VALIDITY AND RELIABILITY OF INSTRUMENT MEASURING CULINARY COMPETENCIES: THE RASCH MEASUREMENT MODEL

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1.1 INTRODUCTION

The current study emphasize on the development of a comprehensive measurement instrument for workers' competencies. In vocational and technical professions, competency-based assessment throws up some challenges to the professions; however the rewards are potentially very substantial. The creation of a genuinely valid competency-based assessment strategy can yield great benefit, not only to the professions, but to the whole community. Under a competency-based assessment system, assessors make judgments, based on evidence, about whether an individual meets criteria specified in the profession's competency standards (Gonczi, Hager & Athanasou, 1993). Skilled workers are recognized as quality workers when they have a unity between technical and non-technical competencies (Ahmad Nabil, Dayana Farzeeha, Muhammad Khair & Mohd Safarin, 2011). Currently there are several studies in developing instrument for competency measurement using Rasch Model Analysis for construct validation (Azliana & Jamaludin, 2013; Jackson, Draugalis, Slack, Zachry, & Agostino, 2002; and Nicholson, Griffin, Gillis, Wu, & Dunning, 2012). Bashook (2005) emphasized on psychometric requirements

in developing competency assessment. When measuring the competencies of an individual during training or in practice, the goal is for each assessment to be an accurate measure of the person's knowledge, skills, abilities, or performance. Accuracy means that the scores from the assessment are reliable and a valid measure of that person's performance. The purpose of the current study is to serve as a strong evidence to support the validity of the instrument prior to the actual study. In detail, the specific objectives are to examine the validity and reliability of the newly developed *Star-Chef Competency* instrument.

1.2 METHODOLOGY

A survey technique was employed in the data collection utilizing *Star-Chef Competency* instrument. The *Star-Chef Competency* instrument was administered to 35 hotel Chefs who work in the kitchen operations of hotels in Johor. Items in the instrument were adapted from the instrument used in previous studies by Bissett, Cheng & Brannan, 2010; Hu, 2010; and Zopiatis, 2010) which also measures Chef's and culinary practitioners' competencies as well as specific government guidelines for Malaysian Chefs' competencies, NOSS Development Guidelines Nurfirdawati, Azmanirah, Marina, Jamil, & Sarebah (2014) and World Chefs certification Scheme by World Association of Chefs Societies (WACS) (Global Culinary Certification, 2013).

1.3 RESULTS

1.3.1 Profile of the respondents

Table 1 shows the profile of the respondents; gender, age groups, job positions and years of experience in culinary industry.

Table 1 Demographic profile of Respondents

Demographic factors	***Factors***	***f***	***%***
Gender	*Male*	*23*	*65.7*
	Female	*12*	*34.3*
Age (years old)	*18-25*	*4*	*11.4*
	26-35	*17*	*48.6*
	36-45	*8*	*22.9*
	< 46	*6*	*17.1*
Job Position	*Executive Chef*	*1*	*2.9*
	Sous Chef	*7*	*20.0*
	Executive Sous Chef	*2*	*5.7*
	Pastry Chef	*3*	*8.6*
	Chef de Partie	*8*	*22.9*
	Commis	*14*	*40.0*
Culinary experience	*Below 5 years*	*8*	*22.9*
	5-10 years	*7*	*20.0*
	11-15 years	*6*	*17.1*
	16-20 years	*8*	*22.9*
	21 years and above	*6*	*17.1*
Education background	*High School graduate*	*26*	*74.3*
	College/ university (Diploma)	*9*	*25.7*

(Sample, n=35)

1.3.2 Analysis of Chefs' Competencies for Superior Work Performance (Star-Chef Competency Instrument)

The data was analyzed using Winsteps version 3.72.3, a Rasch-based item analysis program. Findings are presented into two sections; the reliability and separation index and item validity.

1.3.2.1 Reliability and Separation Index for all items in the Star-Chef Competency instrument

Figure 1 shows the value of items reliability and separation index. The value of item reliability for the *Star-Chef Competency* instrument is 0.80 with the item separation index of 2.00. The value for person reliability is 0.99 with person separation index of 10.01. These values indicate that each of the items is highly acceptable as

suggested by Bond and Fox (2007).

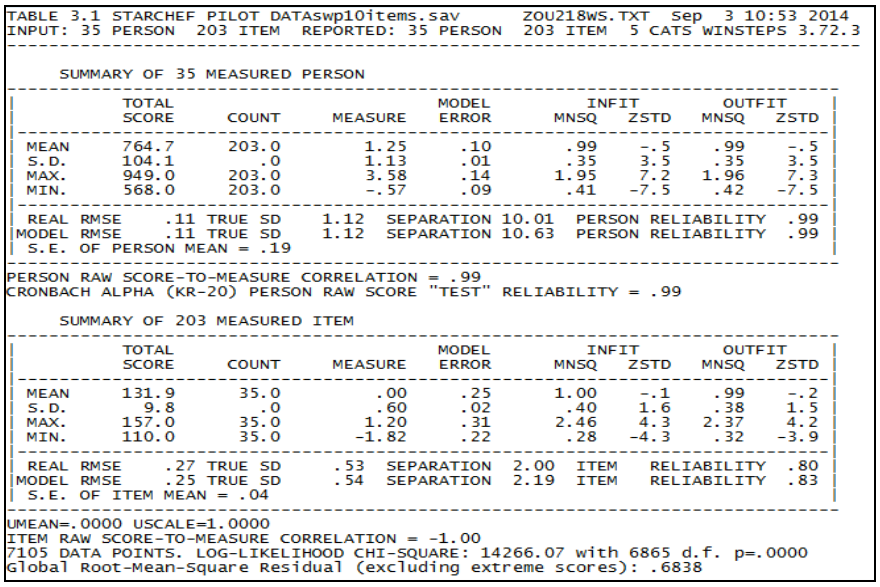

TABLE 3.1 STARCHEF PILOT DATAswp10items.sav ZOU218WS.TXT Sep 3 10:53 2014
INPUT: 35 PERSON 203 ITEM REPORTED: 35 PERSON 203 ITEM 5 CATS WINSTEPS 3.72.3

SUMMARY OF 35 MEASURED PERSON

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	764.7	203.0	1.25	.10	.99	-.5	.99	-.5
S.D.	104.1	.0	1.13	.01	.35	3.5	.35	3.5
MAX.	949.0	203.0	3.58	.14	1.95	7.2	1.96	7.3
MIN.	568.0	203.0	-.57	.09	.41	-7.5	.42	-7.5

REAL RMSE .11 TRUE SD 1.12 SEPARATION 10.01 PERSON RELIABILITY .99
MODEL RMSE .11 TRUE SD 1.12 SEPARATION 10.63 PERSON RELIABILITY .99
S.E. OF PERSON MEAN = .19

PERSON RAW SCORE-TO-MEASURE CORRELATION = .99
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .99

SUMMARY OF 203 MEASURED ITEM

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	131.9	35.0	.00	.25	1.00	-.1	.99	-.2
S.D.	9.8	.0	.60	.02	.40	1.6	.38	1.5
MAX.	157.0	35.0	1.20	.31	2.46	4.3	2.37	4.2
MIN.	110.0	35.0	-1.82	.22	.28	-4.3	.32	-3.9

REAL RMSE .27 TRUE SD .53 SEPARATION 2.00 ITEM RELIABILITY .80
MODEL RMSE .25 TRUE SD .54 SEPARATION 2.19 ITEM RELIABILITY .83
S.E. OF ITEM MEAN = .04

UMEAN=.0000 USCALE=1.0000
ITEM RAW SCORE-TO-MEASURE CORRELATION = -1.00
7105 DATA POINTS. LOG-LIKELIHOOD CHI-SQUARE: 14266.07 with 6865 d.f. p=.0000
Global Root-Mean-Square Residual (excluding extreme scores): .6838

Figure 1 Item and Person reliability for all items in *Star-Chef Competency* instrument

All items in the instrument are accepted because the separation index is equal to 2, which is considered as acceptable value (Azrilah, Azlinah, Noor Habibah, Sohaimi, Hamza & Mohd Saidfudin, 2008). The data shows that items in the *Star-Chef Competency* instrument can be categorize into 2 groups of item ability strata. Person separation is used to classify people. Low person separation (< 2, person reliability < 0.8) with a relevant person sample implies that the instrument may not be sensitive enough to distinguish between high and low performers. More items may be needed (Linacre, 2002). As for the current study, the person separation index value is 10.01 which is highly acceptable and demonstrate that there are 10 levels of person ability can be categorized in the instrument. The finding shows that the instrument is able to distinguish people with different levels of competencies.

1.3.2.2 Reliability and Separation Index for each constructs in Star-Chef Competency instrument

Table 2 shows the value of item reliability and separation index obtained for all constructs. From the table, it can be seen that most of the constructs of *Star-Chef Competency* instrument showed item reliability value that is greater than 0.7. These values indicate that each of the constructs is highly acceptable (Bond & Fox, 2007).

Table 2 Items reliability and separation index for each constructs of Star-Chef Competency instrument

Constructs	Item ID	Items	Item reliability	Separation index
Technical	1-86	86	0.78	1.90
Non-technical	87-165	79	0.84	2.33
Personality	166-195	30	0.80	2.00
Work performance	196-203	8	0.80	2.02
Total		203		

All of the constructs are accepted because the separation indexes are equal to and higher than 2, which is considered as acceptable value. However, technical competency construct need to be revised as the value of item separation is 1.90 and it has the lowest item reliability among other constructs (0.78). Item separation is used to verify the item hierarchy. Low item separation (< 3 = high, medium, low item difficulties, item reliability < 0.9) implies that the person sample is not large enough to confirm the item difficulty hierarchy (= construct validity) of the instrument (Linacre, 2002). The higher the value of the separation index of the items, the better the measurement instrument because the items are separated by levels of varying difficulty. The separation index will increase if the reliability of items is increased and misfit items are detected and removed from the analysis. Table 3 shows the value of person reliability and separation index for the constructs. The person separation index value for all constructs is acceptable.

Table 3 Person reliability and separation index for each constructs of Star-Chef Competency instrument

Constructs	Item ID	Total items	Person reliability	Separation index
Technical	1-86	86	0.98	6.84
Non-technical	87-165	79	0.98	7.56
Personality	166-195	30	0.94	4.10
Work performance	196-203	8	0.88	2.76
Total		203		

1.3.3 Item Validity

1.3.3.1 Item Polarity and Item Fit

Polarity item analysis represents by the (PTMEA correlation) value determines whether all items are moving in one direction with the constructs. Based on Table 4, all of the correlation coefficient is positive for each of the constructs, showing the item ability to measure the Chefs' competencies is valid (Linacre, 2002).

Table 4 Polarity of items' constructs

Constructs	PTMEA CORR				Total items
	Min	***Item***	***Max***	***Item***	
Technical	0.13	TNCQ7	0.86	COST5	86
Non-technical	0.24	COGN1	0.86	HOW7	79
Personality	0.4	NEUR5	0.84	CONS3	30
Work performance	0.76	SWP7	0.85	SWP4	8

*Max = maximum value; Min = minimum value

Fit of the items in measuring the constructs is determined by total mean square Infit and mean square Outfit of each item and the respondent. Items which are below or exceeded the accepted range (0.60 to 1.40) has to be separated in order to make modifications or rephrase (Linacre, 2005). Items with value exceed 1.4 are considered as items that are not homogenous with other items in the same construct measurement scale. Items below value of 0.6

indicate that these items are redundant with other items. Table 5 (Appendix) shows Infit MNSQ and Outfit MNSQ value of the instrument items and respondents. Analysis of the content validity of the 203 items revealed that 136 item not demonstrate acceptable goodness-of-fit to the Rasch measurement model, meaning that the respondents' scores on this particular item were inconsistent with their overall response patterns. Tentatively, the Rasch measurement model recommends these items to be deleted or rephrasing, after considering the study objectives and purpose of measurement.

1.3.3.2 Unidimensionality

Raw variance explained by measures is the benchmark of the instrument unidimensionality. Rasch analysis accept minimum value of standardized residual variance at 40%, however the best index value is 60% (Azrilah, et al. (2008).

Table of STANDARDIZED RESIDUAL variance (in Eigenvalue units)

		-- Empirical --		Modeled
Total raw variance in observations	=	354.3 100.0%		100.0%
Raw variance explained by measures	=	151.3 42.7%		42.2%
Raw variance explained by persons	=	72.0 20.3%		20.1%
Raw Variance explained by items	=	79.3 22.4%		22.1%
Raw unexplained variance (total)	=	203.0 57.3%	100.0%	57.8%
Unexplned variance in 1st contrast	=	29.1 8.2%	14.3%	
Unexplned variance in 2nd contrast	=	21.6 6.1%	10.6%	
Unexplned variance in 3rd contrast	=	17.8 5.0%	8.8%	
Unexplned variance in 4th contrast	=	16.3 4.6%	8.0%	
Unexplned variance in 5th contrast	=	12.6 3.6%	6.2%	

Figure 6 Standardized residual variance (in eigenvalue)

The value of unexplained variance in 1st contrast must not exceed 15% [3]. Based on Figure 6, the raw variance explained by measures is 42.7%, whereas the unexplained variance in 1st contrast is 8.2%. Table 5 shows the value of raw variance explained by measures and the value of unexplained variance in 1st contrast for each constructs in *Star-Chef Competency* instrument.

Table 5 Standardized residual variance (in eigenvalue) for each constructs in *Star-Chef Competency* instrument

Constructs	Raw variance explained	Unexplained variance

	by measures	in 1st contrast
Technical	47.5%	8.8%
Non-technical	51.3%	6.7%
Personality	50.4%	8.5%
Work performance	65.6%	13.6%

1.4 Discussions and Conclusions

Person separation for the present study is even broader continuum than for items. It is typical to find larger separation values for items than for persons, a function of the fact that most researchers work with a small number of items and a larger number of people (Green & Frantom, 2002). Conversely, the present study presents 203 items and 35 people. Separation is affected by sample size, as are fit indices and error estimates. With larger sample sizes, separation tends to increase and error decrease. Thus, the current study needs to revise and take into account this matter in order to increase the separation of items in the *Star-Chef Competency* instrument. Tentatively, in scale revision, the researchers are aware that there are 136 items that need to be put into consideration. For the next stage of study, a shortened version of the *Star-Chef Competency* instrument can be considered after further modifications. The researcher will prepare a precise instrument with less and comprehensive items to enhance understanding of the respondents towards the context of the study. With such characteristics of questionnaire, the time spends in completing the questionnaire will be much less time-consuming for technical workers who involved in demanding daily work operations. Generally, the *Star-Chef Competency* instrument is able to achieve the aims as a good instrument to measure Chefs' competencies. Analyses of validity and reliability demonstrate that psychometric properties of *Star-Chef Competency* are good, thus demonstrates the instrument able to produce meaningful measurement.

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APPENDIX-Analysis of Misfit Items

MEASURE	*MODEL S.E.*	*INFIT*		*OUTFIT*		*PT-MEASURE*		*ITEM*
		MNSQ	*ZSTD*	*MNSQ*	*ZSTD*	*CORR.*	*EXP.*	
.32	*.24*	*1.78*	*2.7*	*1.76*	*2.7*	*J.52*	*.61*	*AEST3*
.60	*.23*	*1.34*	*1.3*	*1.31*	*1.3*	*.58*	*.62*	*AEST4*
.38	*.24*	*1.22*	*.9*	*1.30*	*1.2*	*.60*	*.61*	*AEST5*
-.98	*.27*	*1.77*	*2.6*	*1.47*	*1.7*	*K .52*	*.54*	*TCNQ1*
-.22	*.25*	*1.77*	*2.6*	*1.60*	*2.2*	*L .54*	*.58*	*TCNQ2*
.03	*.25*	*2.03*	*3.3*	*2.07*	*3.5*	*E .39*	*.59*	*TCNQ3*
-.41	*.26*	*1.55*	*2.0*	*1.50*	*1.9*	*X .51*	*.57*	*TCNQ4*
.21	*.24*	*1.52*	*1.9*	*1.57*	*2.1*	*U .25*	*.60*	*TCNQ5*
.26	*.24*	*1.61*	*2.2*	*1.57*	*2.1*	*Q .57*	*.60*	*TCNQ6*
-.22	*.25*	*1.44*	*1.6*	*1.58*	*2.1*	*T .13*	*.58*	*TCNQ7*
-.03	*.25*	*1.47*	*1.7*	*1.35*	*1.4*	*.58*	*.59*	*TCNQ8*
-.62	*.26*	*1.27*	*1.1*	*1.10*	*.5*	*.50*	*.56*	*TCNQ9*
.26	*.24*	*1.35*	*1.3|*	*1.25*	*1.1*	*.62*	*.60*	*TCNQ10*
.03	*.25*	*2.46*	*4.3*	*2.37*	*4.2*	*A .24*	*.59*	*TCNQ11*
-.09	*.25*	*1.21*	*.9*	*1.11*	*.5*	*.48*	*.59*	*PDCT1*
.26	*.24*	*1.59*	*2.1*	*1.61*	*2.2*	*P .49*	*.60*	*PDCT2*
-.22	*.25*	*1.33*	*1.3*	*1.47*	*1.8*	*.45*	*.58*	*PDCT3*
-.09	*.25*	*2.00*	*3.2*	*2.19*	*3.8*	*C .26*	*.59*	*PDCT5*
-.83	*.27*	*1.81*	*2.7*	*1.93*	*3.0*	*F .37*	*.55*	*TECH5*
-.76	*.27*	*1.64*	*2.2*	*1.70*	*2.4*	*N .31*	*.55*	*TECH6*
-.35	*.26*	*1.64*	*2.2*	*1.36*	*1.4*	*O .59*	*.58*	*QUAL1*
-.83	*.27*	*1.46*	*1.7*	*1.39*	*1.5*	*.45*	*.55*	*QUAL4*
1.06	*.22*	*1.50*	*1.9*	*1.61*	*2.2*	*R .41*	*.63*	*NUTR5*

.81	.23	1.39 1.5	1.57 2.1	V .45 .62	SCIE1
1.20	.22	1.41 1.6	1.49 1.9	.47 .64	SCIE3
.86	.23	1.29 1.2	1.49 1.9	.41 .63	SCIE4
.86	.23	1.18 .8	1.37 1.5	.42 .63	SCIE5
-.35	.26	1.36 1.4	1.37 1.4	.46 .58	CULT1
.70	.23	1.22 .9	1.24 1.0	.38 .62	CULT2
-.76	.27	1.26 1.0	1.41 1.5	.34 .55	SOCI3
.26	.24	1.23 1.0	1.26 1.1	.60 .60	SOCI4
-1.06	.28	1.61 2.2	1.40 1.5	S .39 .54	SOCI5
-1.82	.31	1.44 1.6	1.19 .7	.37 .47	SOCI6
.03	.25	1.44 1.6	1.35 1.4	.58 .59	SOCI8
-.22	.25	1.33 1.3	1.23 1.0	.55 .58	PROF4
-1.29	.29	1.40 1.5	1.17 .7	.22 .52	PROF5
-.09	.25	1.39 1.5	1.33 1.3	.46 .59	LEAR5
-.28	.25	1.79 2.6	1.58 2.1	I .31 .58	EMOT2
-1.29	.29	1.27 1.1	1.06 .3	.37 .52	EMOT8
-.16	.25	1.17 .7	1.23 1.0	.55 .59	WHY7
-.03	.25	1.46 1.7	1.36 1.4	.66 .59	WHOM7
.38	.24	1.82 2.8	1.75 2.7	H .67 .61	WHOM8
.32	.24	1.37 1.4	1.23 1.0	.49 .61	SWP3
-.28	.25	1.50 1.8	1.39 1.5	Y .60 .58	SWP4
-.09	.25	1.48 1.8	1.34 1.4	.49 .59	SWP7
-.16	.25	2.36 4.0	2.05 3.4	B .43 .59	SWP8
.60	.23	1.83 2.8	1.78 2.7	G .60 .62	SWP11
.81	.23	1.56 2.1	1.51 1.9	W .65 .62	SWP13
-.90	.27	1.25 1.0	1.13 .6	.55 .55	AGRE2
.60	.23	1.35 1.4	1.33 1.3	.57 .62	NEUR4
-.62	.26	1.28 1.1	1.28 1.1	.43 .56	E XTR1
1.11	.22	1.45 1.7	1.49 1.9	Z .50 .63	EXTR3
-.22	.25	1.80 2.7	2.12 3.6	D .46 .58	OPEN1
.09	.24	1.70 2.4	1.74 2.6	M .37 .60	OPEN2
-.22	.25	1.32 1.3	1.15 .7	.52 .58	PHYS1
-.98	.27	1.23 .9	1.11 .5	.45 .54	PHYS3
-1.13	.28	1.36 1.4	1.24 .9	.42 .53	PHYS4
-1.29	.29	1.23 .9	1.14 .6	.41 .52	PHYS5
BETTER FITTING OMITTED					
.15	.24	.86 -.5	.80 -.8	.73 .60	INNO5
.26	.24	.68 -1.3	.73 -1.2	.61 .60	INNO3
.60	.23	.65 -1.5	.62 -1.8	.68 .62	NUTR1
.15	.24	.66 -1.5	.70 -1.3	.67 .60	NUTR2
.32	.24	.69 -1.3	.80 -.8	.50 .61	NUTR3
.86	.23	.78 -.9	.81 -.8	.61 .63	NUTR6
.65	.23	.80 -.8	.77 -1.0	.70 .62	AEST1
.09	.24	.76 -1.0	.77 -.9	.69 .60	CREA1
.86	.23	.75 -1.0	.78 -.9	.65 .63	CREA4
-.28	.25	.43 -2.8	.52 -2.3	m .67 .58	HYGN1
-.16	.25	.59 -1.8	.64 -1.6	.66 .59	HYGN2
-.48	.26	.73 -1.1	.77 -.9	.59 .57	HYGN3
.26	.24	.64 -1.6	.73 -1.2	.55 .60	HYGN5
.43	.24	.65 -1.5	.78 -.9	.60 .61	HYGN6
.21	.24	.74 -1.1	.77 -1.0	.66 .60	RESE1

.54	.23	.73 -1.1	.67 -1.5	.75 .61	RESE2
.75	.23	.40 -3.2	.40 -3.2	e .90 .62	RESE3
. 91	.22	.61 -1.8	.58 -2.0	y .83 .63	RESE4
.03	.25	.69 -1.3	.71 -1.3	.63 .59	RESE5
.15	.24	.29 -4.0	.34 -3.7	c .75 .60	SAFE1
-.98	.27	.68 -1.3	.63 -1.6	.76 .54	SAFE3
-1.29	.29	.59 -1.9	.53 -2.0	q .71 .52	SAFE4
-.22	.25	.33 -3.6	.32 -3.8	b .83 .58	SAFE5
-.35	.26	.78 -.8	.73 -1.1	.58 .58	SAFE6
.09	.24	.59 -1.9	.64 -1.6	.77 .60	QUAL3
-.35	.26	.58 -1.9	.59 -1.9	r .73 .58	QUAL5
.54	.23	.48 -2.6	.51 -2.4	l .78 .61	WHOM1
.26	.24	.60 -1.8	.61 -1.8	z .71 .60	WHOM2
.49	.23	.45 -2.7	.49 -2.6	j .89 .61	WHOM3
-.03	.25	.55 -2.1	.57 -2.0	p .83 .59	WHOM4
-.03	.25	.74 -1.1	.76 -1.0	.80 .59	WHOM5
-.76	.27	.52 68.6	.59-2.2	.59 -1.8	WHOM6
-.22	.25	.80 -.8	.77 -1.0	.67 .58	WHY1
-.09	.25	.59 -1.9	.59 -1.9	t .73 .59	WHY3
-.09	.25	.75 -1.0	.72 -1.2	.65 .59	WHY4
-.35	.26	.68 -1.4	.64 -1.6	.74 .58	WHY6
-.03	.25	.59 -1.9	.63 -1.7	.75 .59	HOW1
.16	-.25	.59 -1.8	.63 -1.7	.73 .59	HOW2
-.35	.26	.62 -1.7	.66 -1.5	.77 .58	HOW3
.09	.24	.70 -1.3	.72 -1.2	.78 .60	HOW4
.60	.23	.76 -1.0	.81 -.8	.68 .62	HOW6
.03	.25	.48 -2.5	.50 -2.5	k .87 .59	HOW7
.43	.24	.64 -1.6	.66 -1.5	.79 .61	INFO3
-.16	.25	.51 -2.3	.54 -2.2	o .59 .59	LEAR1
-.62	.26	.64 -1.5	.67 -1.4	.56 .56	LEAR4
-.22	.25	.74 -1.1	.72 -1.2	.52 .58	MGMT1
-.09	.25	.43 -2.9	.45 -2.8	h .76 .59	MGMT2
-.41	.26	.57 -1.9	.60 -1.8	v .76 .57	MGMT3
-.22	.25	.37 -3.3	.36 -3.5	d .81 .58	MGMT4
-.69	.27	.52 -2.2	.51 -2.3	n .64 .56	MGMT5
.60	.23	.71 -1.3	.78 -.9	.51 .62	COGN2
.43	.24	.65 -1.5	.73 -1.2	.75 .61	COGN3
.65	.23	.49 -2.5	.60 -1.9	u .77 .62	COGN4
.60	.23	.64 -1.6	.72 -1.2	.62 .62	COGN5
.09	.24	.61 -1.8	.63 -1.7	.74 .60	COGN6
.60	.23	.70 -1.3	.70 -1.3	.67 .62	COGN7
.65	.23	.63 -1.7	.63 -1.7	.75 .62	COGN8
-.28	.25	.63 -1.6	.59 -1.9	.73 .58	PROF2
.03	.25	.66 -1.5	.65 -1.6	.82 .59	PROF3
.65	.23	.55 -2.1	.62 -1.8	.74 .62	ENTR1
1.15	.22	.28 -4.3	.32 -3.9	a .76 .64	ENTR2
1.15	.22	.72 -1.2	.76 -1.0	.65 .64	ENTR3
1.20	.22	.42 -3.1	.40 -3.3	f .80 .64	ENTR4
.86	.23	.42 -3.0	.42 -3.1	g .74 .63	ENTR5
.03	.25	.64 -1.6	.69 -1.4	.78 .59	COST3
-1.29	.29	.80 -.8	.91 -.2	.49 .52	SOCI7

-.62	*.26*	*.65 -1.5*	*.62 -1.7*	*.68 .56*	*EMOT4*
-.35	*.26*	*.68 -1.4*	*.63 -1.7*	*.73 .58*	*EMOT5*
-.16	*.25*	*.68 -1.4*	*.71 -1.3*	*.73 .59*	*LEAD1*
-.62	*.26*	*.80 -.7*	*.77 -.9*	*.74 .56*	*LEAD2*
-.09	*.25*	*.79 -.8*	*.81 -.8*	*.69 .59*	*NEUR2*
-.76	*.27*	*.63 -1.6*	*.65 -1.5*	*.66 .55*	*AGRE3*
.21	*.24*	*.61 -1.8*	*.60 -1.9*	*x .72 .60*	*OPEN3*
.43	*.24*	*.60 -1.8*	*.60 -1.9*	*w.73 .61*	*OPEN4*
-.16	*.25*	*.68 -1.4*	*.71 -1.3*	*.68 .59*	*CONS2*
-.41	*.26*	*.69 -1.3*	*.68 -1.4*	*.67 .57*	*CONS3*
-.48	*.26*	*.46 -2.6*	*.45 -2.8*	*i .81 .57*	*CONS5*
-.48	*.26*	*.78 -.9*	*.74 -1.1*	*.64 .57*	*SWP1*