CHAPTER 3

METHODOLOGY

This chapter discussed the methodological aspects of the research project: research design, subjects, settings and procedures, and protection of subjects' human rights.

Research Design

Cross-sectional study that had two major phases. The first phase was to develop a Thai Expressed Emotion Scale (TEES) for family caregivers of schizophrenic patients. The second phase was to evaluate the psychometric properties of the scale. The evaluation of psychometric properties indicated assessments of content validity (using a content validity index to examine expert agreement), internal consistency (assessed through Cronbach's coefficient alpha), construct validity (assessed through factor analytic, hypothesis testing, and convergent validity). These phases and steps were explained in detail as the following and were summarized as the figure 5.

Phase I: Development of the Thai Expressed Emotion Scale

The first phase was to develop a Thai Expressed Emotion Scale (TEES). This phase consisted of four steps, as follows:

Step 1. Analysis of the pre-existing constructs of EE. This step began with a review of the literature relevant to the construct of EE.

Step 2. Description of the EE construct in the Thai context. The pre-existing

constructs of EE were used to develop guideline for in-depth interviews. The following information were examined by interviewed items including; (1) age, (2) religion, (3) marital status, (4) educational level, (5) income, (6) type of family, (7) number of household members, (8) role of subject in family and supports, (9) patients' age, (10) gender and (11) patients' treatment recorded. The content of the interview focused on the caregiver's general feelings about caring for the relative, thoughts and feelings related to situations where the caregiving experience was positive and worked well, thoughts and feelings about situations when the patient was inappropriate or problematic for the caregiver, and specific situations that exemplified typical experiences in the caregiving relationship. Questions for the interview guide were reviewed by thesis advisors.

Ten caregivers of schizophrenic patients were interviewed using the semi-structured interview guideline. All subjects agreed to allow their interview to be audio-taped. Field notes were written for every interview to capture nonverbal communications and other relevant contextual information beyond the interview questions. The interviews were conducted in the homes of the interviewees. In order to maintain the focus of attention on the family climate, the interviews with the caregivers were conducted separately. This also provided the necessary privacy allowing the caregivers to express themselves freely. The caregivers were told that questions concerning their experiences as related to EE, and about the family climate at their home, would be asked. The interview length was from 90 minutes to two hours.

The interview consisted of closed and open-ended items, arranged in three sections (Appendix A). After data collection, the data were transcribed verbatim into written text and checked for accuracy.

Step 3. Synthesis of the EE constructs (temporary). Thematic analysis was used to code the data, as outlined by Boyatzis (1998). The first aspect of coding involved a deductive approach that was driven by prior research on EE. In this step, all data were coded according to previously identified EE categories. Specific operational definitions were developed from previous research to guide the coding of these 5 dimensions of EE: critical comments, hostility, emotional over-involvement, warmth and positive remarks. Each transcript was reviewed to identify any statement that fit the definition of an EE dimension. Then each transcript was reviewed independently a second time by author and co-advisor, using an inductive, data-driven approach. In this analysis, all transcript segments were noted that indicated an attitude or behavior reflecting an emotional experience with or about the relative, but which did not fit any of the previously identified EE categories. Author and co-advisor gave each of these segments a thematic label that best reflected what the expressed emotion might represent.

After these independent reviews, the author and co-advisor reviewed their codes together and identified any deductive codes that were different. Overall, there was a high level of consistency between author and co-advisor in identifying transcript segments that indicated expressed emotion. Only a few differences occurred in the classification, mostly in distinguishing the codes for criticism and hostility. These segments were discussed until agreement was reached regarding their appropriate EE code. In addition, each of the transcript segments that were independently derived from inductive analysis was discussed by the author and co-

advisor. First, agreement was reached regarding their validity as exemplars of expressed emotion: Did the statement indicate an emotional frame of mind toward or about the relative? Again, there was a high level of agreement in identifying EE segments. Then transcript segments that reflected similar meanings were considered as a group to identify their common theme and to develop a clear operational definition for the EE theme. Each transcript was then independently reviewed again by author and co-advisor using the new EE codes and their mutually agreed upon definitions. After this process was complete, the author and co-advisor met again to confirm the reliability of their coding of specific segments and to decide upon the status of any segments where disagreement may have occurred. Based on content analysis of the data, a list of themes was developed for further consideration for inclusion in the Thai EE scale.

Step 4. Generation of an item pool. Once the EE constructs were synthesized, then specific items were generated. The TEES version 1 was constructed and consisted of 50 items as follows: Theme 1 critical comments consist of 7 items, theme 2 hostility consist of 7 items, theme 3 emotional over-involvement consist of 7 items, theme 4 warmth consist of 8 items, theme 5 positive remarks consist of 7 items, theme 6 emotional regulation consist of 7 items, and theme 7 emotional under-involvement consist of 7 items. The TEES version 1 was a self-reporting paper-and-pencil instrument. DeVelli (1991) notes that the Likert scaling is widely use in instruments measuring opinions, beliefs, and attitudes. The EE measures attitude and behavior, then the Likert scale is appropriate for this measurement. The respondents were given a 4-point Likert Scale, ranging from strongly agree, agree, not agree, and strongly not agree.

Subjects

In the first phase, the subjects were a convenience sample of caregivers who met the following criteria: 1) they were a primary caregiver for a family member who had been diagnosed for at least one year with schizophrenia, based on the ICD-10 code, 2) they were in continuous care for patients at least 1 year prior to the time of interview, 3) all subjects were Thai and spoke the Thai language, 4) they were at least 18 years old and provided voluntary consent to participate in the study, and 5) neither the caregiver, the relative with schizophrenia, nor anyone else in the household had any serious health problems.

The subjects all lived within a major southern province of Thailand and their relatives were patients at a tertiary care hospital in the central city of the province. This hospital was the primary service provider for the entire region. Subjects all lived within an area of the province where they could be easily reached by public transportation or within reasonable travel time by car.

Exclusion criteria were:

1. There was an additional family member with a chronic disease in the household (e.g., dementia, HIV) who also required serious care

2. Residence in households experiencing extreme levels of stress due to currently, or in the recent past, dealing with major traumatic life events such as recent bereavement, serious legal problems, or natural disasters.

3. Communication problems (such as difficulties with speech or hearing that would interfere with the ability to complete the interview).

Purposive sampling, as discussed by Polit and Hungler (1999), is based on the belief that the researcher's knowledge about the population can be used to handpick the cases to be included in the sample. For this study, subjects were selected who had been in a caregiver role for at least one year. It was felt that this range of time would allow the caregiver to recall expressed emotions they applied when they lived with, and cared for, the care recipients.

Settings and Procedures

Interviews were conducted in a home setting. The author interviewed each participant at a time that was convenient for the caregiver. A semi-structured interview was used for data collection, modeled after the construct of EE put forth in the prior research of Brown and Rutter (1966). The content of the interview focused on the caregiver's general feelings about caring for the relative, thoughts and feelings related to situations where the caregiving experience was positive and worked well, thoughts and feelings about situations when the patient's behavior or actions were inappropriate or problematic for the caregiver and specific situations that exemplified typical experiences in the caregiving relationship. Each interview was at the caregiver's home and lasted on average from 90 minutes to two hours. The interviews were audio taped for later transcription.

Phase 2: Psychometric Evaluation of the Thai-EES

The aim of the second phase was to test the psychometric properties of the prototype TEES, including the content validity, reliability, and construct validity.

Subjects

In the second phase, the subjects were a purposive sampling of caregivers who took their relative to receive care from psychiatric hospital in four regions of Thailand. The inclusion criteria and exclusion criteria were same as subjects in phase I (page 63). When considering the sample size, a general rule is that the minimum should be at least five times as many variables as there are to be analyzed, and the more acceptable size would have a ten-to-one ratio. The author tried to obtain the highest cases-per-variable ratio to minimize the chances of over fitting the data (Hair, Anderso, Tathan, & Black, 1998). Comrey and Lee (1992 cited in Pornchaikate, 2003) recommended a sample size of 300 to obtain reliable correlations or good factor analysis. However, the actual sample; however, comprised 566 family caregivers. There were two groups of subjects in this study. The first group was 566 family caregivers of schizophrenic patient who took their relative to a psychiatric hospital. The second group was 37 schizophrenic patients who participated in the process for evaluation of convergent validity.

Setting and Procedures

Data collection was conducted at outpatient unit of psychiatric hospital in four regions of Thailand. These included in the north (Suan Prung Psychiatric Hospital), northeast (Nakhonratchasima Rachanakarin Psychiatric Hospital), central (Srithunya Hospital) and southern (Songkhla Rachanakarin Psychiatric Hospital and Suansaranrom Hospital) Thailand. The evaluation of psychometric properties indicated assessments of content validity (using a content validity index to examine expert agreement), internal consistency (assessed through Cronbach's coefficient alpha),

construct validity (assessed through factor analytic, hypothesis testing, and convergent validity).

Permission to conduct the study was obtained from the directors of the institutions where the data were collected. The Human Subject Protection protocol was approved by the faculty of Nursing, Prince of Songkla University. On the date of data collection, potential subjects' profiles were checked based on the inclusion criteria at the out-patient unit of psychiatric hospitals by the researcher.

The procedures for confirmed the constructs of EE and psychometric evaluation were follows:

1. Factor analysis was used for confirm the component of the concept of EE and also testing the construct validity: a principal components analysis was selected as the factor analysis extraction technique, as recommended by Nunnally and Bernstein (1994) and using Varimax orthogonal rotation, following the principal components analysis. Four criteria were set forth a priori to use in analyzing and interpreting the factor analysis results. The first two criteria were used to determine the number of relevant factors in the principal components analysis:

(a) The root one criterion, which states that factors with eigenvalues equal to or greater than 1 should be rotated (Guttman, 1954; cited in McSherry, Draper, & Kendrick 2002).

(b) The scree test criterion, by Cattell (1966), which suggests that factoring should cease when the plotted graph of the eigenvalues levels off, forming a straight line with an almost horizontal slope.

(c) The criterion applied to the selection of items in the accepted rotated factor solution: an item-factor loading of at least .30 on the primary factor and

a difference of at least .20 between items loading on the primary factor and any other factor was used to determine item retention.

(d) Parsimony and interpretation solution were considered as criteria for factors so the varimax and oblique rotations with iteration were performed on the Thai Expressed Emotion Scale. Both orthogonal (varimax) rotations was carried out to check for a possible strong interrelation among the resulting factors. Sum scores of the final scales were calculated.

2. Reliability. The internal consistency reliability was assessed through Cronbach's coefficient alpha; data collection was carried out by the researcher and research assistants.

3. Construct validity was assessed through factor analysis, hypothesis testing and convergent validity.

3.1 Content validity. The content was examined and evaluated to see whether the criteria statements within each domain accurately measured the domain. Five experts considered which validation items should be included. Three experts were educators who were experts in dealing with family caregivers of people with schizophrenia. The forth expert was a psychiatrist with expertise in dealing with people with schizophrenia, and the last expert was a psychologist who was an expert in people with schizophrenia and scale development. Each content specialist rated the relevance of each item for content by using a four-point scale:

1	=	Not relevant	2	=	somewhat relevant
3	=	Quite relevant	4	=	Very relevant

The data from these scores representing the relevance scale were computed for the Content Validity Index (CVI).The CVI for each item is determined by the proportion of experts who rate it as content valid (a rating of 3 or 4); the CVI for entire instrument is the proportion of total items judged content valid (Lynn, 1986).

$$CVI = \frac{\text{Number of items on which raters Agreed}}{\text{Total number of Items}}$$

The range of this index was from -1.00 to + 1.00, with +1.00 indicating perfect positive item-objective relevancies. Waltz and colleagues (1991) recommended an index cut-off score of 0.75, so that if "an index is below 0.75, it should be discarded from the measure or analyzed and revised to improve its validity." Clarity requires that the definition or operations for the concept of items be presented in a way that can be easily understood using "yes" and "no" responses. Conciseness requires that the definition or operations for the concept be presented in a way that can be well-fitting or concise using "yes" and "no" responses. All items were rated for conciseness.

Each item was rated as relevant, not relevant or somewhat relevant. The item was excluded from the questionnaire if it was rated by any expert as irrelevant or rated by two or more experts as questionably relevant. However, if it was scored as questionably relevant by only one expert, the inclusion or exclusion of the item was carefully considered (Flaherty et al., 1988 cited in Maneesriwonggul, 2002).

3.2 The hypothesis testing approach was also used to evaluate construct validity. The conceptual framework and the literature contributing to the

conceptualization of EE (Brown et al. 1972) were applied to test the following hypotheses:

Hypothesis 1: Patients who live with their caregiver will have caregivers with higher EE scores in the areas of warmth, positive remarks, emotional overinvolvement, and emotion regulation.

Hypothesis 2: Patients who are not living with their caregiver will have caregivers with higher EE scores in the areas of hostility, criticism, and emotional under-involvement.

Hypothesis 3: Caregivers who are higher in hostility, critical comments, emotional involvement, and emotional under-involvement will have significantly higher scores for duration of the relative's illness, caregiver's psychological dysfunction (total GHQ), and number of relative's previous hospitalizations.

Hypothesis 4: Caregivers who are higher in positive remarks, warmth, and emotional regulation will have significantly lower scores for duration of the relative's illness, caregiver's psychological dysfunction (total GHQ), and number of relative's previous hospitalizations.

Hypothesis 5: Patients who have caregivers with higher scores in the areas of hostility and emotional overinvolvement will have a lower level of self-care.

Hypothesis 6: Patients who have caregivers with higher scores on positive remarks, warmth and emotional regulation will have higher levels of self-care.

Instruments which used with in these steps which confirm the constructs of EE, psychometric evaluation for reliability, and validity (content validity and hypothesis testing validity) were presented as follow.

A) A demographic data questionnaire was used to obtain personal information in accordance with the purpose of this study, related to age, religion, marital status, occupation, educational level, income, and health status.

B) The General Health Questionnaire (GHQ-28), originally developed by Goldberg (1972) cited in Nilchaikovit, Sukying, and Silpakit (1996). GHQ-28 used for the hypothesis testing approach, the GHQ was previously translated into Thai and the reliability and validity were tested by Nilchaikovit, Sukying and Silpakiet (1996) on a sample of 100 people visiting a mobile primary health care unit in Nongchok district, Bangkok. The results of this study showed that all versions of the Thai GHQ (Thai GHQ-60, Thai GHQ-30, Thai GHQ-28, and Thai GHQ-12) had good reliability and validity, with a range of Cronbach's alpha coefficients from 0.86 to 0.95, and range of sensitivity and specificity from 78.1% to 85.3% and 84.4% to 89.7%, respectively, making the Thai versions of the General Health Questionnaire valid as a self-administrative screening instrument to detect psychiatric disorders in the Thai population. The Thai GHQ-28 is a distress and wellbeing scale. For each of 28 items, the relative must rate the occurrence of a particular symptom on a four-point Likert scale (0-3) of less than usual, no more than usual, more than usual, and much more than usual, giving a total score of from 0 to 56. The GHQ can also be scored as a case score with each item scored as 0 or 1 (0-0-1-1), and the sum score can then range from 0 to 56. A case score above five is considered a high score, reflecting recognizable psychological problems (Goldberg 1972 cited in Boye et al., 2001). The GHQ is divided into sub-scales for anxiety, depression, well-being, social dysfunction and coping failure (Hupper et al., 1989; cited in Boye et al., 2001). The QHQ-28 was

used for testing the construct validity (hypothesis testing approach) of the prototype TEES.

C). The Adjective Checklist Scale, originally developed by Friedmann and Goldstien (1993), was used for testing the convergent validity of the prototype TEES. The checklist consisted of twenty adjectives, ten of which were positive and the other ten negative. The positive adjectives were; loving, good-natured, friendly, devoted, and easy to get along with, cooperative, considerate, clear, accepting and active. The negative adjectives were rude, mean, lazy, irritable, irresponsible, hostile, deceitful, contrary, bored, and angry. The adjectives were selected to reflect affective attitudes corresponding to the major components of EE, criticism and emotional over-involvement. Each adjective was rated on a scale from 1 (never) to 8 (always). This instrument had never been previously used with Thai subjects, so it was translated in to Thai by two bilingual translators. The positive reliability was .91 and the negative reliability .84.

3.3 Convergent validity was measured by examining the correlation of the TEES with two other measures of expressed emotion, the Perceived Criticism Scale (Hooley & Teasdale, 1989) and the Adjective Checklist (Friedman & Goldstein, 1993). In this step, thirty seven of schizophrenic patients were completed two questionnaires; demographic data questionnaire and Perceived Criticism and the thirty seven of caregivers who took schizophrenic patients to the psychiatric hospital were completed three questionnaires same as the previous step (page 70-71).

A) Demographic data questionnaire was used to obtain personal information in accordance with the purpose of this study, related to age, religion, marital status, occupation, educational level, income, and health status.

B) Perceived Criticism (PC) scale developed by Hooley and Teasdale (1989).

The PC is a measure of relationship quality between family caregiver and schizophrenic patient. This instrument has good temporal stability and good concurrent validity with the CFI, ease of administration and scoring, and a clear breaking point. However, it has only been applied in samples of patients with a unipolar depressive disorder, except in the study of Chambless et al. (1999).Perceived criticism from caregiver was assessed by asking patients, "How critical of you do you feel your caregiver is?" Along with assessing PC-caregiver, the author assesses PC from patient by asking patients "How critical of you do you feel your relative is?" To evaluate the convergent validity of the TEES, the TEES should be at least moderately correlated with the PC. Both items were self-report and were rated on a 10-point Likert scale with the endpoints anchored so that 1 represented not at all critical, and 10 represented very critical indeed.

Testing for psychometrics properties of TEES was summarized as the following (Table 2).

Protection of Human Subjects' Rights

Approval for the study was obtained from the Committee for Human Research at the Faculty of Nursing, Prince of Songkla University. First phase; the community mental health nursing staff affiliated with the hospital reviewed the charts of patients who might meet the criteria, especially patients who were scheduled for an upcoming home visit by the nurse. After nursing staff identified patients who were eligible for the study, the author accompanied the nurse on the regular home visit to the patient and was introduced to the caregiver by the nurse. The home visiting approach was necessary because of the absence of telephones in most households. The author described the purpose of the study and made it clear to the caregiver that participation was voluntary and would not in any way affect care that the relative would receive at the hospital. Informed consent was acquired if the caregiver was interested in participation and an appointment was made for a subsequent interview with the author. The author also specify to the subjects about destroying their tape recorded after finished the data collection. Ten caregivers were recruited for this pilot study. Four were mothers of the patient and one caregiver was a father. Four other caregivers were siblings of the patient and the final caregiver was the patient's husband.

The second phase; the director of five psychiatric hospitals were originally contacted for permission to conduct the study. The author approached potential subjects, supplying information about the study and its objectives, particularly the title of the study, the purpose of the study, assurance of the subject's anonymity, voluntary participation assurance with the right to withdraw from the study at any time, the usefulness of the results of the study to schizophrenic patients and their families, and the name and address of the author, after which the author also responded to any

questions the potential participant might have. The voluntary nature of the participation was emphasized with written consent obtained prior to complete the self report questionnaire.
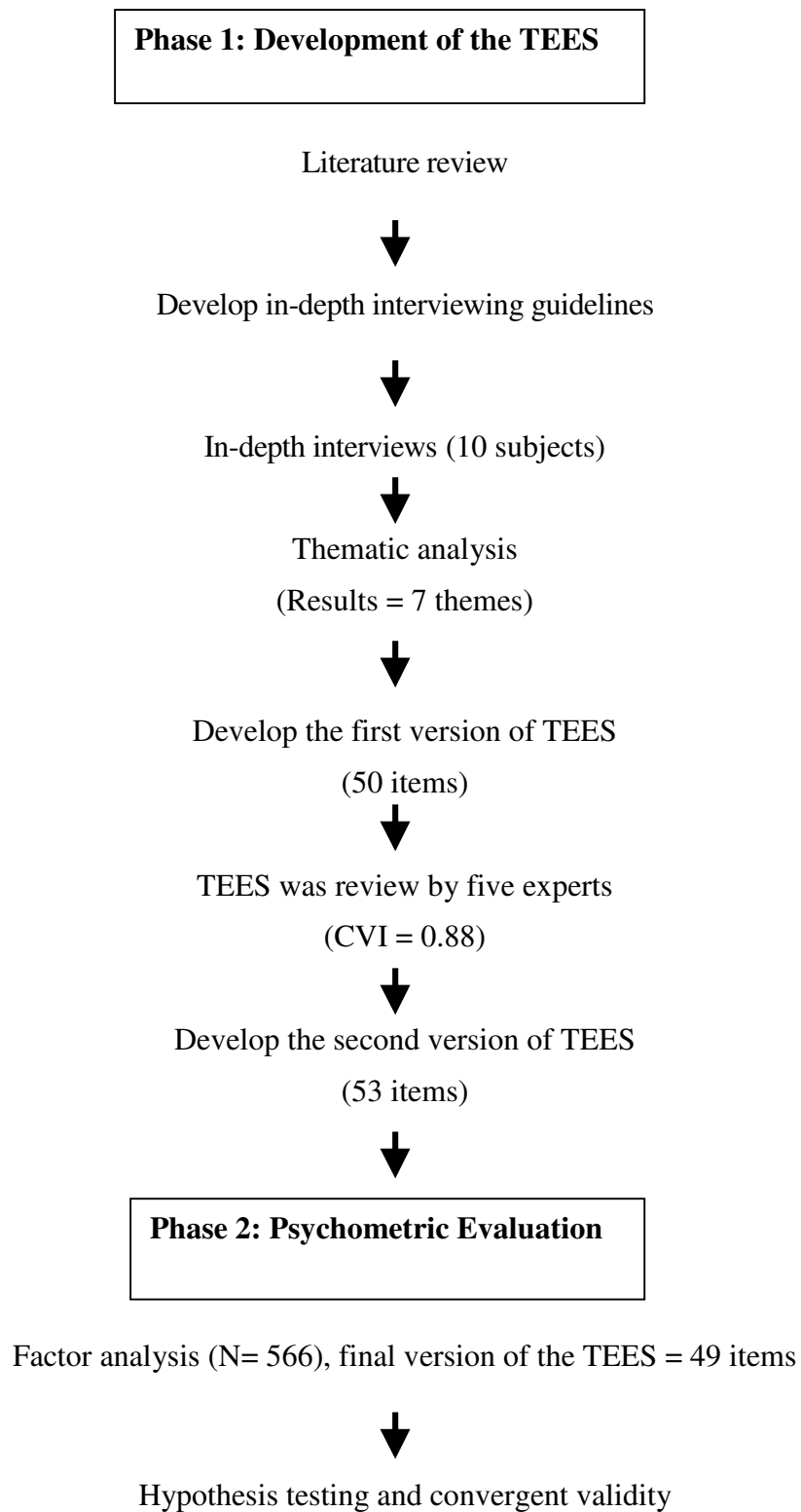
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│  Phase 1: Development of the TEES         │
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Literature review

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Develop in-depth interviewing guidelines

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In-depth interviews (10 subjects)

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Thematic analysis

(Results = 7 themes)

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Develop the first version of TEES

(50 items)

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TEES was review by five experts

(CVI = 0.88)

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Develop the second version of TEES

(53 items)

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│  Phase 2: Psychometric Evaluation         │
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Factor analysis (N= 566), final version of the TEES = 49 items

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Hypothesis testing and convergent validity

Figure 5. The development and testing psychometric properties of the TEES