Journal of Asian Vocational Education and Training
Vol. 11, pp. 13-21, 2018

ISSN 2005-0550

Construct Validation for an Instrument to Measure Clothing Fashion Design Competency Knowledge (CFaDCK) using Rasch Model

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ABSTRACT

The purpose of this study was to validate an instrument to measure clothing fashion design competency knowledge (CFaDCK) using Rasch model. A random sampling technique was used to select 330 teaching staff in fashion design. The Rasch measurement model was used to analyze the items and the respondents' reliability, the items and respondents' separation index, the items' fit, the levels of items' difficulty and the respondents' ability. The findings showed that the items' reliability index was 0.99 and the respondents' reliability index was 0.84. These values were relatively high which indicated the instrument possessed high internal consistency. The items' separation index was 8.38, which explained that there were eight different levels of items' agreement in this study. Meanwhile, the respondents' separation index was 2.25, which indicated that there were two levels of respondents' ability in this study. The results also found that 31 items were misfit to the Rasch measurement model and were dropped based on the values of outfit/infit MNSQ and the z-standardized index. Knowledge construct indicated that there was a uniform distribution between easy, medium and difficult items. This can be seen as many items were available along the continuum scale of the measurement. The statistical analysis provided a strong evidence to support the validity and reliability of the scale. Therefore, CFaDCK instrument can be used as a placement tool for the admission into the fashion program, to identify the effectiveness of the application of competencies in teachings and also to train new instructors.

Keywords: Clothing fashion design competency, instrument validation, Rasch measurement model, separation index, Malaysia

INTRODUCTION

The purpose of this study was to validate an instrument for Clothing Fashion Design Competency Knowledge (CFaDCK) using Rasch model. A good instrument to measure clothing fashion design competency should be stable, robust, and has high validity and reliability, and can be used to test the knowledge and competency of the prospective and present students of fashion design. In addition, the CFaDCK instrument is also essential in the assessment part of the of fashion design curriculum. The curriculum must be relevant with the current mold, as well as has a global outlook for the preparation of students' career in the fashion industry (Karpova, Jacobs, Lee, & Andrew, 2011; Yu & Jin, 2005). The instrument can also be used as a guide to establish national standards for the competencies of CFaDCK for

education and training institutions that offer fashion programs (Arasinah, Bakar, Ramlah, Soaib & Norhaily, 2014; Arasinah, Bakar, Ramlah, Soaib, & Zaliza, 2015). The instrument was designed to ensure that the standard competencies of CFaDCK are in line with the present requirements of the industry (Arasinah, Bakar, Ramlah, Soaib, & Norhaily, 2014; Landgren & Pasricha, 2011).

LITERATURE REVIEW

Clothing Fashion Design Competency Knowledge (CFaDCK)

CFaDCK is specific knowledge and skills that are needed by students to master fashion design. Wesley and Bickel (2005), Karpova et al. (2011), and Arasinah et al. (2014) stated that individuals can acquire fashion design knowledge and skills from institutions of technical education that offer the course. In addition, industrial knowledge can also be obtained through the collaboration with industry or work-study program to assist students to understand better about fashion design in the industry (Karpoval et al., 2011; Rentenaar, Buckland, Leslie, & Mulne, 2008). Industrial knowledge can also be acquired through work experience while studying in educational institutions (Southward & Burgess, 2003). CFaDCK encompasses clothing design (Cole & Czachor, 2008; Godawat, 2011), clothing construction (Chen-Yu, Guo, & Kemp-Gatterson, 2009), clothing selection (Chattaraman, Simmons, & Ulrich, 2013; Grogan, Gill, Brownbridge, Kilgariff & Whalley, 2013; Malik & Zaheer, 2013; Tiggemann & Andrew, 2012), and clothing care (Cameron, 2007; Chen-Yu, Guo & Kemp-Gatterson, 2009). Kamis et al. (2014a; 2014b) also found that the knowledge in fashion making field includes the design, trading, textile evaluation, as well as the knowledge about the trend in fashion and business strategy. This study was conducted to validate the instrument for fashion design competencies. The purpose of this study was to validate an instrument for Clothing Fashion Design Competency Knowledge (CFaDCK) using Rasch model. The specific objectives of this study were as follows:

(1) To test the items and respondents' reliability.
(2) To check the items and respondents' separation index.
(3) To test the item fit of CFaDCK competencies.
(4) To determine the levels of items' difficulty and respondents' ability.

Rasch analysis

The Rasch measurement model was used to determine the validity and reliability of the instrument. The study focused on several objectives to determine the items and respondents' reliability, the items and respondents' separation, the items' suitability (item fit), as well as the levels of items' difficulty and respondents' ability of CFaDCK items as in the study by Kamis et al. (2016b). The interpretation of reliability by Pallant (2011) stated that the reliability value of 0.60 is acceptable for a newly built instrument or in the early stage of the study (exploratory). Bond and Fox (2007) stated that the reliability value that exceeds 0.8 is an acceptable value, whereas the value between 0.6-0.8 is less acceptable, and the value less than 0.6 is unacceptable. Meanwhile, according to Fisher (2007), the reliability value of the items and individuals higher than 0.94 is excellent, 0.91-0.94 is very good, 0.81-0.90 is good, 0.67-0.80 is not good and 0.67 is weak. On the other hand, DeVellis (2012) and Pallant and Tennant (2007) stated that the Cronbach's Alpha value exceeding 0.7 is acceptable. The researchers had identified the items that need to be removed to enhance the reliability of the instrument in order to achieve high internal consistency.

Separation index refers to the separation of items and individuals. Individuals' separation index describes individual differences by the level of ability. Meanwhile, items' separation index explains the level of difficulty of the items (Bond & Fox, 2007; Lamoureux, Pallant, Pesudovs, Ress, Hassell, & Keeffe, 2007; Wright & Masters, 1982). Linarce (2004) stated that the items and individuals' separation value that exceeds 2.0 is good, whereas according to Fisher (2007), the value of the items and individuals < than 2 is weak, 2 to 3 is medium, 3 to 4 is good, 4 to 5 is very good and the value of > 5 is excellent. The purpose of the item fit statistics is to determine whether the items in any test measure the same construct, and whether

the individuals provide consistent response with the expected model. In addition, item fit analysis was designed to distinguish individuals with high ability and individuals with low ability based on the values of infit MNSQ/outfit MNSQ or the standard values (Bond & Fox, 2007; Smith, Rush, Fallowfield, Velikova, & Sharpe, 2008). Hence, the acceptable range of dichotomous data for the statistical infit/outfit MNSQ is between 0.7 to 1.33 (Bond & Fox, 2007). If the value exceeds 1.33 logit, this shows that the item is not homogeneous with other items in a measurement scale. For the item that is less than 0.7 logit, it indicates that there is an overlap with other items. The researchers used the "local item fit" to observe the suitability of the items, which is the mean value added with the standard deviation value to determine the suitability of infit MNSQ and outfit MNSQ (Linacre, 2002).

The levels of respondents' ability and the items' difficulty are based on the map of item-person (Wright map). The map of item-person indicates whether a test is parallel or in accordance with the ability of the respondents or targets. The right part is the position of the items and the left part is the ranking of the individuals; the upper left is the individuals with high ability and the upper right is the most difficult items (Baghaei, 2008; Kamis et al., 2012; Wilson, 2005). Good, valid and reliable items should be in the range between +4.0 and -4.0 (Bond & Fox, 2007; Rahayah, 2008).

METHODOLOGY

The survey design was used for the verification purpose of the CFaDCK instrument. A quantitative approach was used to determine the validity and reliability of the items. This study used the quantitative approach in the form of survey method with a set of questionnaires. The respondents were selected by using simple random sampling technique. A sample of 330 teaching staff in the Skills Training Institute (STI) in Malaysia were involved in the study. The data was analyzed by Rasch model (WINSTEPS version 3.72.3). The instrument contained 85 items in the form of responses based on images, multiple choices, matching, fill in the blanks and open questions. The items contained (1) Clothing Design-PR: 10 items, (2) Clothing Construction-PB: 40 items, (3) Clothing Selection-PP:9 items, (4) Clothing Care-PP:12 items, and (5) Textilel-PT:14 items.

RESULTS AND DISCUSSION

The findings were presented based on the objectives of the study in order to determine the validity and reliability of the CFaDCK instrument. The analysis was conducted to test the items and respondents' reliability, to check the items and respondents' separation index, to test the items' fit, as well as to determine the levels of items' difficulty and respondents' ability.

Items' reliability and separation

The items and respondents' reliability indicates the extent of the items' suitability (fit) to the Rasch measurement model. Table 1 displayed the summary of statistics that measure 85 items of knowledge competencies. The items' reliability index was 0.99, which indicated that the value was very high, good and acceptable (Bond & Fox, 2007; Fisher, 2007 & DeVellis, 2012; Pallant & Tennant, 2007). The items' separation index was 8.38, which shows that there are 8 different levels of items' agreement in this study. If the items' separation level is high, therefore, the measurement instruments are considered better as the items have varied difficulties.

Table 1: The items' reliability and separation

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SUMMARY OF 85 MEASURED ITEM
-------------------------------------------------------------------------------
|           TOTAL                          MODEL         INFIT        OUTFIT    |
|           SCORE     COUNT     MEASURE    ERROR      MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      212.6     330.0         .00      .15       .99     .1   1.00     .1 |
| S.D.       74.9       .1        1.33      .05       .09    1.9    .18    2.1 |
| MAX.      323.0     330.0        3.74      .39      1.33    9.4   1.52    7.4 |
| MIN.       20.0     329.0       -3.28      .12       .84   -3.7    .62   -3.5 |
|-----------------------------------------------------------------------------|
| REAL RMSE    .16 TRUE SD    1.33  SEPARATION  8.38  ITEM   RELIABILITY  .99 |
|MODEL RMSE    .16 TRUE SD    1.33  SEPARATION  8.48  ITEM   RELIABILITY  .99 |
| S.E. OF ITEM MEAN = .15                                                     |
-------------------------------------------------------------------------------
UMEAN=.0000 USCALE=1.0000
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.98
28049 DATA POINTS. LOG-LIKELIHOOD CHI-SQUARE: 27670.63 with 27635 df. p=.4387
Global Root-Mean-Square Residual (excluding extreme scores): .4040

     SUMMARY OF 330 MEASURED PERSON
-------------------------------------------------------------------------------
|           TOTAL                          MODEL         INFIT        OUTFIT    |
|           SCORE     COUNT     MEASURE    ERROR      MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN       54.8      85.0         .82      .27      1.00     .0   1.00     .0 |
| S.D.        9.8       .1         .69      .02       .17    1.3    .33    1.2 |
| MAX.       72.0      85.0        2.23      .37      1.78    5.6   2.34    4.9 |
| MIN.       10.0      84.0       -2.59      .25       .69   -2.4    .48   -2.0 |
|-----------------------------------------------------------------------------|
| REAL RMSE    .28 TRUE SD     .63  SEPARATION  2.25  PERSON RELIABILITY  .84 |
|MODEL RMSE    .27 TRUE SD     .63  SEPARATION  2.33  PERSON RELIABILITY  .84 |
| S.E. OF PERSON MEAN = .04                                                   |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = 1.00
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .85
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The items' suitability (item fit) to measure the constructs

Table 1 displayed the measure of item misfit with the Rasch measurement model. The mean square (MNSQ) on infit column for each item was studied and interpreted. The mean value for the data was 0.99 and standard deviation (SD) value was 0.09 at the bottom line on infit column. Basically, in order to determine the suitability of items (item fit), the "local item fit" was evaluated. The purpose of local item fit was to make sure that the value of infit was larger than the SD from the infit mean as proposed by Linacre (2002). Based on Table 1, the values of mean were 0.99 +/- SD (0.09) = 1.08/0.90 (column at infit MNSQ) and (1.00) +/- SD (0.18) = 1.18/0.82 (column at outfit MNSQ). Higher value indicates that the item is not homogeneous with other items in a measurement scale. Low value indicates the redundancy with other items. Tabulated in Table 2, the findings showed that 20 items from 85 items did not fit/misfit with the Rasch measurement model, thus they were dropped based on the value of outfit/infit MNSQ. The items were PJ84, PP72, P71, PR6, PB37, PB32, PR3, PB25, P80, B65, PB85, PT97, PB46, PB55, PB68, PB23, KJ88, PB19, PB61 and PT98.

In addition, the item fit can also be referred to the value of z-std. The infit/outfit value of z-std that exceeds +2 or less than -2 is regarded as less compatible with the model. Table 2 showed that there were 7 items with the value of z-std that did not meet the condition, namely PB39, PT105, PT103, PT99, PT111, PT104 and PB59. Therefore, the researcher decided to drop these items as the presence of these items have possibly resulted the data is not unidimensional. Overall, 31 items of CFaDCK were dropped.

Table 2: The measure of item fit for CFaDCK

INPUT: 330 PERSON 85 ITEM REPORTED: 330 PERSON 85 ITEM 2 CATS WINSTEPS 3.72.3

PERSON: REAL SEP.: 2.25 REL.: .84 ... ITEM: REAL SEP.: 8.38 REL.: .99

ITEM STATISTICS: MISFIT ORDER 1.08/0.9 1.18/0.82

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	ITEM
61	69	330	2.28	.14	1.11	1.4	1.34	2.8	E .02	.23	79.1	79.1	PJ84
52	273	330	-.88	.15	1.10	1.0	1.30	2.3	F .10	.27	82.1	83.1	PP72
51	269	330	-.79	.15	1.07	.8	1.29	2.4	G .12	.28	83.3	82.0	PP71
4	134	330	1.25	.12	1.06	1.6	1.26	4.6	H .17	.29	64.5	64.0	PR6
27	188	330	.53	.12	1.18	4.8	1.21	4.5	I .05	.31	55.2	64.1	PB37
23	304	330	-1.84	.21	.96	-.2	1.19	.9	J .24	.22	92.4	92.2	PB32
3	116	330	1.51	.12	1.13	3.1	1.19	2.8	K .08	.28	57.3	66.8	PR3
18	273	330	-.88	.15	1.09	1.0	1.18	1.4	L .13	.27	82.7	83.1	PB25
59	177	330	.68	.12	1.15	4.4	1.17	3.8	N .09	.30	46.4	62.9	PP80
47	106	330	1.65	.12	1.12	2.4	1.14	1.9	P .10	.27	62.4	68.8	PB65
62	100	330	1.75	.12	1.12	2.3	1.12	1.5	Q .10	.26	65.5	70.2	PJ85
29	165	330	.84	.12	1.07	2.2	1.08	1.8	W .20	.30	54.5	62.2	PB39
79	195	330	.43	.12	.94	-1.6	.90	-2.1	.40	.31	63.9	65.1	PT105
77	209	330	.23	.12	.92	-1.8	.88	-2.3	r .42	.31	69.4	67.4	PT103
74	235	330	-.16	.13	.92	-1.4	.85	-2.1	p .43	.30	73.3	72.9	PT99
84	160	330	.90	.12	.91	-2.8	.91	-2.2	l .42	.30	71.5	62.1	PT111
72	315	330	-2.46	.27	.90	-.4	.62	-1.3	j .34	.18	95.8	95.5	PT97
78	189	330	.51	.12	.90	-2.9	.86	-3.1	i .46	.31	68.2	64.3	PT104
33	280	330	-1.05	.16	.90	-1.0	.72	-2.2	h .44	.26	85.5	85.2	PB46
38	291	330	-1.36	.18	.95	-.3	.81	-1.2	.34	.25	88.8	88.4	PB55
49	274	330	-.91	.15	.89	-1.2	.80	-1.7	g .44	.27	84.2	83.4	PB68
17	276	330	-.95	.15	.88	-1.2	.80	-1.6	f .44	.27	84.8	84.0	PB23
65	253	330	-.47	.14	.88	-1.7	.80	-2.2	e .47	.29	78.2	77.5	PJ88
14	289	330	-1.30	.17	.87	-1.0	.67	-2.3	d .46	.25	88.2	87.8	PB19
42	200	330	.36	.12	.86	-3.7	.84	-3.5	c .50	.31	74.5	65.9	PB59
44	261	330	-.63	.14	.84	-2.0	.76	-2.5	b .51	.28	80.9	79.7	PB61
73	255	330	-.51	.14	.84	-2.3	.71	-3.3	a .54	.29	79.7	78.0	PT98
MEAN	212.6	330.0	.00	.15	.99	.1	1.00	.1			75.4	76.1	
S.D.	74.9	.1	1.33	.05	.09	1.9	.18	2.1			12.0	10.2	

The items' difficulty and the respondents' ability

Figure 1 illustrated the items of knowledge competencies, in which all of the items were found in the expected layout positions based on their respective dimensions, namely knowledge on clothing construction, clothing care, clothing design, clothing selection and textile evaluation. The respondents at the uppermost position indicated the individuals with high ability (logit +2.23), whereas those at the lowermost position were the individuals with low ability (logit -2.59). Meanwhile, the uppermost position of the items are the most difficult items (PB69 item= + 3.74 logit) and the lowermost position indicates the simplest item (PB15 item= -3.28 logit) as described by Wilson (2005), Baghaei (2008), and Kamis et al. (2012).

This means that the PB69 item (machine stitching error) is the most difficult item for the respondents. This also means that the respondents are not yet proficient or unskilled in the aspect of addressing the problem of repairing the stitching error made by the machine. The respondents have low ability to agree with PB69, PR12 and PT112 items that are available in the instrument of CFaDCK. Meanwhile, the PB15 item (measurements of neck/chest/hip) that is related to the knowledge of clothing construction is the easiest item. This means that respondents are proficient in the aspect of knowledge to take the body measurements. The range measure of the respondents' ability is between +2.23 and-2.59. The index measure of the difficulty met the index suggested by Bond and Fox (2007) and Rahayah (2008), which is in the range of +4.0 to -4.0.

Meanwhile, K1 is the group of teaching staff that performed moderate tasks and K2 is the only group that is capable of doing simple tasks of the competencies. The knowledge constructs show that there is a uniform distribution between easy, medium and hard items. This can be seen through most of the items that are available along the continuum scale of measurement. It can be concluded that every item in 5 constructs of CFaDCK received high agreement from the respondents. In addition, the findings of the study

also showed that all constructs indicated lower measurement of the respondents with the highest ability compared to the measurement of the most difficult items to be answered by the respondents.

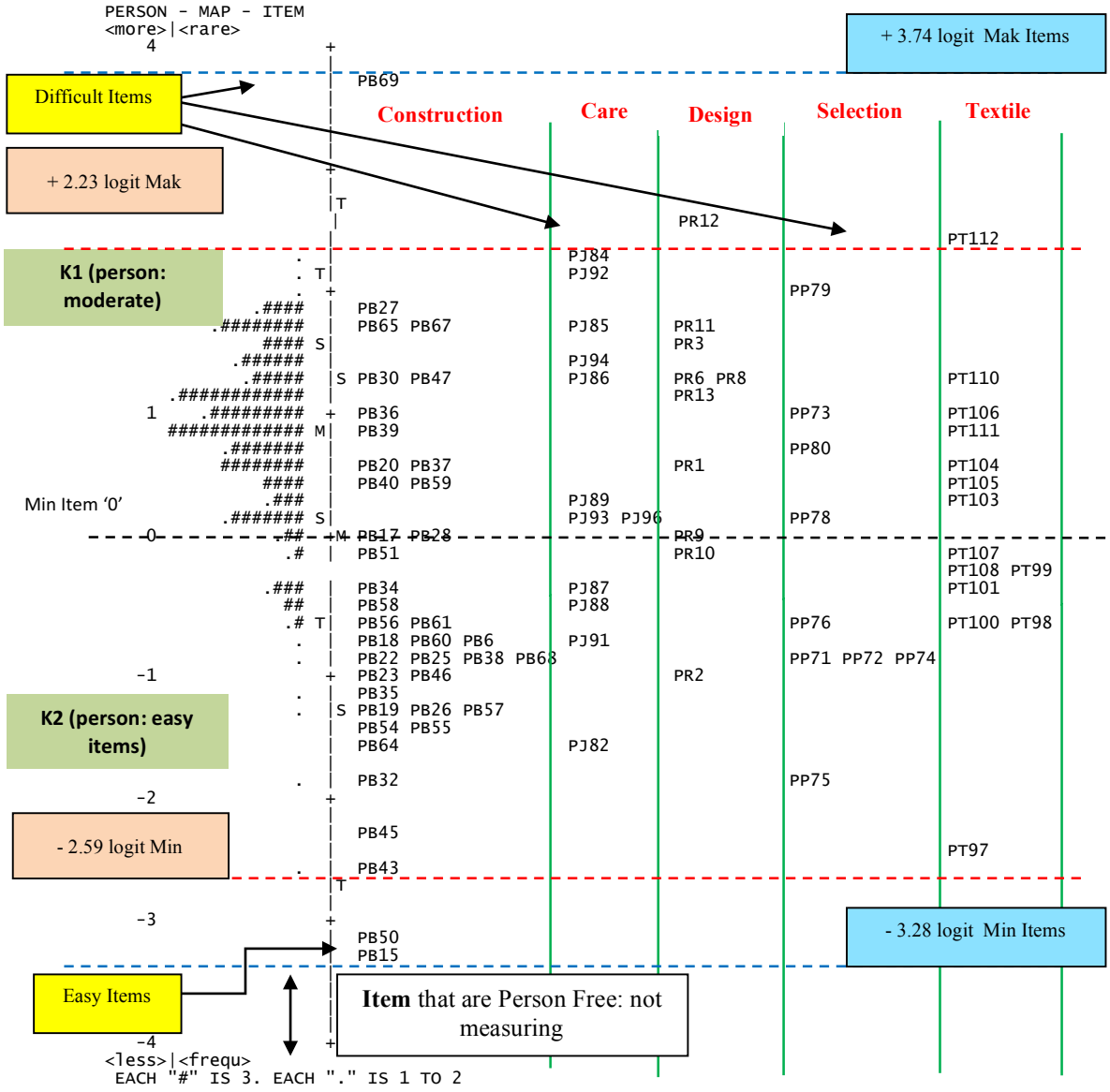

Figure 1: Distribution of items and respondents in the CFaDCK instrument (Wright Map)

CONCLUSION

The purpose of this study was to validate an instrument for Clothing Fashion Design Competency Knowledge (CFaDCK) using Rasch model. Based on the outcome of validity and reliability for 85 items of CFaDCK competencies, 31 items are recommended to be dropped and 54 items are to be retained. The final instrument includes the knowledge of clothing design, clothing construction, clothing selection, clothing care and textiles. There were 8 items of design knowledge, 27 items of clothing construction, 5 items of clothing selection, 8 items of clothing care and 6 items knowledge on textile evaluation. Therefore,

items that are available in the CFaDCK instrument are good items and have high validity and reliability because these items are not too difficult and not too easy. It is recommended that the next study of CFaDCK instrument should be preferably administered to include more respondents representing diverse ethnicity, geographical locations and various training institutions. More respondents representing various groups can provide instruments with more robust validity.

REFERENCES

Arasinah, K., Bakar, A.R., Ramlah, H., Soaib. A., & Norhaily. Ab. H. (2014). Technical skills, knowledge competencies and expected changes in the clothing industry. *International Journal Humanities, Arts, Medicine and Sciences*, 2(1), 1-12.

Arasinah, K., Bakar, A.R., Ramlah, H., Soaib, A., & Zaliza, H. (2015). Using Rasch model and confirmatory factor analysis to assess instrument for clothing fashion design competency. *International Journal of Social Science and Humanity*, 5(5), 418-421.

Baghaei, P. (2008). The Rasch model as a construct validation tool. *Rasch Measurement Transactions*, 22(1), 1145-1146.

Bond, T.G., & Fox, C.M. (2007). Applying the Rasch model: Fundamental measurement in the human sciences. Mahwah, NJ: Lawrence Erlbaum Associates.

Cameron, B.A. (2007). Laundering in cold water: Detergent considerations for consumers. *Family and Consumer Sciences Research Journal*, 36(2), 151-162.

Chattaraman, V., Simmons, K.P., & Ulrich, P.V. (2013). Age, body size, body image, and fit preferences of male consumers. *Clothing and Textiles Research Journal*, 31(4), 291-305.

Chen-Yu, J.H., Guo, J., & Kemp-Gatterson. B. (2009). Effects of household fabric softners on thermal comfort of cotton and polyester fabrics after repeated launderings. *Family and Consumer Sciences Research Journal*, 37(4), 535-549.

Cole, J.C., & Czachor, S. (2008). *Professional sewing techniques for designers*. New York: Fairchild Publications.

DeVellis, R.F. (2012). *Scale development: Theory and applications*. Thousand Oaks, CA: Sage.

Fisher, W.P. Jr. (2007). Rating scale instrument quality criteria. *Rasch Measurement Transaction*, 21(1), 1095.

Godawat, A. (2011). Extent of professional competencies developed under textile and apparel designing courses of home science graduate programme in State Agricultural Universities: A study of Rajasthan. *Journal of Community Mobilization and Sustainable Development*, 6(1), 104-107.

Grogan, S., Gill, S., Brownbridge, K., Kilgariff, S., & Whalley, A. (2013). Dress fit and body image: A thematic analysis of women's accounts during and after trying on dresses. *Body Image*, 10(3), 380-388.

Kamis, A., Bakar, A. R., Hamzah, R., & Asmiran, S. (2012). Kesahan dan Kebolehpercayaan Instrumen Kompetensi Rekaan Fesyn Pakaian (RFP) (In Malay). *Jurnal Pendidikan Malaysia*, 37(2), 11-19. ISSN: 2180-0782.

Kamis, A., Bakar, A.R., Hamzah, R., & Asimiran, S. (2014a). Validity and reliability of clothing fashion design competency (CFaDCK) instrument. *Middle-East Journal of Scientific Research 19 (Innovation Challenges in Multidisciplinary Research & Practice)*, 89-97.

Kamis, A., Bakar, A.R., Hamzah, R., & Asimiran, S. (2014b). Keperluan kompetensi pengetahuan rekaan fesyen pakaian untuk menceburkan diri dalam industri fesyen (in Malay). *Sains Humanika*, 2(4), 25-33.

Kamis, A., Jamaludin, R., Bakar, A.R., & Hanapi, Z. (2016a). Clothing fashion design competency instrument: An application of Rasch measurement model. *Advanced Science Letters*, 22(5-6), 1343-1347.

Kamis, A., Mohamed, S., Hanapi, Z., Kob, C.G.C., & Jamaluddin, R. (2016b). Fashion and clothing instrument for Malaysian fashion lecturers: An analysis of the instructors' competency scale. *GEOGRAFIA: Malaysian Journal of Society and Space*, 12 (3), 35 – 45.

Karpova, E., Jacobs, B., Lee, J.Y, Andrew, A. (2011). Preparing students for career in the global apparel industry: Experiential learning in a virtual multinational team-based collaborative project. *Clothing & Textiles Research Journal*, 29(4), 298-313.

Landgren, T.M., & Pasricha, A. (2011). Transforming the fashion and apparel curriculum to incorporate sustainability. *International Journal of Fashion Design, Technology and Education,* 4(3), 187-196.

Lamoureux, E.L., Pallant, J.F., Pesudovs, K., Ress, G., Hassell, J.B., & Keeffe, J.E. (2007). The impact of vision impairment questionnaire: An assessment of its domain structure using confirmatory analysis and Rasch analysis. *Investigative Ophthalmology & Visual Science,* 48(3), 1001-1006.

Linacre, J.M. (2002). What do infit and outfit, mean-square and standardized mean? *Rasch Measurement Transaction*, 16(2), 878.

Linacre, J.M. (2004). Test validity, and Rasch measurement: Construct, content, etc. *Rasch measurement transactions,* 18(1), 970-971.

Malik, R.K., & Zaheer, N. (2013). Imitative behavior of women in the selection of clothing. *Journal of Basic and Applied Scientific Research*, 3(5), 429-439.

Pallant, J.F. (2011). *SPSS survival manual: A step by step guide to data analysis using SPSS.* Chicago, IL: Allen & Unwin.

Pallant, J.F., & Tennant. A. (2007). An introduction to the Rasch measurement model: An example using the Hospital Anxiety and Depression Scale (HADS). *Br J Clin Psychol*, 46(1), 1-18.

Rahayah, A.S. (2008). *Inovasi dalam pengukuran dan penilaian pendidikan* (In Malay). Bangi: Universiti Kebangsaan Malaysia.

Rentenaar, T.J., Buckland, S.S, Leslie, C.A., & Mulne, S. (2008). Expending opportunities in fashion merchandising. A successful internship program through an innovative collaboration with The National Needle Arts Association. *International Journal of Consumer Studies*, 32(4), 323-327.

Smith, A.B., Rush, R., Fallowfield, L.J., Velikova, G., & Sharpe, M. (2008). Rasch fit statistics and sample size considerations for polythomous data. *BMC Medical Research Methodology*, 8(33), 1-11.

Southward, L., & Burgess, B. (2003). The effectiveness of student internships. *ITAA Proceedings*, 60, 134.

Tiggemann, M., & Andrew, R. (2012). Clothing choice, weight and trait, self-objectification. *Body Image*: *An International Journal of Research*, 9, 409-412.

Wilson, M. (2005). *Constructing measures: An items response modelling approach*. Mahwah, NJ: Lawrence Erlbaum Associates.

Wesley, S.C., & Bickel, M.C. (2005). Examination of a paradigm for preparing undergraduates for a career in the retailing industries: Mentors, curriculum and an internship. *College Students Journal*, 39(34), 680-691.

Wright, B.D., & Masters, G.N. (1982). *Rating scale analysis*. Chicago, IL: Mesa Press.

Yu, H., & Jin, B. (2005). Enhancing international dimensions in apparel and merchandizing curricula in the USA: A practitioner's perspective. *Journal of Fashion & Marketing and Management*, 9(2), 232-243.