation of previously developed instruments may often be the choice when addressing research questions to groups whose language is not English. Self-report instruments developed and validated in English have often been translated into a second language for measuring the variable of interest in a second culture. Investigators have frequently assumed consistency in the validity and reliability of an established instrument following translation (Flaherty et al. 1988; Jones et al, 2001). However, the process of translating concepts developed in one culture for use in another is fraught with problems of semantics (Chang et al. 1999).

The university where this study was conducted had a large population of students from a Non-English Speaking Background, and in particular, students who were bilingual in Chinese and English. However, in conducting this study two unanticipated problems arose. The first relates to the difficult and protracted recruitment of students. Extensive use of signs on notice boards failed to attract any enquiries about the study. Following permission from lecturers, an announcement was made at the first classes of a semester. Students enrolled in the schools of business, law, foreign language and health were approached. A copy of the Chinese version of the HAP was displayed on an overhead projector and a large number of students indicated that they could read it. A copy of the information sheet, consent form and either the English or Chinese version was distributed. Follow up visits to encourage participation and distribute study information was undertaken. Despite these procedures a low participation rate resulted. A number of students asked what remuneration was available if they completed the questionnaires. "Voluntary" participation was contingent on payment. Clearly this identifies two concerns: firstly, would payment ensure voluntary participation; and secondly, how much payment is required to ensure "voluntary" participation.

Secondly, and more importantly, several of the bilingual participants commented on the written form of the questionnaire. The HAP and dyspnea scale had been translated into the formal or traditional (complex) version of Chinese. Traditional Chinese is used in many Chinese-speaking areas of the world (e.g. Republic of Taiwan and Malaysia); the People's Republic of China and Singapore use a simplified version. Instrument translation research from English into Chinese has not previously reported the differences between traditional and simplified Chinese (Chang et al 1999; Li & Lopez 2004; Suet-Ching 2001). Typically this research has been undertaken in one Chinese speaking country where only one version of written of Chinese is used. This is important to note in Western countries such as Australia where Chinese language speakers have migrated from many different countries, and who may read either traditional or simplified Chinese.

In addition, even if a decision is made to use traditional (or simplified) Chinese, not all Chinese readers would agree on the same word usage. For example, in English, 'footpath' is appropriate for Australia but 'sidewalk' is used in the USA. Whilst, we did not determine the Chinese origin of our bilingual student, these students nevertheless believed that many Chinese people would not understand the traditional version and that a simplified or modern written version was more commonly and readily understood.

This problem with traditional or simplified Chinese was unanticipated by the research team who had conducted an extensive literature review of translation methods as well as contacting Chinese speaking colleagues. This background investigation identified that whilst Chinese had many dialects, the written form was the same regardless of dialect. In addition, a reliable professional and specialist translation service was used and the back translated version revealed only three minor differences. The original version was, however, translated into traditional Chinese and none of the researchers were aware of this as problematic. To overcome this problem the researchers recommend including several bilingual experts into the research team and following a more rigorous translation procedure (cf Jones et al. 2001). Although the equivalence of the Chinese version of the HAP and dyspnea scale was, demonstrated, continued validation of both translated versions of the questionnaires on a larger sample is warranted before using the scales in clinical practice.

CONCLUSION

In a multicultural society like that of Australia, there is need for health related research to be inclusive of people from Non English speaking backgrounds. Instruments therefore need to be developed that are relevant and meaningful for people from many cultures and languages. The process of adapting both the HAP and dyspnea scale into Chinese, using the back translation methods and the procedures for testing equivalence have been described. The process was not without challenge, and it is argued, that the outcome was worthwhile with both the HAP and dyspnea scale being available for use in (traditional) Chinese and English speaking populations. Nevertheless, further testing to compare the traditional and simplified Chinese versions to English is warranted. Finally, the benefits of research using these instruments will support the development of improved nursing practices to assist patients with chronic illnesses in maximising their physical performance outcomes.

Acknowledgements

In memorial to David Wilkes who assisted in this study. The authors gratefully acknowledge the funding grant from the School of Nursing, Family and Community Health, University of Western Sydney.

REFERENCES

Australian Bureau of Statistics. *2001 Census Basic Community Profile and Snapshot: Language Spoken at Home*. Retrieved 19 July 2004 from http://www.abs.gov.au/ausstats/abs%40census.nsf/4079a1bbd2a04b80ca256b9d00208f92/7dd97c937216e32fca256bbe008371f0!OpenDocument#Top

Australian Institute of Health and Welfare (AIHW). *Chronic Diseases and Associated Risk Factors in Australia, 2001*. Canberra: AIHW, 2002.

Brislin RW. Back translation for cross-cultural research. *J. Cross-Cultural Psych.* 1970; **1**: 187-216.

Brislin RW. The wording and translation of research instruments. In Lonner WL, Berry JW (eds). *Field Methods in Cross-Cultural Research*. Newbury Park CA: Sage, 1986; 137-164.

Brunier GM, Graydon J. The influence of physical activity on fatigue in patients with ESRD on hemodialysis. *ANNA J.* 1993; **20**: 457-461.

Cade P. Exercise and a positive attitude help dialysis patients to thrive. *Nephrol. News Issues.* 1995; **April**: 26-28.

Chakravarthy MV, Joyner MJ, Booth FW. An obligation for primary care physicians to prescribe physical activity to sedentary patients to reduce the risk of chronic health conditions. *Mayo Clin. Proc*. 2002; **77**(2): 165-173.

Chang AM, Chau JPC, Holroyd E. Translation of questionnaires and issues of equivalence. *J. Adv Nurs.* 1999; ***29*****(**2): 316-322.

Clark M. Lifestyle self-management in patients with type 2 diabetes. *J. Diab Nurs*. 2002; **6**(6): 182-188.

Disney A. *24th annual ANZDATA Registry Report.* Adelaide: Australia and New Zealand Dialysis and Transplant Registry, 2002.

Dodeen H. Effectiveness of valid mean substitution in treating missing data in attitude assessment. *Assessment & Evaluation in Higher Education*. 2003; **28**(5): 505-513.

Eidemak I, Haaber AB, Feldt-Rasmussen B, Kanstrup I.-L, Strandgaard S. Exercise training and the progression of chronic renal failure. *Nephron.* 1997; **75**(1): 36-40.

Everit BS, Wykes T. *A Dictionary of Statistics for Psychologists*. London: Arnold, 1999.

Farrell M, Gibson S, Helme R. Measuring the activity of older people with chronic pain. *Clin J Pain.* 1996; **12**(1): 6-12

Flaherty JA, Gavira FM, Pathak D, Mitchell T, Wintrob R, Richman JA, Birz S. Developing instruments for cross-cultural psychiatric research. *J Nerv Ment Dis.* 1988; **176**(5): 257-263.

Fix AJ, Daughton DM. *Human Activity Profile*. Odessa, Florida: Psychological Assessment Resources, 1988.

Hilton A, Skrutkowski M. Translating instruments into other languages: Development and testing processes. *Cancer Nurs.* 2002; **2**(1): 1-7.

Howell DC. *Fundamental Statistics for the Behavioral Sciences*. (3rd ed). Belmont, CA: Duxbury Press, 1995.

Johansen K, Chertow G, Ng A, Mulligan K, Carey S, Schoenfeld P, Kent-Braun J. Physical activity levels in patients on hemodialysis and health sedentary controls. *Kidney Int.* 2000; **57**(6): 2564-70.

Jones PS, Lee JW, Phillips LR, Zhang XE, Jaceldo KB. An adaptation of Brislin's translation model for cross-cultural research. *Nurs Res.* 2001; **50**(5): 300-304.

Landis JR, Koch GG. The measurements of observer agreement for categorical data. *Biometrics*. 1977; **33**: 159-174.

Li HCW, Lopez V. Chinese translation and validation of the Nowicki-Strickland locus of control scale for children. *Int J Nurs Stud.* 2004; **41**: 463-469.

Lin L-C, Chen M-Y, Chen Y-C, Portwood MJ. Psychometrics of a Chinese translation of the swallowing questionnaire. *J. Adv Nurs.* 2001; **34**(3): 296-303.

Mimura, C., & Griffiths, P. (2004). A Japanese version of the perceived stress scale: translation and preliminary test. *Int J Nurs Stud.* **41**: 379-385.

Nunnally J. *Psychometric Theory*. (2nd ed). New York: McGraw Hill, 1978.

Oberley ET, Compton A. Nursing interventions for rehabilitating patients. *ANNA J.* 1994; **21**(7): 407-411.

Painter P, Carlson L, Carey S, Paul S, Myll J. Physical functioning and health related quality of life changes with exercise training in hemodialysis patients. *Am J Kidney Dis.* 2000; **35**(3): 482-92.

Painter P, Carlson L, Carey S, Myll J, Paul S. Determinants of exercise encouragement practices in hemodialysis staff. *Nephrol Nurs J.* 2004; **31**(1): 67-74.

Painter P, Stewart A, Carey S. Physical functioning: definitions, measurement, and expectations. *Adv Ren Replace Ther.* 1999; **6**(2): 110-23.

Raymond MR. Missing data in evaluation research. *Evaluation & the Health Profession*. 1987; **9**: 395-420.

Satta A. Exercise training in asthma. *J Sports Med Phys Fitness.* 2000; **40**(4): 277-283.

Shalom R, Blumenthal JA, Williams RS, McMurray RG, Dennis VW. Feasibility and benefits of exercise training in patients on maintenance dialysis. *Kidney Int*. 1984; **25**: 958-963.

Shrout PE, Fleiss JL. Intraclass correlations: Uses in assessing rater reliability. *Psychol Bull.* 1979; **86**: 420-428.

Snyder T. An exercise program for dialysis patients. *Am J Nurs.* 1989; **March**: 362-364.

Speck BJ, Harrell JS. Maintaining regular physical activity in women: Evidence to date. *J Cardiovasc Nurs.* 2003; **18**(4): 282-294.

Suet-Ching WL. The psychometric properties of the Chinese dialysis quality of life scale for Hong Kong dialysis patients. *J. Adv Nurs.* 2001; **36**(3): 441-449.

Wellard S. Validation of physical activity measurement for people on dialysis treatment. *EDTNA/ERCA.* 2003; **XXIX**(3): 140-142.

Table 1

Item by item percentage of equivalent answers (%), Chi square (X^2) and kappa (K) for the Human Activity Profile (n=15, df=4)

	Activity	**%**	X^2 *(p)*	**K (p)**		**Activity**	**%**	X^2 *(p)*	**K**
1.	Getting in & out of chairs or bed (without assistance)	93	15.0 (.01)	.48 (.01)	48.	Making beds (changing sheets)	93	15.0 (.01)	.64 (.01)
2.	Listening to the radio	100	15.0 (.01)	1.00 (.01)	49.	Sweeping	93	21.9 (.01)	.77 (.01)
3.	Reading books, magazines or newspapers	93	(ns)	.00 (ns)	50.	Sweeping (five minutes, non stop)	93	18.7 (.01)	.80(.01)
4.	Writing (letters, notes)	93	(ns)	.63 (.01)	51.	Carrying a large suitcase or bowling (one line)	67	(ns)	(ns)
5.	Working at a desk or table	93	(ns)	(ns)	52.	Vacuuming carpets	87	(ns)	.30 (.01)
6.	Standing (for more than one minute)	100	(ns)	(ns)	53.	Vacuuming carpets (5 minutes non-stop)	93	15.0 (.01)	.72 (.01)
7.	Standing (for more than five minute)	93	(ns)	(ns)	54.	Painting (interior/exterior)	67	11.5 (.05)	.47 (.01)
8.	Dressing or undressing (without assistance)	100	15.0 (.01)	1.00 (.01)	55.	Walking six blocks on level ground	87	18.2 (.01)	.74 (.01)
9.	Getting clothes from drawers or closets	93	(ns)	.00 (ns)	56.	Walking six blocks on level ground (non stop)	80	11.5 (.05)	.61 (.01)
10.	Getting in or out of a car (without assistance)	100	15.0 (.01)	1.00 (.01)	57.	Carrying out the garbage	80	9.2 (.05)	.42 (.05)
11.	Dining at a restaurant	100	-	-	58.	Carrying a heavy load of groceries	93	(ns)	.63 (.01)
12.	Playing cards/table games	93	6.9 (.01)	.63 (.01)	59.	Climbing 24 steps	87	(ns)	.46 (.01)
13.	Taking a bath (without assistance)	87	9.2 (.05)	-	60.	Climbing 36 steps	100	30.0 (.01)	1.00 (.01)
14.	Putting on shoes, stockings or socks (no rest / break needed)	93	15.0 (.01)	.48 (.01)	61.	Climbing 24 steps (non stop)	87	(ns)	.46 (.05)
15.	Attending a movie, play, church event or sports activity	93	(ns)	.63 (.01)	62.	Climbing 36 steps (non stop)	100	30.0 (.01)	1.00 (.01)
16.	Walking 30 yards (27 metres)	100	-	-	63.	Climbing walking one mile	87	14.4 (.01)	.66 (.01)
17.	Walking 30 yards (non stop)	93	15.0 (.01)	.48 (.01)	64.	Climbing walking one mile (non stop)	87	18.2 (.01)	.74 (.01)
18.	Dressing/undressing (no rest or break needed)	93	15.0 (.01)	.48 (.01)	65.	Running 110 yards or playing softball/baseball	73	(ns)	.50 (.05)
19.	Using public transport or driving a car (99 miles or less)	93	(ns)	(ns)	66.	Dancing (social)	73	11.8 (.05)	.59 (.01)
20.	Using public transport or driving a car (110 miles or more)	93	15.0 (.01)	.48 (.01)	67.	Doing callisthenics/aerobics(5 min non-stop)	73	11.3 (.05)	.59 (.01)
21.	Cooking your own meals	87	(ns)	(ns)	68.	Mowing the lawn (not riding mower)	80	16.9 (.01)	.68 (.01)

22.	Washing or drying dishes	87	(ns)	(ns)
23.	Putting groceries on shelves	93	LCC	(ns)
24.	Ironing or folding clothes	87	(ns)	.30 (.01)
25.	Dusting/polishing furniture or polishing car	87	16.7 (.01)	.68 (.01)
26.	Showering	100	-	-
27.	Climbing six steps	93	15.0 (.01)	.48 (.01)
28.	Climbing six steps (non-stop)	100	15.0 (.01)	1.00 (.01)
29.	Climbing nine steps	93	15.0 (.01)	.48 (.01)
30.	Climbing twelve steps	100	15.0 (.01)	1.00 (.01)
31.	Walking 1/2 block on level ground	100	15.0 (.01)	1.00 (.01)
32.	Walking 1/2 block on level ground (non stop)	93	15.0 (.01)	.48 (.01)
33.	Making a bed (not changing sheets)	93	(ns)	.63 (.01)
34.	Cleaning windows	87	15.0 (.01)	.55 (.01)
35.	Kneeling or squatting to do light work	93	(ns)	.63 (.01)
36.	Carrying a light load of groceries	100	(ns)	(ns)
37.	Climbing nine steps (non stop)	93	(ns)	(ns)
38.	Climbing twelve steps (non stop)	93	(ns)	.48 (.01)
39.	Walking half a block uphill	80	(ns)	(ns)
40.	Walking half a block uphill (non stop)	87	(ns)	(ns)
41.	Shopping (by yourself)	93	15.0 (.01)	.48 (.01)
42.	Washing clothes (by yourself)	87	(ns)	.44 (.05)
43.	Walking one block on level ground	100	15.0 (.01)	1.00 (.01)
44.	Walking two blocks on level ground	93	(ns)	.63 (.01)
45.	Walking one block on level ground (non stop)	93	(ns)	.63 (.01)
46.	Walking two blocks on level ground (non stop)	87	(ns)	.45 (.05)
47.	Scrubbing (floors, walls or cars)	93	15.0 (.01)	.82 (.01)

69.	Walking 2 miles	80	13.3 (.01)	.65 (.01)
70.	Walking 2 miles (non stop)	87	19.2 (.01)	.80 (.01)
71.	Climbing 50 steps	93	24.0 (.01)	.87 (.01)
72.	Shovelling, digging, spading	80	13.4 (.01)	.67 (.01)
73.	Shovelling, digging, spading (5 min non-stop)	80	13.4 (.01)	.67 (.01)
74.	Climbing 50 steps (non stop)	100	30.0 (.01)	1.00 (.01)
75.	Walking three miles or golfing 18 holes	87	30.4 (.01)	.80 (.01)
76.	Walking three miles (non stop)	87	15.0 (.01)	.69 (.01)
77.	Swimming 25 yards	93	23.4 (.01)	.89 (.01)
78.	Swimming 25 yards (non stop)	93	23.0 (.01)	.89 (.01)
79.	Bicycling one mile	73	11.7 (.05)	.57 (.01)
80.	Bicycling two mile	73	12.7 (.01)	.60 (.01)
81.	Bicycling one mile (non stop)	80	15.3 (.01)	.70 (.01)
82.	Bicycling two mile (non stop)	73	11.7 (.02)	.60 (.01)
83.	Running or jogging 1/4 miles	93	25.2 (.01)	.85 (.01)
84.	Running or jogging 1/2 miles	93	26.3 (.01)	.88 (.01)
85.	Playing tennis or racquetball	80	14.5 (.01)	.65 (.01)
86.	Playing basketball (game play)	73	12.6 (.05)	.60 (.01)
87.	Running or jogging 1/4 miles (non stop)	93	25.7 (.01)	.88 (.01)
88.	Running or jogging 1/2 miles (non stop)	87	23.0 (.01)	.78 (.01)
89.	Running or jogging 1 mile	67	(ns)	.49 (.01)
90.	Running or jogging 2 miles	80	14.9 (.01)	.70 (.01)
91.	Running or jogging 3 miles	73	11.4 (.02)	.57 (.01)
92.	Running or jogging 2 miles in 12 minutes or less	80	16.7 (.01)	.68 (.01)
93.	Running or jogging 2 miles in 20 minutes or less	80	20.0 (.01)	.68 (.01)
94.	Running or jogging 2 miles in 30 minutes or less	80	20.1 (.01)	.68 (.01)

Table 2

Item by item percentage of equivalent answers (%), Chi square (X^2) and kappa (K) for the Dyspnea scale (n=16)

Activity	**%**	**X^2 (p)**	**K**
1. Walked 1/2 block uphill?	81	(ns)	.66 (.01)
2. Walked 1 block on level ground (non stop)?	88	(ns)	.55 (.01)
3. Walked 2 blocks on level ground (non-stop)?	81	(ns)	.54 (.05)
4. Walked 6 blocks on level ground (non stop)?	81	(ns)	.71 (.01)
5. Climbed 12 steps (non stop)?	94	23.4 (.01)	.77 (.01)
6. Climbed 24 steps (non stop)?	94	27.5 (.01)	.89 (.01)
7. Climbed 36 steps (non stop)?	94	27.6 (.01)	.87 (.01)
8. Carried a heavy load of groceries 30 feet on level ground?	63	(ns)	.39 (.05)

Table 3

Descriptive statistics for summed items on the HAP and Dyspnea scale

	N	Range	Scale Mean	Scale SD	Item Mean	Item SD
HAP						
English	17	94-224	126.76	33.82	1.35	.36
Chinese	19	94-198	128.32	28.12	1.37	.30
Dyspnea						
English	18	0-12	3.89	3.43	0.49	.43
Chinese	19	1-13	5.05	3.88	0.63	.48

Figure 1

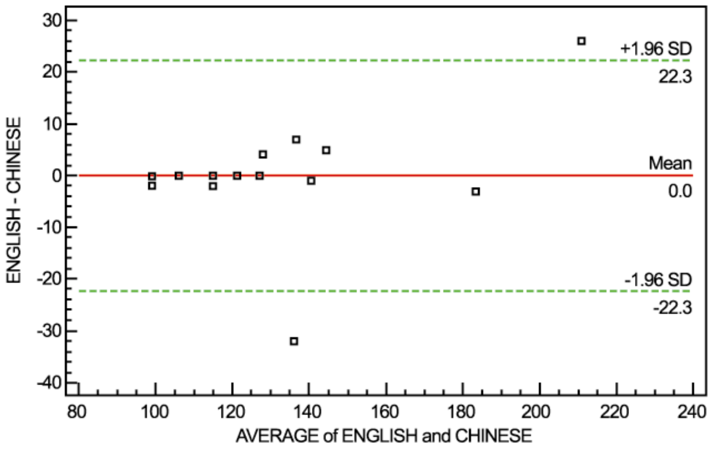

Figure 1. Bland Altman plot of English and Chinese Human Activity Profile

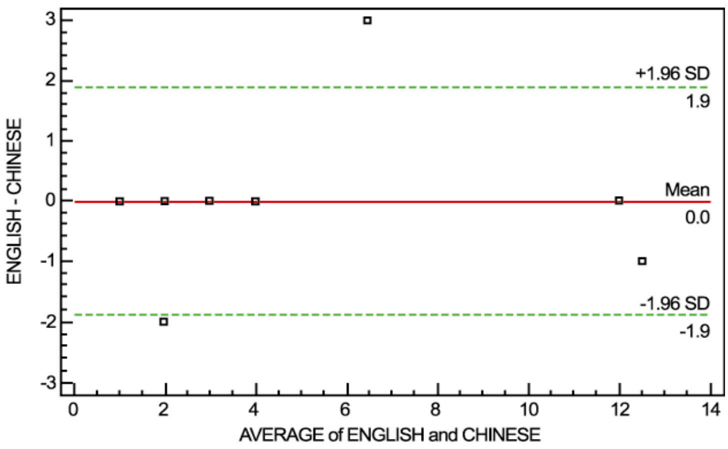

Figure 2. Bland Altman plot of English and Chinese Dyspnea Scale