CHAPTER IV

RESULTS

This study was to develop the Thai Family Health Routines sacle (TFHR scale) and to test its psychometric properties. This chapter reported the results of pilot study which used to generate the item pool of the TFHR scale, pretest study for selecting the appropriate items to construct the TFHR scale, and main study for testing construct validity and reliability of the scale.

Scale construction

In scale construction phase, finding from pilot study using semi-structural in-depth interview with Thai families, results of pretest study using item analysis and item review were reported including characteristics of the samples of both studies.

1. Results of pilot study

1.1 Demographic data of the pilot study

Participants for in-depth interview composed of 13 Thai families from both nuclear and extended family types where most of them were nuclear families which had at least one child (66%). The participants' occupations vary, but a large group of them earned their living from their own business as merchants (38%). The participants' income ranged from less than 5,000 to more than 30,000 bahts a month, and only one family had a low income (7.7%). And more than half of those had been living in urban areas (69.3%). More detail was showed in Table 4.

Table 4   Background of participants for in-depth interview (N = 13)

Characteristics	Number	Percentage (%)
Family type		
Nuclear family without a child	1	7.7
Nuclear family with child(ren)	8	61.6
Exptend fmily	4	30.7
Major occupation		
Farmer	1	7.7
Daily employee	2	15.4
Company employee	3	23.1
Merchant	5	38.4
Civil servant	2	15.4
Family income (baht/month)		
Less than 5, 000	1	7.7
5000-10,000	1	7.7
10,001-20,000	0	0
20,001-30,000	7	53.9
More than 30,000	4	30.7
Current residental place		
Rural area	4	30.7
Urban area	9	69.3

1.2   Finding from the in-depth interview

The finding from the in-depth interview showed that Thai families had routines activities related to their health after they woke up until went to bed. It was seen that routines health behaviors of Thai family were incorporated into the six categories; self-care, safety and prevention, mental health behavior, family care, and family caregiving routine that proposed by Denham (2003a). These routines were intertwined with daily activities as follows:

1.2.1 Self-care routine composed of information about routines health behaviors that could be categorized into five aspects of self-care routines as follows:

1.2.1.1 Dietary practice includes such behaviors as cooking food at home or buying ready cooked food, having meal styles and meal time, eating useful food, selecting safety food to eat, keeping left over food, snacking, etc.

1.2.1.2 Sleep and rest pattern include such behaviors as sleeping and waking time, taking a nap, etc.

1.2.1.3 Hygiene care includes such behaviors as keep themselves clean after waking up and before going to bed, keeping themselves away from germs, etc.

1.2.1.4 Exercise and physical activity include such behaviors as playing sport, doing exercise and moving parts of the body

1.2.1.5 Sexuality, in this aspect, the participants gave little information directly related to sexuality as routines behaviors. They talked only about contraceptive method, and do not have bad behaviors that caused distrust of their spouse.

1.2.2 Safety and prevention routine composed information which was categorized into three aspects of safety and prevention routine.

1.2.2.1 Prevention of disease includes such behaviors as eating clean and safety food, avoidance of eating foods caused of diseases, getting health check-up, keeping them self warm when exposed to the cold, protecting themselves from mosquitoes, dust, or germs,

1.2.2.2 Prevention of injury includes such behaviors as getting rid of source of mosquitoes and poisonous animals, preventing accidents at home such as using electrical safety devices, checking house safety before going to bed or outside, unplugging electrical appliances and turn off gas valve, etc., and

preventing accidents or injuries on the road such as using safety devices of cars and motorcycles, driving cars or riding motorcycles carefully, etc.

1.2.2.3 Avoidance of risk behaviors includes such behaviors as drinking beer and liquors, taking addict substances, smoking, quarrelling, using rough words, and fighting, etc.

1.2.3 Mental health behavior routines compose of information about routine health behaviors which categorized into aspects of regular behavior related to self-esteem, personal integrity, success in work and play, and stress management as follows:

1.2.3.1 Regular behaviors related to self-esteem include such behaviors as letting children solve their small problems by themselves, giving opportunity to do some difficult things by themselves, showing concerns by words, staying with, supporting and encouraging in difficult time, providing favor things without request, making good relationships with neighbors,

1.2.3.2 Regular behaviors related to personal integrity include such behaviors as showing gratitude to parents such as giving money, taking good care, giving special food for good health, visiting, etc. which make parent glad and happy, donating things or money, and volunteer to do works.

1.2.3.3 Regular behaviors related to success in work and play include such behaviors as earning enough for family expense, not going to work or school late, going to work or school everyday, doing work overtime, playing creative games, playing with friends, completing homework, etc.

1.2.3.4 Stress management includes such behaviors as using reason to solve conflicts or arguing, keeping quiet for a while, going outside, sleeping, listening to radio, talking with other persons or relatives, etc.

1.2.4 Family care compose of information about doing leisure activity together such as eating outside, cooking and eating special meal at home, doing houseworks, going outside, chatting, playing games or sports, etc.; doing religious practices such as offering food to the Buddhist monk every morning, respecting to image of the Buddha, etc.; doing traditional activities such as participating in Ceremony of circling a temple on the Buddhist Lend day, participating in Loi Kratong or Songkran festival, etc.; and having sense of humor such as teasing each other, talking joke, etc.

Based on Thai cultutre, routine behavior of family care were closely interrelated. One patterened behavior might represent all aspect the routines. For example, eating food at resteraunt on weekend, this behavior also represent to cerebration for Birthday of the family member, leisure activity, or sense of humor. Therefore, family care was seen as a unidimension construct of family health routines in Thai family.

1.2.5 Family caregiving routines compose of informantion about routine health behaviors categorized into aspects of household task, health teaching, family resource management, and socialization.

1.2.5.1 Household tasks include such behaviors as providing school uniforms, clothes, and foods, doing or helping each other to do houseworks, such as cleaning house, washing clothes, gardening, arranging things within and around the house, etc.

1.2.5.2 Health teaching involves warning, suggesting or encouraging family members to protect themselves from disease or illness including such behaviors as not eating unsafety foods, warning about driving fast or driving when get drunk, suggesting about having unsafesex, etc.

1.2.5.3 Family resource management involves routine behaviors aimed at maintaining economic status of the family such as not buying things if do not have enough money, buying things by considering usefulness and worthwhile, not extravagant use, or loaning for buying nessesary things, etc.

1.2.5.4 Socialization involves such behaviors as disciplining, warning or encouraging family members to save money, loyalty, tell the truth, repaying for parents, interesting in study or working, respecting or acting politely to seniorities, etc.

1.2.6 Illness care routines compose of information about providing medicine, feeding or staying with sick member(s), going back to the hospital when ill conditions worsen, not going to see a doctor even if being sick, going to see a doctor immediately when getting wounded from sharp objects or animals, buying drug without a prescription, going to the hospital or legal clinic, following up the doctor's appointment, keeping on treatement plan continuously.

Knowledge from reviewing literature and in-depth interview with Thai families used to generate an item pool of the TFHR scale. The item pool composed of 206 items covering 6 constructs; self-care routine, safety and prevention routine, mental health behavior routine, family care routine, family caregiving routine, and illness care routine (Appendix E). Statement of each was worded from knowledge of both the literature and the in-depth interview based on the operational definition of the six routines: 1) Self-care routine consisted of 63 items covering 5 dimensions; 25 items for dietary practice, 10 items for sleep and rest pattern, 18 items for hygiene care; 4 items for exercise and physical activity, and 6 items for sexuality, 2) Safety and prevention routine consisted of 45 items covering 3 dimensions; 20 items for

prevention of disease, 12 items for prevention of injury, and 13 items for avoidance of risk behaviors, 3) Mental health behavior routine consisted of 40 items covering 4 dimensions; 18 items for regular behavior related to self-esteem, 6 items for regular behavior related to personal integrity, 7 items for regular behavior related to success in work and play, and 9 items for stress management, 4) Family care routine was a unidimentional subscale consisted of 15 items, 5) Family caregiving routine consisted of 26 items covering 4 dimensions, 11 items for household task, 4 items for family resource management, 4 items for health teaching, and 7 items for socialization, 6) Illness care routine was a unidimensional subscale consisted of 16 items.

2. Results of the pretest study

The pretest study was to determine what items to use in order to access the second draft of the TFHR scale used in the main study. In pretest study, item analysis and item review were performed to identify appropriate items, and improve the item quality which would be contained in the second draft scale.

2.1 Characteristics of samples for the pretest study

Data for the pretest study were collected through a convenient sampling method at the central region of Thailand. The samples, for item analysis procedure, were 145 Thai families living in central region of Thailand. The respondents, mothers/wives, were asked to complete the questionnaires. All respondents were between 16 and 70 years old (X = 41.56, SD = 9.95). Almost of them were Buddhist (97.9%) and level of education lower than bachelor degree (89%). Characteristic of the samples were various family types. Most samples were nuclear family with at least one child (75.8%), and without any children (5.5%). More than half of samples had major occupation as

employees who worked at various places (33.8%) and who were daily hired (23.4%).

Family incomes per month of most samples ranged from 5,000 to 10,000 bahts

(34.3%). Most samples (71.7%) lived in their own houses. The number of samples lived

in urban (51.7%) and rural areas (48.3%) were nearly equal (Table 5).

Table 5   Characteristics, number, and percentage of the samples for item analysis

Characteristics	Number (N=145)	Percentage (%)
Age group (years)		
Less than 20	1	0.7
20 – 30	21	14.5
31 – 40	45	31.0
41 – 50	56	38.6
50 – 60	17	11.7
More than 60	5	3.5
Min. = 16 Max = 70, X = 41.56, SD = 9.95		
Education of respondents		
Primary school	51	35.2
Secondary school	50	34.5
Vacational school	28	19.3
Bachelor degree	16	11.0
Higher than Bachelor degree	0	0.0
Religion		
Buddhism	142	97.9
Islam	2	1.4
Cristianity	1	0.7
Family type		
Nuclear family without child(ran)	8	5.5
Nuclear family with child(ran)	110	75.8
Exptend fmily	22	15.2
Single-parent family	5	3.5
Major occupation of the family		
Farmer	13	9.0
Daily employee	34	23.4
Company employee	49	33.8
Merchant	22	15.2
Civil or State enterprise servant	27	18.6
Family income		
Less than 5, 000 Baht	12	8.2
5000-10,000 Baht	58	34.0
10, 001-20,00 Baht	32	22.1
20,001-30,000 Baht	20	13.8
More than 30,000 Baht	23	15.9

Table 5 (Continued)

Characteristics	Number (N=145)	Percentage (%)
Current residental place		
Rural area	70	48.3
Urban area	75	51.7
Status of house occupying		
Own house	104	71.7
Rental house	22	15.2
Relative's house	17	11.7
Welfare house	2	1.4

2.2 Results of item analysis

The item analysis was used to determine which items in the first draft TFHR scale were appropriate for constructing the second draft of the TFHR scale. The results of item analysis (Appendix M) were presented as follows:

Item distribution was examined by using mean, standard deviation, skewness, and kurtosis. For 145 items of the second draft scale, their means ranged from 0.938 to 2.945 with standard deviation ranged from 0.258 to 1.272. Two statistic indicators, represented normal distribution, were skewness and kurtosis. In this study, there were 44 items obtained skewness values falling inside the range of -1 to +1 which represented normal distribution (Hair, Aderson, Tatham, and Black, 1998). There were 101 items which had negatively high skewness ranged from -1.005 to -5.852. The high negative values of skewness indicated that, for each item, a number of large individual scores were greater than a number of small individual scores.

Precision of items was examined using corrected item-total correlations. Results of the pretest study showed that 91 of all 145 items had the item-total correlations greater than 0.3. For correlation matrix, when considered, there were 4 paired-items; 72/73, 79/82, 80/81, and 135/137, which had inter-item correlation ≥ 0.7.

Chronbach's alpha coefficient of the first draft scale was quite high (α = 0.944) which indicated that a number of items of the second draft scale would be reduced due to many redundant items. Additionally, the value of Chronbach's alpha coefficients, if any item was deleted, was still high and ranged from 0.943 to 0.945.

2.3 Results of Item review

The item review by fifteen mothers/wives of Thai families was used to investigate appropriateness and clarity of each item wording. It was found that during questionnaires being held, some respondents acted such behaviors as long pauses, scribbing, or answer-changing. These behaviors and recorded including causes behind those response behaviors such as misunderstanding, having difficulty to understand, or reluctant to answer some item statements. This finding was used for modifying those item statements.

Time used for answering the TFHR questionnaires was varied ranged from 16 minutes to 55 minutes. Time taken during process depended on respondents' age, the older they were, the more time they used. After completing the questionnaires, a briefing had taken place in which respondents were invited to comment on each item and offered suggestions (Appendix N).

Guidances for selecting appropriate items were conducted from item distribution and the results of both item analysis and item review. Although statistic data had been very useful for item selection, the final decision to include or reject any items in the final scale should be primarily based on human judgment regarding to what the item

analysis shown (Nunnally and Bernstein, 1994). Therefore, corrected item-total, inter-item correlation, operational definition of the TFHR constructs, and results of item review, were cooperated on making decision to select the items.

Based on the findings from pretest study, 85 items were retained and 60 items were deleted. For undeleted items, 14 items were revised and improved their wording according to comments or suggestion from the resuts of item review. The final outcome of the scale construction phase was the second draft of the TFHR scale which composed of 85 items covering the six constructs of family health routines concept including self-care routines, safety and prevention routines, mental health behavior routines, family care routines, family caregiving routines, and illness care routines. The second draft scale also reflected all aspects of routine health behaviors of Thai family provided in the operational definitions.

Psychometric testing phase

In psychometric testing phase, a main study was conduct to test whether the second draft of the TFHR scale was a reliable and valid research instrument. The results of main study were demonstrated by results of examining item description, testing construct validity and reliability, including demographic data.

1. Characteristics of the samples for conducting CFA

The samples were 1,040 Thai families of which their representatives who answered the TFHR scale were mothers/wives. Most of respondents were Buddhist (97.9%). Their age were between 16 and 75 (Mean = 39.92, SD = 9.71). Level of

education of samples was primary school (29.6%), secondary school (27.3%), and bachelor's degree (28.4%).

For samples characteristics, data showed that large number of samples were nuclear family with at least one child (41.1%), and without any children (11.0%). More than half of samples had major occupation as employees who worked at various places (24.1%), and those who were daily hired (15.2%). For civil or state enterprise servant, its amount was nearly equal to those two groups of employees (30.6%). For family incomes per month, most samples earned 5,000-20,000 bahts; 32.6% of samples earned 5,000-10,000 bahts, and 21.0% of samples earned 10,001-20,000 bahts; while small number of samples earned less than 5,000 bahts (11.6 %). A large number of samples (62.5%) had their own houses. The number of samples lived in urban (53.3%) and rural areas (46.7%) was nearly equal. More details were shown in Table 6.

Table 6 Characteristics, Number, and Percentage of the samples for CFA in main study (N=1040)

Characteristics	Number (N=145)	Percentage (%)
Age group (years)		
Less than 20	6	0.6
20 – 30	174	16.7
31 – 40	406	39.0
41 – 50	315	30.3
50 – 60	109	10.5
More than 60	30	2.9
Min. = 16 Max = 75, X = 39.861, SD = 9.73		
Education of respondents		
Primary school	308	29.6
Secondary school	284	27.3
Vocational school	128	12.3
Bachelor degree	295	28.4
Higher than Bachelor degree	25	2.4
Religion		
Buddhism	1018	97.9
Islam	16	1.5
Christianity	6	0.6

Table 6 (Continued)

Characteristics	Number (N=145)	Percentage (%)
Family type		
Nuclear family without child(ran)	114	11.0
Nuclear family with child(ran)	427	41.0
Exptend fmily	453	43.6
Single-parent family	46	4.4
Major occupation of the family		
Farmer	99	9.5
Daily employee	158	15.2
Company employee	251	24.1
Merchant	214	20.6
Civil or State enterprise servant	318	30.6
Family income		
Less than 5, 000 Baht	121	11.6
5000-10,000 Baht	339	32.5
10, 001-20,00 Baht	218	21.0
20,001-30,000 Baht	142	13.7
More than 30,000 Baht	220	21.2
Current resident place		
Rural areas	486	46.7
Urban areas	554	53.3
Status of house occupying		
Own house	650	62.5
Rental house	191	18.4
Relative's house	179	17.2
Welfare house	20	1.9

2. Descriptive statistics for the 85- items TFHR scale

The data were examined prior analysis of the confirmatory factor analysis using descriptive statistics in order to identify possible violations of the multivariate normality assumption asscosiated with maximum likelihood estimation (Kline, 1998). The results showed that means of 85 items of the second draft scale ranged from 1.28 to 2.97 with standard deviation ranged from 0.209 to 1.241. In case of skewness values, it was found that there were 20 items represented normal distribution. At least 21 items of 85 items represented item characteristics of non-normal distribution. Therefore, using non-significant chi-square test as a threshold of overall fit index in further investigation on first order CFA should be carefully considered (Appendix M).

3. Item parceling

The second draft scale was conceptualized as a multidimensional scale. Measurement model of the scale was identified as having 85 items with 6 factors; 4 multidimensional factors and 2 unidimensional factors, as shown in Figure 5.

For well understanding in all model, figures demonstrated in this study, symbols of all indicator names were presented as follows:

|			
DIETARY	= Dietary practice	ESTEEM	= Regular behavior related to self-esteem
SLEEP	= Sleep and rest pattern	INTEGRIT	= Regular behavior related to integrity
HYGIENE	= Hygiene care	WORK	= Regular behavior related to success in work and play
EXERCISE	= Exercise and physical activity	STRESS	= Stress management
SEXUAL	= Sexuality	HOUSE	= Household task
DISEASE	= Prevention of disease	RESOUR	= Family resource management
INJURY	= Prevention of injury	HTEACH	= Health teaching
RISKB	= Avoidance of risk behavior	SOCIAL	= Socialization
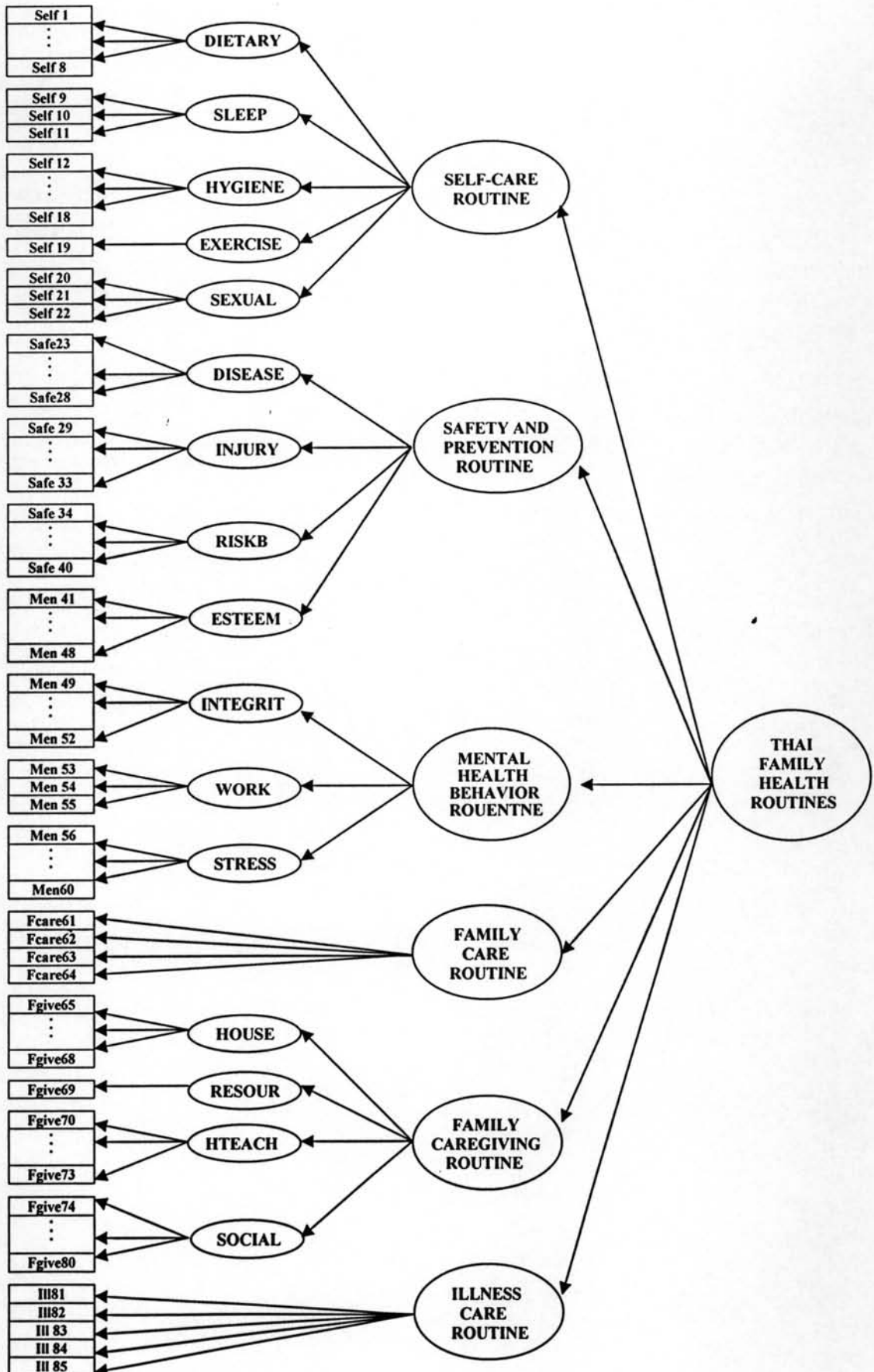
Figure 5 Measurement model of the scond draft of the TFHR scale

According to complexity of the measurement model of the second draft scale which consisted of both multidimensional factors and unidimension factors, conducting second order factor analysis to test construct validity was limited. Therefore, sub-dimensions of the 4 factors had to be parcelled. The factor structure model of the second draft based on parceling items was presented in figure 6.
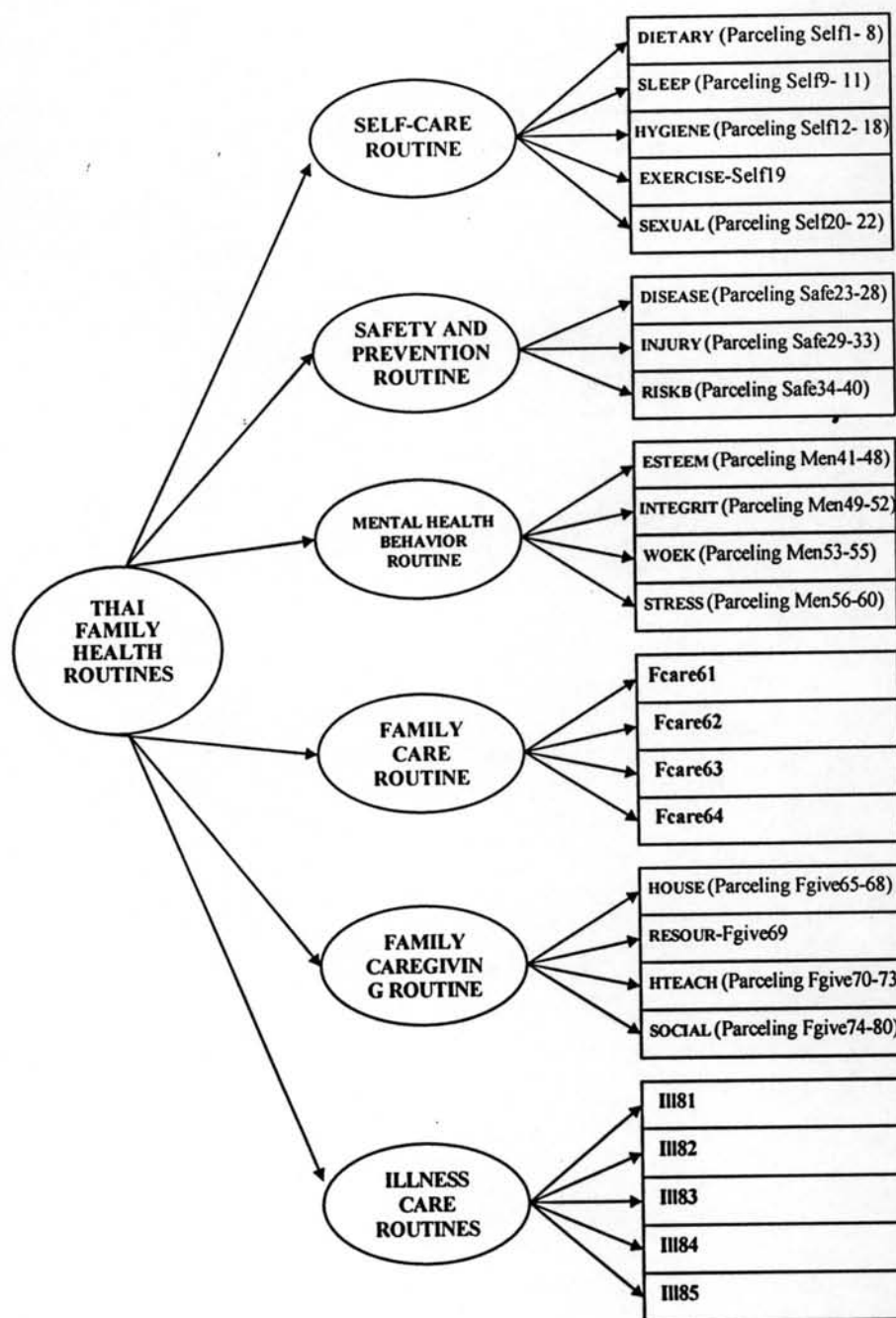
Figure 6 The factor structure of the second draft of the TFHR Scale

Before pacelling item, first order factor analysis was employed on 14 sub-dimensions in order to confirm that the individual items which belonged to those sub-dimensions were their actual indicators. Results of the first order factor showed that all of 14 sub-dimension models were overall fit as shown in Table 7.

Table 7   Overall fit indexes of factor structure models for fourteen item parcels

Factor/Item parcel	Index of overall model fit					
	GFI	**AGFI**	**NFI**	**CFI**	**RMR**	**RMSEA**
Self-care routine						
1. Diertary practice	0.99	0.97	0.96	0.97	0.018	0.045
2. Sleep and rest pattern			**Perfect Fit**			
3. Hygiene care	1.00	0.99	0.99	1.00	0.006	0.023
4. Sexuality			**Perfect Fit**			
Safety and prevention routine						
5. Prevention of disease	1.00	1.00	1.00	1.00	0.004	0.000
6. Prevention of injury	1.00	0.99	0.96	0.98	0.006	0.034
7. Avoidance of risk behavior	1.00	0.99	0.99	1.00	0.006	0.020
Mental health behavior rotuine						
8. Regular behavior related to self-esteem	0.99	0.98	0.99	0.99	0.008	0.037
9. Regular behavior related to personal integrity	1.00	0.99	0.98	0.99	0.005	0.018
10. Regular behavior related to success in work and play			**Perfect Fit**			
11. Stress management	1.00	0.99	0.99	0.99	0.009	0.024
Family caregiving routine						
12. Household task			**Perfect Fit**			
13. Health teaching	1.00	1.00	1.00	1.00	0.002	0.000
14. Socalization	1.00	1.00	1.00	1.00	0.001	0.000

After assessing the overall model fit, the measurement model fit of 14 sub-dimension model were assessed to identify their appropriately actual indicators. In case of a large sample size greater than 100 subjects (n=1,040), factor loadings which relatively low on a factor provided meaningful power for interpretation of the data (Cohen, 1999; Kachigan, 1991). Therefore, a cut off magnitude of factor loading for appropriate indicators in this study was considered at 0.2. The items which had factor loadings less than 0.2 or the items were deleted as well as items which their

loadings were non-statistically significant. The reason for deleting those items was that they were not or insufficient to predict variability of the factors which they belonged to. The results of assessing measurement model fit showed that 15 items were deleted due to unsatisfied factor loadings. After conducting the first order factor analysis, the number of items of the second draft scale was reduced from 85 items to 70 items in final version of the TFHR scale.

In self-care routine factor, all of 22 factor loadings, ranging from 0.08 to 0.64, were statistically significant (Table 8). There were 5 items had to deleted due to their factor loading less than 0.2. The 5 deleted items were Self4 *"Our family members eat burned grilled or fried food"*, Self 5 *"Our family members have three meals a day"*, Self9 *"Each day our family members have individual spare time to do their favorite activities"*, Self14 *"Our family members wear clothes repeatedly without washing"*, and Self 18 *"Our family members urinate and excrete in the lavatory"*.

Table 8   Factor loading of item parcels belonged to self-care routine factor

| Items | Factor loading (regression coefficient) | | | | t-values |
	Dietary practice	Sleep and rest pattern	Hygiene care	Sexulity	
Self1	0.24				8.02
Self2	0.23				8.36
Self3	0.22				4.62
Self4	0.15				4.23
Self5	0.17				6.59
Self6	0.32				6.98
Self7	0.31				6.60
Self8	0.29				4.69
Self9		0.16			4.72
Self10		0.64			6.24
Self11		0.41			5.97
Self12			0.33		7.73
Self13			0.21		5.70
Self14			0.16		6.00
Self15			0.34		7.15
Self16			0.40		7.03
Self17			0.20		6.33
Self18			0.08		4.91
Self20				0.24	8.71
Self21				0.22	10.87
Self22				0.22	10.79

Reg ression coefficient is significant at the t-value > 1.96

In case of safety and prevention routine factor, all of 18 factor loadings, ranged from 0.10 to 0.78, were statistically significant (Table 9). There were 3 items; Safety29 *"Our family members do not store sharp objects in the safe place"*, Safety 38 *"Our family members take drugs that give feeling of happiness and energy, such as amphetamine, ecstasy, etc"*, and Safety40 *"Our family members harm each other by whipping or locking in the house"*, which had factor loadings less than 0.2, but only two items were deleted. The item named Safety29 was not deleted because its factor loading was much closed to 0.20.

Table 9   Factor loading of item parcels belonged to safety and prevention routine factor

| Items | Factor loading (regression coefficient) | | | t-values |
	Prevention of disease	Prevention of injury	Avoidance of risk behaviors	
Safety23	0.31			8.28
Safety24	0.25			11.26
Safety25	0.21			8.69
Safety26	0.78			9.23
Safety27	0.28			7.37
Safety28	0.30			9.64
Safety29		0.19		3.06
Safety30		0.25		5.90
Safety31		0.20		7.68
Safety32		0.10		7.78
Safety33		0.28		8.14
Safety34			0.29	5.67
Safety35			0.38	7.27
Safety36			0.25	4.32
Safety37			0.27	5.60
Safety38			0.25	6.46
Safety39			0.23	5.10
Safety40			0.13	6.58

Regression coefficient is significant at the t-value > 1.96

Considering mental health behavior rotine factor, all of 15 factor loadings, ranged from 0.06 to 0.60, were statistically significant ((Table 10). There were 5 items which were deleted due to their factor loadings less than 0.2 including items named Men48 *"Our family members quarrel with neighbors"*, Men50 *"Our family members steal or pick someone's belongings without permission"*, Men51 *"Our family*

members gamble", Men57 "*When conflicts arise in our family, we reasonably talk to each other until clearly understand*", and Men59 "*Our family members relieve stress by eating snacks all the time or buying in bulk*".

Table 10 **Factor loading of item parcels belonged to mental health behavior routine factor**

Items	Factor loading (regression coefficient)				t-values
	Self-esteem	Personal integrity	Work and play	Stress	
Men41	0.33				12.82
Men42	0.37				16.44
Men43	0.33				15.58
Men44	0.34				16.36
Men45	0.35				16.79
Men46	0.25				11.33
Men47	0.23				10.47
Men48	0.06				3.00
Men49		0.34			5.35
Men50		0.10			4.28
Men51		0.10			3.47
Men52		0.20			4.61
Men53			0.25		6.00
Men54			0.60		7.82
Men55			0.37		6.99
Men56				0.46	12.57
Men57				0.16	5.39
Men58				0.35	10.83
Men59				0.16	4.83
Men60				0.56	14.44

* Reg ression coefficient is significant at the 0.05 level (2-tailed).

In family caregiving routine, all of 15 factor loadings, ranged from 0.15 to 0.47, were statistically significant (see Table 11). Items with factor loadings less than 0.2 were Fgive67 "*For our family, we clean our house*", Fgive68 "*Our family members refuse to do housework even if it is their turns to do*", Fgive75 "*For our family, we warn and advise each other of paying attention to work and study*", and Fgive78 "*For our family, we encourage each other to respect elderly persons*". For this factor, there were 3 items; Fgive68, Fgive75, and Fgive78, were deleted because both factor loading and t-value were low. In case of item named Fgive67, it was not deleted because of t-values also high and its factor loading quite close to 0.2.

Table 11   **Factor loading of item parcels belonged to family caregiving routine factor**

Items	Factor loading (regression coefficient)			t-values
	Household task	Health teaching	Socialization	
Fgive65	0.29			22.36
Fgive66	0.29			22.82
Fgive67	0.17			16.08
Fgive68	0.15			4.00
Fgive70		0.33		14.56
Fgive71		0.36		16.38
Fgive72		0.47		19.68
Fgive73		0.32		11.49
Fgive74			0.31	11.48
Fgive75			0.15	6.09
Fgive76			0.22	13.05
Fgive77			0.20	12.97
Fgive78			0.17	11.19
Fgivr79			0.31	9.70
Fgive80			0.21	12.41

* Reg ression coefficient is significant at the 0.05 level (2-tailed).

4. Second order factor analysis

The 70 item-TFHR scale (Appendix J) was conducted to test construct validity using second order factor analysis. Before testing on construct validity against the hypothesized facture structure model of the TFHR sacle, scores of 14 item parcels were generated by using regression method which offered in SPSS for Windows version 14.0 (Pett, Lackey, and Sullivan, 2003). The reasons for using regression method were that factor loadings of each of 14 item parcels were unequal, and to minimize the variances between the composed factor score (scores of item parcel) and the real factor score underlying theory (Kim and Mueller, 1978; Nonglak Wiratchai, 1999). The score of each item parcel was used as a representative of an observed score for each sub-dimentions. Scores of item parcels were standardized of which mean equal to zero and standard deviation equal to one.

3.2.1 Testing assumption for CFA

Testing assumptions for CFA, normality, linear relationship, collinearity, Bartlett test of sphericity, Kaiser-Meyer-Olkin test, and Measure of Sampling Adequacy were examined. The results demonstrated that it was fairly appropriate to conduct CFA for testing construct validity of the TFHR scale.

In normality testing, skewness and kurtosis of twenty five indicators ranged from -0.214 to -4.679 and -0.082 to 29.317 respectively (Table 12). The data showed that only 7 indicators were approximately normal distribution because values of skewness fell inside the range of -1 to +1.

Table 12   Descriptive statistic of items and item parcels of hypothesized factor structure of the second draft of theTFHR scale

Iindicators	Mean	S.D.	Skewness	Kurtosis
DIETARY (Parcelling Self1, 2, 3, 6, 7, 8)	0.000	1.000	-.476	-.099
SLEEP (Parcelling Self10, 11)	0.000	1.000	-.487	-.275
HYGIENE (Parcelling (Self12, 13, 15, 16, 17)	0.000	1.000	-1.438	2.370
Self 19 (EXERCISE)	1.65	.834	-.214	-.489
SEXUAL (Parcelling Self20-22)	0.000	1.000	-4.679	29.317
DISEASE (Parcelling Safe23-28)	0.000	1.000	-1.564	2.629
INJURY (Parcelling Safe29, 30, 31, 33)	0.000	1.000	-1.804	4.397
RISKB (Parcelling Safe34-39)	0.000	1.000	-2.278	10.687
ESTEEM (Parcelling Men41-47)	0.000	1.000	-1.890	4.109
INTEGRITY(Parcelling Men49, 52)	0.000	1.000	-1.899	5.914
WORK (Parcelling Men53-55)	0.000	1.000	-.890	.410
STRESS (Parcelling Men56, 58, 60)	0.000	1.000	-.776	.082
Fcare61	2.50	.687	-1.273	1.164
Fcare62	2.55	.641	-1.395	1.869
Fcare63	2.49	.670	-1.146	.865
Facare64	2.49	.667	-1.132	.866
HOUSE (Parcelling Fgive65-67)	0.000	1.000	-4.142	21.408
Fgive 69 (RESOUR)	2.20	.913	-.757	-.604
HTEACH (Parcelling Fgive70-73)	0.000	1.000	-1.876	3.696
SOLIAL(Parcelling Fgive74, 76, 77, 79, 80)	0.000	1.000	-2.617	8.315
ILL81	2.66	.774	-2.209	3.738
ILL82	2.80	.534	-3.074	10.029
ILL83	2.82	.489	-3.064	10.480
ILL84	2.34	.928	-.995	-.465
ILL85	2.83	.473	-3.379	13.642

Identifying linear relationship between variables in this study, items with high skewness were examined by scatter plots. By this method, it was found that there was no evidence of true collinearity. Collinearity was tested on the correlation matrix of 25x25 indicators. The results showed that magnitude of correlation ranged from 0.002 to 0.566. It was found that 80.37% of total correlations were statistically significant ($p < .01, .05$). There was no correlation coefficient greater than 0.60 which indicated no collinearity within the correlation matix (Nonglak Wiratchai, 1999; Pett, Lackey, and Sullivan, 2003). This evidence consistent with the value of tolerance and Variance of Inflation Factor (VIF) of which all of tolerance values were not closed to 0 (0.475-0.877), VIF vaules were less than 10 (1.199-2.105) (Appendix O).

Bartlett test of sphericity was supposed to test the hypothesis with its matrix identifying its own, and also provided determination of multivariate normal distribution (Dixon, 2001; Hair, Anderson, Tatham, and Black, 1998; Pett, Lackey, and Sullivan, 2003). In this study, result of Bartlett test of sphericity was significant ($\chi^2 = 6715.100$, $df = 300$, and $p = .000$). The result indicated that 25 indicators had multivariate normal distribution, and the correlation matrix was not an identity matrix. Kaiser-Meyer-Olkin (KMO) test showed that the size of the overall KMO was 0.887 (Appendix P). This value was meritorious level because the value was more than 0.8 (Pett, Lackey, and Sullivan, 2003). Measure of sampling adequacy (MSA) test showed individual MSAs ranging from 0.749 to .933. Ideally, the individual MSAs among diagonal elements of the anti-image matrix would be greater than 0.70 (Pett, Lackey, and Sullivan, 2003). Acceptable KMO and set of eighteen MSAs implied that the sample size (N=1040) for CFA was sufficient to produce the correlation matrix which was factorable.

3.2.2   Model specification and identification

As represented in the measurement model (Figure7), the concept of family health routines was design to be illustrated by a hierarchical factorial structure composed of six first-order factors (self-care, safety and prevention, mental health behavior, family care, family caregiving, and illness care routines) and a single second-order factor (Thai family health routines). Based on the structural domain of the Family Health Model developed by Denham (2002; 2003a), there was no identified relationships among six factors. The hypotesized model of factor structure of the TFHR sacle was over-identified model. The model hypothesized was specified that:

1) The 25 indicators were hypothesized as having measurement error, and six factors were uncorrelated with each other.

2) Response to the TFHR scale could be explained by six first-order factors (Self-care, Safety and Prevention, Mental health behavior, Family care, Family caregiving, and Illness care routine).

3) Each item would have a non-zero loading on the first-order factor it was designed to measure, and zero loadings on the other five first-order factors.

4) Error terms associated with each item would be uncorrelated.

5) Co-variation among the six factors would be explained fully by their regression on the second-order factors.
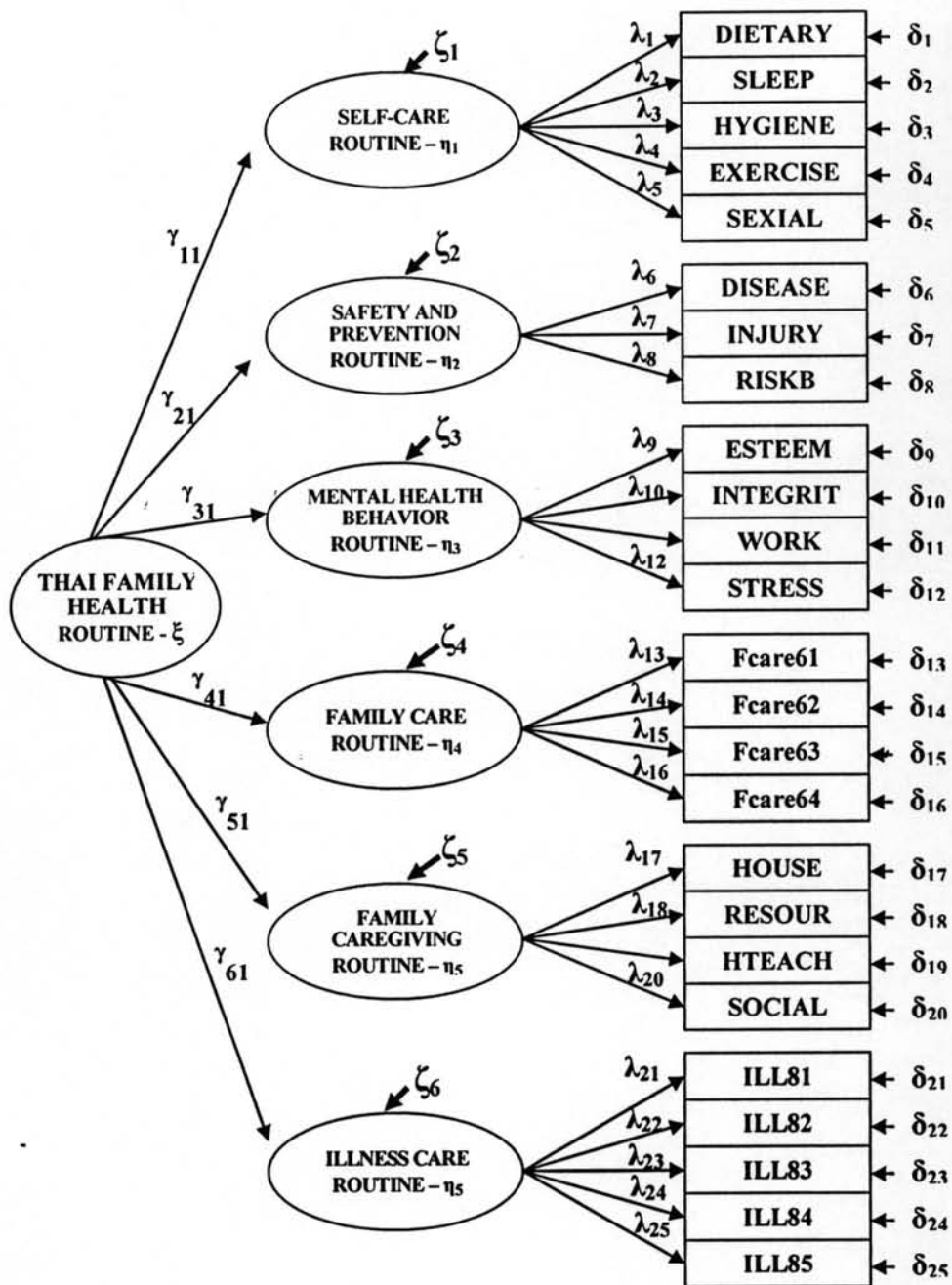
Fugure 7 The hypothesized factor structure model of the TFHR scale

3.2.3 Assessment model fit

3.2.3.1 Assessment of overall model fit

The hypothesized factor structure model of the TFHR scale was tested using second-ordered factor analysis. The results showed inacceptable model fit to the data (χ^2 [275] = 2767.407, p =0.00, χ^2/df = 10.063, GFI = 0.824, CFI = 0.873, RMSEA = 0.093). It was indicated that the hypothesized model was misfit a possible data-model (Table 13). Therefore, the hypothersized model was modified and retested.

3.2.3.2 Assessment of measurement model fit

For the hypothesized model, although the overall model was misfit, factor loadings of all factorsn ranging from 0.12 to 0.74 were statistically significant ($p < .05$). LISREL output suggested that some factors might be correlated due to very large indices for PSI between some factors such as self-care routine and safety and prevention routine, safety and prevention routine and family care routine, etc. In addition, residuals of many indicators were very large which indicated that error term between indicators were possible correlated.

3.2.4 Model modification

The hypothesized model was modified terms in order to reduce residual values of each indicator by using two methods; allowing relationships of error terms between possible paired indicators and allowing possible relationships among the six factors.

Regarding model modification, researcher judged to free error terms of each paired-item under rationale consideration. The results showed that there were 21 paired-indicators of which their error possibly correlated.

Considering item statements of the 18 paired-indicators, it was found that they shared some error variance with each other due to measuring correlated attributes with each other. For examples, item statements of "ill81"r and "ill84", which state that *"When our family members get sick, we do not concern of sick members and bring them to see the doctor when they are severely sic"* and *"Our family sick members do not take medicine as prescribed by doctor"* respectively, represent a correlated attribute about "not concern to take care themselves when have got sick".

In case of freeing error terms between individual item and item parcel, the item named "ill83" and the item parcel named "esteem" also shared correlated attribute with each other. Considering item statement of ill83 *"When our family members get sick, we console, encourage and assist sick members, and stay together"* and item statement of men42 in item parcel of esteem *"When our family members have problems, we stay side by side, console and encourage each other"*, it was found that they share attributes of "support and encourage with each other" in different conditions. More detail about statements of individual items of the TFHR scale is shown in Appendix Q.

After modifying the model, the results indicated that all indices of overall model fit of the modified model met the criteria for supporting the good model fit ($\chi^2_{[247]}$ = 769.704, p =0.00, χ^2/df = 3.11, GFI = 0.944, CFI = 0.970, RMSEA = 0.045). In this study, chi-square was not used as the goodness of fit statistic because it was sensitive to high skewness and large sample size (Bollen and Long, 1993; Byrne, 1998; Diamantopoulos and Siguaw, 2000)

Table 13   Fit indices of hypothesized and modified factor structure of the TFHR

scale (N=1040)

Goodness of Fit Statistics	Values	
	Hypothesized model	Modified model
Chi-Square	2767.407	769.704
	(p = 0.000)	(p = 0.00)
Goodness of Fit Index (GFI)	0.824	0.944
Root Mean Square Error of Approximation (RMSEA)	0.093	0.045
Comparative Fit Index (CFI)	0.873	0.970
Parsimony normed fit index (PNFI)	0.787	0.786

These results indicated that the modified factor structure model was congruence with empirical data, and under investigation the factor structure in the modified model was possible to be the factor structure of the TFHR construct (Figure 8). The results of assessment model fit of the modified model were reported on two parts; the first level of CFA and the second level of CFA.
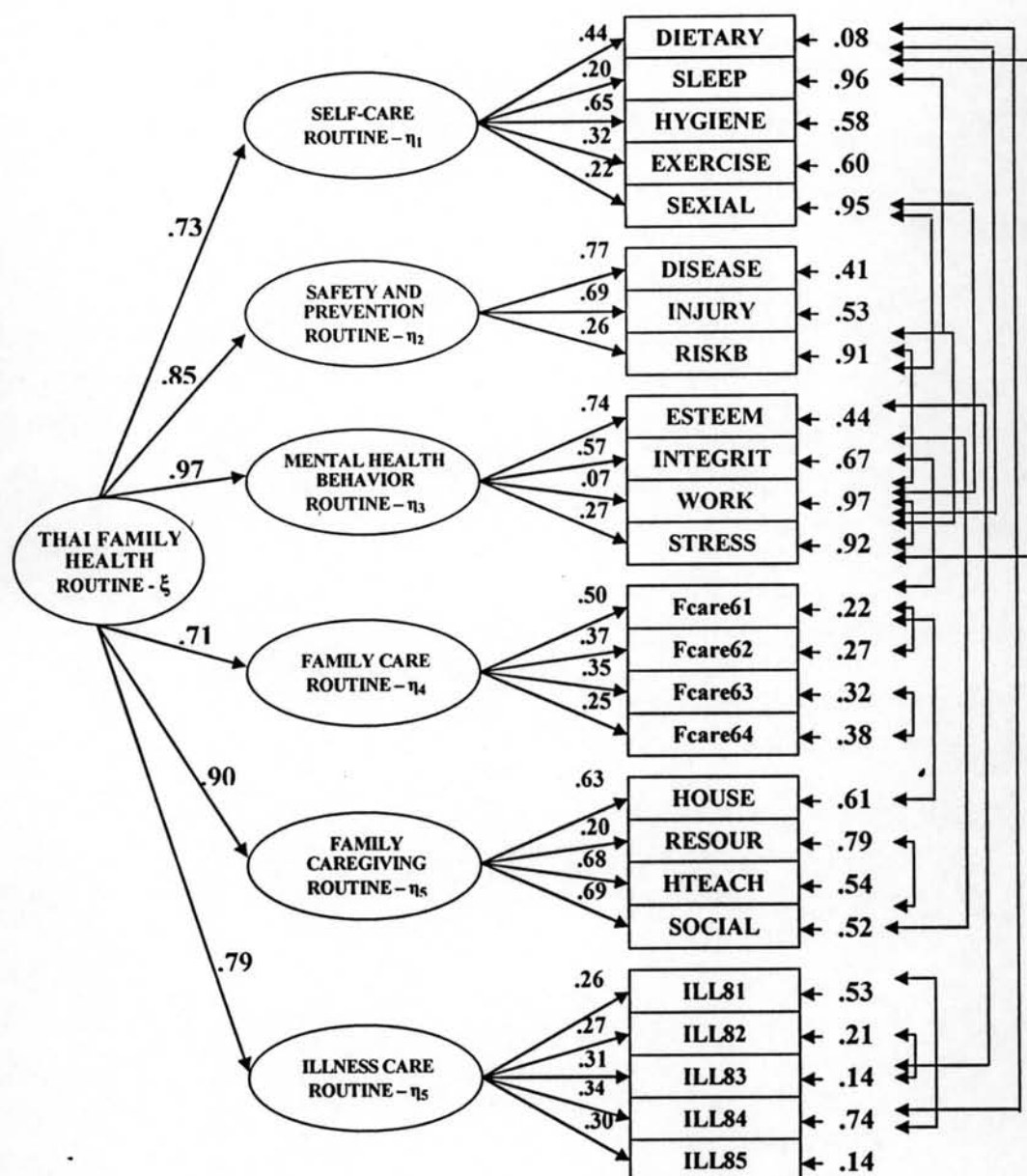
Figure 8   Modified measurement model of the TFHR scale

3.2.4.1   The first level of CFA

There were 25 indicators and 6 factors in the first level of CFA as shown in Figure 7. The results showed that factor loading of all 25 indicators ranging from 0.073 to 0.765 were statistically significant (Table 14). There was one indicator, regularly behavior related to success in work and play, which its factor loading was very low ($b = 0.07$).

Table 14 Factor loadings and construct reliability

Item/Item parcels	Standardized factor loadings					
	SELF	SAFETY	MENTAL	FCARE	FGIVE	ILLNESS
DIETARY	0.436					
SLEEP	0.202					
HYGIENE	0.651					
EXERCISE	0.316					
SEXUAL	0.216					
DISEASE		0.765				
INJURY		0.686				
RISKB		0.265				
ESTEEM			0.745			
INTEGRIT			0.574			
WORK			0.073			
STRESS			0.267			
Fcare61				0.498		
Fcare62				0.371		
Fcare63				0.354		
Facare64				0.251		
HOUSE					0.627	
RESOUR					0.202	
HTEACH					0.676	
SOLIAL					0.693	
ILL81						0.260
ILL82						0.274
ILL83						0.314
ILL84						0.343
ILL85						0.297
Factor loading	0.731	0.850	0.972	0.709	0.902	0.792
Construct reliability (Squared Mulitiple Correlation)	0.534	0.722	0.946	0.503	0.814	0.627

DIETARY	= Dietary practice		HOUSE	= Household task
SLEEP	= Sleep and rest pattern		RESOUR	= Family resource management
HYGIENE	= Hygiene care		HTEACH	= Health teaching
EXERCISE	= Exercise and physical activity		SOCIAL	= Socialization
SEXUAL	= Sexuality		ILLNESS	= Illness care
DISEASE	= Prevention of disease		SELFCARE	= Self-care rouitnes
INJURY	= Prevention of injury		SAFETY	= Safety and prevention rouines
RISKB	= Avoidance of risk behavior		MENTAL	= Mental health behavior routines
ESTEEM	= Mental health behavior related to self-esteem		FAMCARE	= Family care routines
WORK	= Mental health behavior related to integrity		FAMGIVE	= Family caregiving routines
STRESS	= Mental health behavior related to work and play		ILLNESS	= Illness care routines
FAMCARE	= Stress management			

3.2.4.2 The second level of CFA

The results show that all regression weights between the six factors and the Thai family health routines (TFHR) ranged from 0.709 to 0.972 were statistically significant at $p < .01$. It was indicated that self-care routine, safety and prevention routine, mental health behavior routine, family care routine, family cargiving routine, and illness care routine were actual predictors of the TFHR. In case of construct reliability of the six factors, it was found that their squared multiple correlations ranged from 0.534 to 0.946. There were three factors; self-care routine, family care routine, and illness care routine, which were in unsatisfied level of construct reliability ($R^2 < 0.7$).

Relationship between the six second-ordered factors, when considered, self-care routines were found significantly correlated with safety and prevention routines ($r = .398, p < .01$) and mental health behavior routine ($r = 0.112, p < .05$). Family care was significantly correlated with mental health behavior routines ($r = 0.217, p < .01$) and self-care routines ($r = 0.073, p < .05$). For others correlations, there were non statistical significant ($p > .05$).

4. Criterion related validity

According to criterion related validity involved the testing hypothesis that how can develop scale related to the other existing scale in case of measuring the same concept. The TFHR scale could be used to measure health of Thai families through their routines health behaviors; whereas, Chulalongkorn Family Functioning (CFI) have widely been used to measure health of the family through family functioning. Therefore, CFI was used as a criterion for testing the construct validity of The TFHR scale.

Relationship between the TFHR scale and the CFI was examined with a hundred of Thai families (n=100). Respondents were mothers/wives which were representative of the samples. Characteristics of samples were nuclear family which was equal to extended family. Most samples were Buddhists living in both rural and urban areas. Most were employees (55%) with an income ranging from 5,000 to 10,000 bahts (36%), and lived in their own houses (52%). More characteristics of respondents and samples are shown in Table 15.

Table 15   Characteristics, Number, and Percentage of the samples for testing criterion related validity

Characteristics	Number (N=100)	Percentage (%)
Age group (years)		
20 – 30	6	6.0
31 – 40	45	45.0
41 – 50	36	36.0
50 – 60	11	11.0
More than 60	2	2.0
Min. = 28 Max = 75, X = 41.61, SD = 8.27		
Education of respondents		
Primary school	28	28.0
Secondary school	34	34.0
Vacational school	10	10.0
Bachelor degree	26	26.0
Higher than Bachelor degree	2	2.0
Religion		
Buddhism	97	97.0
Islam	2	2.0
Cristianity	1	1.0
Family type		
Nuclear family without child(ran)	6	6.0
Nuclear family with child(ran)	45	45.0
Exptend fmily	45	45.0
Single-parent family	4	4.0
Major occupation of the family		
Farmer	2	2.0
Daily employee	14	14.0
Company employee	41	41.0
Merchant	13	13.0
Civil or State enterprise servant	30	30.0

Table 15 (Continued)

Characteristics	Number (N=100)	Percentage (%)
Family income		
Less than 5, 000 Baht	14	14.0
5000-10,000 Baht	36	36.0
10, 001-20,00 Baht	20	20.0
20,001-30,000 Baht	10	10.0
More than 30,000 Baht	20	20.0
Current residental place		
Rural area	53	53.0
Urban area	47	47.0
Status of house occupying		
Own house	52	52.0
Rental house	22	22.0
Relative's house	24	24.0
Welfare house	2	2.0

The study hypothetically stated that Thai family health routines had significant positive relationship with Thai family functioning. Pearson's correlation coefficient was to indicate the relationship between these two concepts (Table 16). Thai family health was measured by the TFHR scale; whereas, Thai family functioning was measured by the CFI. The scores from TFHR scale and CFI scale had to test normal distribution using Kolmogorov-Smirnov Test. Results of Kolmogorov-Smirnov Test showed that the TFHR and CFI scores performed by 100 samples were normal distribution (Appendix R). Therefore, assumption of correlational testing was not violated.

Pearson's correlation, after investigating, showed that the TFHR score were significantly positive correlation with the CFI score at moderate level ($r = 0.64$, $p < .01$). It could be an indication for sufficient evidence support for the criterion related validity of the TFHR.

Table 16 Pearson's product moment correlation between Thai family health
routine and Thai family functioning scores (N=100)

Measured concept	Mean	S.D	Correlation
Thai family health routine	177.040	18.409	0.640**
Thai family functioning	80.129	14.128	

** Correlation is significant at the 0.01 level (2-tailed).

5. Contrasted-groups approach

Contrasted-groups approach was to test construct validity of the
TFHR scale through an analysis with the scale separated groups which were believed to
be differed on the basis of contrasting characteristics. To demonstrate difference in
health of families, t-test was performed to determine whether there were significant
differences in health of families across two groups; healthy and unhealthy families,
which identified themselves as mothers or wives.

Characteristics of healthy and unhealthy family groups were
different in amout of family type, major occupation, incomes, status of house occupying,
and having ill member(s) in those families as shown in Table 17. Comparing some
characteristics between groups of unhealthy and unhealthy families, the large group of
unhealthy familes was found in various types of family including single-parent family
(6.7%), who earned less than 10,000 bahts a month (46.7%), and those who were
daily hired, and had to take care at least one ill member(s). Contrastly, a large group
of healthy families that earned more than 10,000 bahts a month (86.7%), did more
permanent jobs (i.g.Civil or State enterprise servant, company employee), had no ill
member(s) in their families, and lived in their own houses (73.0%). Moreover, there
was no single-parent in the healthy family group.

Table 17 Characteristics, Number, and Percentage of the samples for testing construct validity using contrasted-groups approach (N = 60)

Characteristics	Healthy family		Unhealthy family	
	Number (N=30)	Percentage (%)	Number (N=30)	Percentage (%)
Family type				
Nuclear family without child(ren)	4	13.4	1	3.3
Nuclear family with child(ren)	13	43.3	11	36.7
Exptend fmily	13	43.3	16	53.3
Single-parent family	0	0.0	2	6.7
Major occupation of the family				
Farmer	0	0.0	2	6.7
Daily employee	2	6.7	10	33.3
Company employee	8	26.7	7	23.3
Merchant	6	20.0	2	6.7
Civil or State enterprise servant	14	46.7	9	30.0
Family income				
Less than 5, 000 Baht	1	3.3	8	6.7
5000-10,000 Baht	3	10.0	12	40.0
10, 001-20,00 Baht	9	30.0	5	16.6
20,001-30,000 Baht	9	30.0	3	10.0
More than 30,000 Baht	8	26.7	2	6.7
Current residental place				
Rural area	12	40.0	14	46.7
Urban area	18	60.0	16	53.3
Status of house occupying				
Own house	22	73.3	15	50.0
Rental house	7	23.4	7	23.4
Relative's house	0	0.0	7	23.4
Welfare house	1	3.3	1	3.3
Having ill member(s)	0	0.0	13	43.3

T-test, before conducting, normal distribution was separately tested on each group by using One-Sample Kolmogorov-Smirnov Test. For healthy families, Kolmogorov-Smirnov Z was 0.748 with $p = .631$, and those of unhealthy ones, Kolmogorov-Smirnov Z was 1.295 with $p = 0.07$. It indicated that the scores on each group was such normal distribution. Therefore, conducting independent sample t-test was appropriated for testing the differences of these predicted contrasting groups.

Table 18   Mean and Standard deviation for testing difference on THFR scores between healthy and unhealthy families (N=60)

Family group	Mean	S.D	t	df	Sig. (2- tailed)
Healthy family (N=30)	183.44	15.58	3.86	58	.000**
Unhealthy family (N=30)	165.63	19.87			

** t-value is significant at the 0.01 level (2-tailed).

The result from t-test showed that scores on TFHR scale in the group of healthy family were significantly different from the scores in the unhealthy family group (see Table 18). Considering mean scores on TFHR scale, it was found that the mean score of the healthy family group was greater than those of unhealthy family group. Therefore, it could be stated that the TFHR scale was a valid instrument that would separate a group of healthy families from a group of unhealthy ones.

6. Reliability

The Chronbach's alpha coefficient of internal consistency for the TFHR scale was at high level ($r = 0.91$, $p < .001$). For the 6 subscales, their reliability ranged from 0.54 to 0.77. There were two constructs; safety and prevention and illness care routines, which were less than acceptable criteria at 0.7 for a new developed instrument (Nunnally and Bernstein, 1994) as shown in Table 19. Considering internal consistency of overall scale, it was found that alpha coefficient of the TFHR scale had sufficient evidence for internal consistency as the reliable scale.

Table 19   Chronbach's alpha coefficient of the TFHR scale's constructs

Constructs	Reliability (α)
1. Self-care routines	0.70
2. Safety and prevention routines	0.67
3. Mental health behavior routines	0.75
4. Family care routines	0.77
5. Family caregiving routines	0.73
6. Illness care routines	0.54

The study results showed many empirical evidences to support that the TFHR scale which composed of 70 items could accept to be a valid and reliable instrument. The factor structure of the TFHR measurement model was confirmed having 6 factors.

Considering operational definitions, the original operational definitions providing for 206-item pool had to revise due to item reduction. The proposed operational definitions of the 70-item TFHR scale were identified as follows:

Family Health routines mean regular behaviors of individuals and collective members of Thai families that occur in everyday life in order to regain, maintain, or promote health and wellness of individual members and a whole family as well as to overcome or prevent injuries and illness. There were six constructs of family health routines.

1. **Self-care routine** means regular behaviors of individuals or collective members of Thai families in relation to daily living. These routines include dietary practices, sleep and rest patterns, hygiene care, exercise and physical activity, and sexuality in order to maintain or promote health and wellness of individual members and a whole family.

1.1 Dietary practice means regular behaviors of individuals or collective members of Thai families in relation to consumption of five food groups, hygienic food preparation, and avoidance of unhealthy snacking.

1.2 Sleep and rest pattern means regular behaviors of individuals or collective members of Thai families in relation to adequate sleep and avoidance of unhealthy sleep related-behaviors.

1.3 Hygiene care means regular behaviors of individuals or collective members of Thai families in relation to cleanliness of body and clothes.

1.4 Physical activity and exercise means regular behaviors of individuals or collective members of Thai families in relation to intentional body movement to maintain or promote health.

1.5 Sexuality means regular behaviors of individuals or collective members of Thai families in relation to appropriate and safety expression of sexual desire.

2. Safety and prevention routine means regular behaviors of individuals or collective members of Thai families in relation to prevention of diseases and unintended injuries, and avoidance of risky behaviors.

2.1 Prevention of disease means regular behaviors of individuals or collective members of Thai families to avoid causes of prevented diseases and illness.

2.2 Prevention of injury means regular behaviors of individuals or collective members of Thai families to prevent accidents both inside and outside the house, and avoid situation that might resulting in injuries.

2.3 Avoidance of risk behavior means regular behaviors of individuals or collective members of Thai families to avoid smoking, drinking alcohols, misusing of drugs and other substances, abuse and violence.

3. Mental health behavior routine means regular behaviors of individuals or collective members of Thai families in relation to self-esteem, personal integrity, success in work and play, and stress management in order to maintain or promote health and wellness of individual members and a whole family.

3.1 Mental health behavior routine related to self-esteem includes such behaviors as anticipatory response to member needs, allowing members to be different from one another, providing emotional support, and making good patterns of affiliation to extended family.

3.2 Mental health behavior routine related to personal integrity includes such behaviors as supporting members' emotional wholeness, and the ways to express conscience and right actions sanctioned by social norms, or laws.

3.3 Mental health behavior routine related to work and play means regular behaviors of individuals or collective members of Thai families in relation to support success in occupation, school achievement, and playing.

3.4 Stress management means regular behaviors of individuals or collective members of Thai families to solve problems and conflicts in daily life, and to control emotional stress effectively.

4. Family care routine means regular behaviors of individuals or collective members of Thai families including leisure and traditional activities, and spiritual or religious practices that give meaning to family life and provide shared enjoyment, pleasure, and happiness for multiple members.

5. **Family caregiving routine** means regular behaviors of individuals or collective members of Thai families in relation to the ways family members act as mutual caregivers to create household environments for members' growth. These routines include household task, health teaching, family resource management, and socialization in order to maintain or promote health and wellness of individual members and a whole family.

5.1 **Household task** means regular behaviors of individuals or collective members of Thai families in relation to provided basic needs and share housework with one another.

5.2 **Health teaching** means regular behaviors of individuals or collective members of Thai families in relation to discipline, suggest, or warn each other to maintain or promote their health.

5.3 **Family resource management** means regular behaviors of individuals or collective members of Thai families in relation to balance the use of family resources and incomes.

5.4 **Socialization** means regular behaviors of individuals or collective members of Thai families in relation to discipline, suggest, or warn each other about morals.

6. **Illness care routine** means regular behaviors of individuals or collective members of Thai families in relation to effective ways family members deal with illness conditions. These routines include such behaviors as decisions making on suitable time to see a doctor, using health services, follow-up with prescribed medical regimens, and providing actively support for sick members in order to overcome the illness conditions.