CHAPTER 3

METHODOLOGY

This chapter focused on the description of the methodological approach adopted in the present study. It included the research design, population and sample, protection of human rights, research instrumentations, training of research assistant, and procedure of data collection and analysis.

Research Design

This research design was a quasi-experimental study using a pre-test and post-test control group design to compare the differences in depressive symptoms, negative automatic thought, and social and adaptive functioning between the intervention and the control group. The intervention group received the school-based cognitive behavior therapy for Thai adolescents with depression program in twelve sessions composing of psycho-education, goals setting, mood monitoring, increasing pleasant activities, problem-solving, cognitive restructuring, social skills training, and relaxation training. Timeframe for data collection and intervention are shown in Diagram 3-1

Diagram 3-1

Timeframe for data collection and intervention

	Baseline		**Six weeks during intervention**	**Posttest immediately upon the completion of intervention**	**Posttest at four weeks post intervention**
Intervention group	O_{E1}	X	O_{E2}	O_{E3}	O_{E4}
Control group	O_{C1}		O_{C2}	O_{C3}	O_{C4}

O_{E1} and O_{C1} refer to scores of depressive symptoms, negative automatic thought, and social and adaptive functioning prior to participate in an intervention for the intervention group (O_{E1}) and the control group (O_{C1}), respectively.

X refers to the School-based CBT Program for Thai Adolescents with Depression which was given to the intervention group.

O_{E2} and O_{C2} refer to scores of depressive symptoms, negative automatic thought, and social and adaptive functioning at six weeks during the intervention for the intervention group (O_{E2}) and the control group (O_{C2}), respectively.

O_{E3} and O_{C3} refer to scores of depressive symptoms, negative automatic thought, and social and adaptive functioning immediately upon the completion of the intervention for the intervention group (O_{E3}) and the control group (O_{C3}), respectively.

O_{E4} and O_{C4} refer to scores of depressive symptoms, negative automatic thought, and social and adaptive functioning at four weeks after the completion of intervention for the intervention group (O_{E4}) and the control group (O_{C4}), respectively.

Population and Sample

The target population of this study was adolescents who were 14 to 17 years. The accessible population was students living in the Central part of Thailand. Samples were recruited from two high schools in the Central part of Thailand during the 2009 academic year. These two schools have been chosen because they have the same school health policy and school nurses' usual care for students. The specific sample inclusion criteria were: adolescents who

1. were 14 to 17 years old
2. had mild to moderate depressive symptoms score of 16 to 24 which assessed by using the Center for Epidemiologic Studies-Depression Scale, Thai Version (CES-D, Thai Version)
3. were willing to participate in the study
4. had one of their parents or legal guardians gave permission to participate in the study

Exclusion Criteria

The samples were excluded from this study if they had history or present severe depression (by the score over 24 on the CES-D).

Number of Sample Size

A sample size for this study was determined based on the population standard deviation and mean scores of the previous study of cognitive behavior therapy in the treatment for adolescents with depression study (TADS) randomized controlled trial (March et al., 2007) by using nQuery Advisor Version 4.0 statistical software for sample size and power calculations (power = .80, significant level = .05 and effect size = .70) (Elashoff, 2007). From the calculation, the sample size was 32 subjects in each group making a total sample of at least 64 participants. With the estimating 20% attrition over the 12 week period, the sample size was determined to be 76 (38 per group) (Elashoff, 2007). 205 students who met inclusion criteria in the intervention schools were matched by age, gender, GPA, depressive symptoms scores to 194 students in the control school, the total of 74 participants was recruited into this study. At the end of this study 70 participants provided post-program data completion (4 participants dropped out, 2 participants in the intervention group and 2 participants in the control group). Reasons for declining from the study included not wanting to miss the school band activity for the intervention group and not feeling comfortable being in the study for the control group.

The procedure of recruitment was as follows:

(1) The investigator surveyed secondary schools in the Central part of Thailand that had the same school health policy and system to provide school health services to students (n = 15).

(2) The investigator selected two schools by using random sampling. The investigator made slips of paper with marked the name of each school on each paper in equal to 15 schools. Then, put all slips into a box and drew them out, allocating the

first draw was the name of the “Intervention group” and the second draw was the name of the “Control group”.

(3) After receiving a permission to conduct the research program from the administrator of each school, students age 14-17 who accepted depression screening at both schools were approached and screened their depression by using CES-D (Thai version). The number of students who completed depressive symptoms screening was 594 in the intervention school and 540 in the control school.

(4) The investigator and research assistants verified potential adolescents that met the inclusion criteria. The number of potential students who met the inclusion criteria in the intervention and the control school was 205 out of 594 and 194 out of 540, respectively. The investigator and researcher assistants interviewed potential adolescents and consent to participate in the matching process was obtained from 119 of 205 and 105 from 194, respectively. Reasons for declining included not feeling comfortable to join in the program, not wanting to miss school school’s activities they joined, and parents not allowing them.

(5) The investigator and research assistants matched pair 119 students in the intervention school with 105 potential students in the control school by age, gender, GPA, and depressive symptoms scores to facilitate the assignment of participants to the control and the intervention group (Polit, & Hungler, 1999). The number of this matched pairs was 74 (37 participants in the intervention group and 37 participants in the control group). During the study, two participants in the intervention group and two participants in the control group dropped out from this study. Reasons for declining from the study included not wanting to miss the school band activity and not feeling comfortable being in the study. Those participants in both groups were in the

same matching criteria. Therefore, at the end, 35 participants in the intervention group and 35 participants in the control group provided post-program data completion.

(6) The investigator informed the adolescents and one of their parents or legal guardian on a one-on-one basis about the study purposes and requirements, and obtained a signature of assent from participants and the consent from one of their parents or legal guardians after confirming their understanding of the study.

Recruitment and matched procedures are depicted in Figure 2.

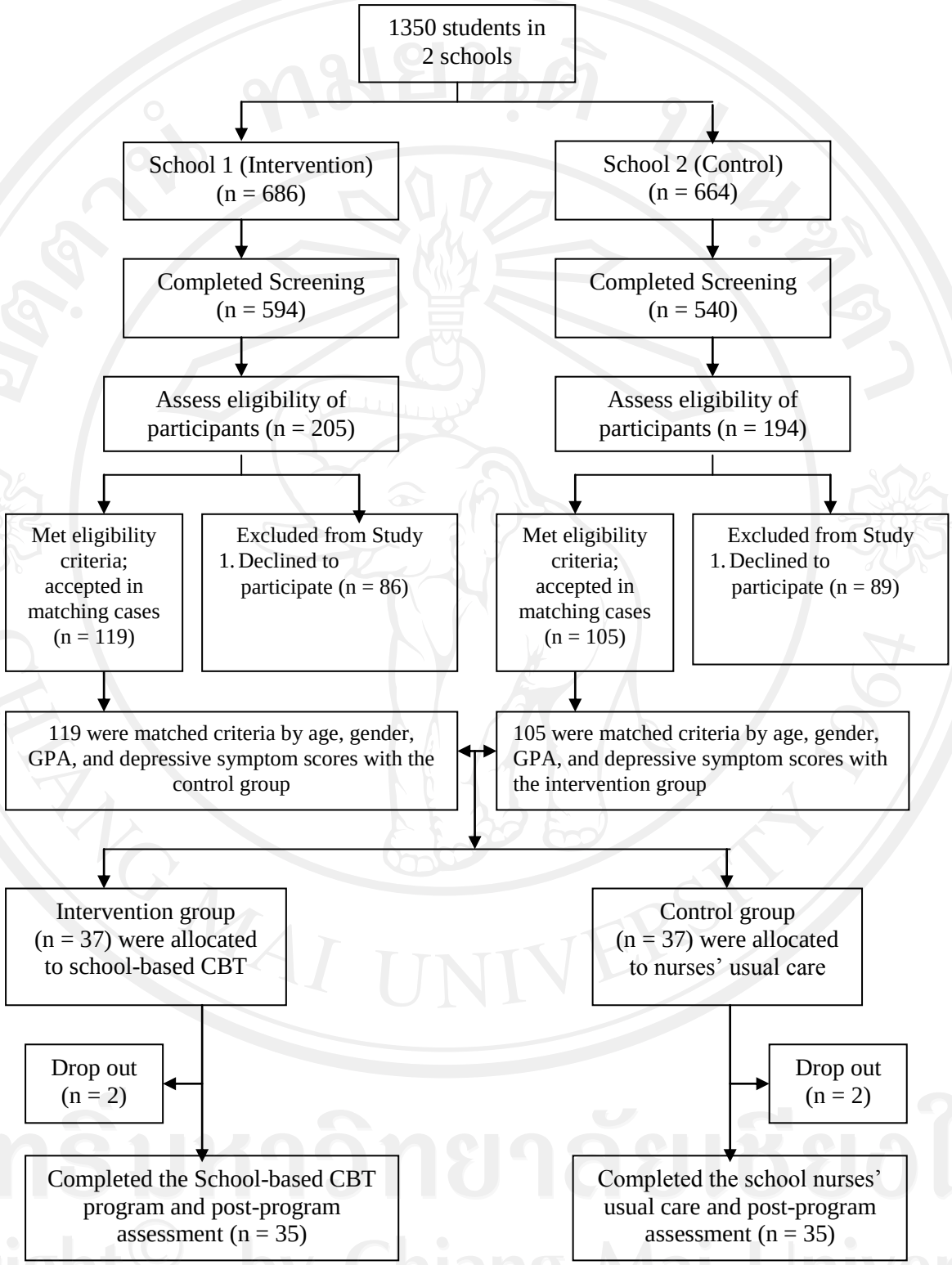

Figure 2 Flow Chart of Recruitment and Matched Pairs Procedure

Instruments

There are two types of instruments in this study including instrument for data collection and instrument for intervention. The descriptions of the instruments are as follows.

Instrument for Data Collection

For quantitative data collection, four instruments were utilized. These instruments were the Demographic Data Form, the Center for Epidemiologic Studies Depression Scale-Thai Version (CES-D Thai version), the Children Automatic Thought Scale (CATS), and the Child and Adolescent Social and Adaptive Functioning Scale (CASAFS). To obtain qualitative data, the question guideline was used during focus group discussion. Each instrument had components as follows:

Instrument 1: Demographic Data Form

The demographic data form was developed by the investigator based on the literature reviews of Thai adolescents with depression. The form included personal data such as age, gender, religion, GPA, CES-D score, and family monthly income.

Instrument 2: The Center for Epidemiologic Studies Depression Scale-Thai Version

The Center for Epidemiologic Studies-Depression Scale (CES-D) was developed by Radloff (1977) is utilized to measure the levels of adolescent

depression. The CES-D is a 20-item self-reported measure was designed to cover the major symptoms of depression, with an emphasis on depressed affect (i.e., blues, depressed, lonely, cry, sad); positive affect or well being (i.e., good, hopeful, happy, enjoy); somatic symptoms (i.e., appetite, sleep); and interpersonal problems (i.e., unfriendly, dislike). Each item consists of one statement describing depressive symptoms. Respondents are asked to rate the past week's experience of depression on a 4-point scale ranging from 0 (rarely or none of the time) to 3 (most or all of the time). A summary score is calculated by adding the ratings after reversing the score on four items worded in the opposite direction; high scores indicate a high level of depression (<16 = non-depressed, 16 to 24 = mildly to moderately depressed, > 24 = severely depressed) (Munoz, 2008).

CES-D is the most common measure which is in the public domain as the Beck Depression Inventory (BDI) (Lewinsohn, Rohde, & Seeley, 1998a). But CES-D is better than Beck Depression Inventory (BDI) which of depression is high prevalence (McDowell, 2006). This instrument has been utilized in cross-cultural research studies many times (Iwata, & Buka, 2002; McDowell, 2006). Department of Mental Health in the Ministry of Public Health, Thailand, recommended the CES-D to measure depression in Thai adolescents because CES-D was reported high internal consistency and has been widely utilized in research settings (Department of Mental Health, 2005).

Validity

Construct validity was demonstrated by factor analysis across samples and has shown consistent results producing four factors including depressed affect,

positive affect or well being, somatic symptoms, and interpersonal problems (Radloff, 1977 as cited in Charoensuk, 2005). Ploylearmsang (2005) examined the construct validity of CES-D depression scale in 201 Thai adolescents. The results revealed that CES-D depression scale showed good construct validity. Hamilton (1960) and Roberts, Andrews, Lewinsohn, and Hops (1990) examined concurrent validity between CES-D and the Hamilton Depression Rating Scale (HDRS) for depression in adolescent samples. The correlation between CES-D and HDRS was ranging from 0.73 to 0.89. Fechner-Bates, Coyne, and Schwenk (1994) compared CES-D scores at or above 16 with Diagnostic and Statistical Manual of Mental Disorder Revised the Third Edition (DSM-III-R) Axis I. They found that CES-D was significantly related to a diagnosis of major depression with the sensitivity of 79.5% and specificity of 71.1% (Rush et al., 2000).

Trangkasombat, Larpboonsarp and Havanond (1997) evaluated CES-D scores in 125 adolescents with structured psychiatric interview by psychiatrists. Results Subjects with interview validated depression had significantly elevated CES-D scores (mean = 25.6, SD=8.8 compared with non-depressed subjects (mean=15.4, SD=6.7), P<10-6. Furthermore, the CES-D scores increased as the severity of depression increased. Using the Receiver Operating Characteristic Curve produced the best overall screening characteristics (sensitivity=72%, specificity=85 % and accuracy=82).

Reliability

Internal consistency as measured by Cronbach's alpha was .87 across 155 adolescent samples (Roberts et al., 1990). Split-half reliability ranged from 0.77 to

0.92 (Rush et al., 2000). The test-retest reliability of the CES-D showed correlations ranging from .32 to .67 (Wong, 2000).

Trangkasombat et al. (1997) translated this instrument and edited from the original version into Thai. They conducted a reliability test with 1, 264 high school students. The internal consistency for the CES-D Thai version was supported by Cronbach's Alpha Coefficiencies ranging from .86. Charoensuk (2005) also reported the internal consistency of CES-D Thai version of .88 in a study with Thai adolescents in schools.

In this study, Cronbach's Alpha Coefficient was used to analyze the internal consistency reliability for the 70 participants (35 participants in the control and 35 participants in the intervention group) included in the present study. The results revealed that the Cronbach's Alpha Coefficient ranged from .89 to .98.

Instrument 3: Children Automatic Thought Scale (CATS)

Children Automatic Thought Scale (CATS) was developed by Schniering and Rapee (2002) to assess negative beliefs across both internalizing and externalizing difficulties in children and adolescents. The CATS is a 40-item that reflects negative automatic thoughts on four distinct factors on physical threat, social threat, personal failure, and hostility, in persons aged 7-16 years (Schniering & Rapee, 2002). Respondents are asked to rate the frequency of experienced each thought over the past week on 5-point scale ranging from not at all (0) to all the time (4). The 0-4 ratings for each item are summed to provide a total score for all 40 items (maximum=160), with high scores reflecting a greater frequency of negative automatic thoughts (Schniering & Rapee, 2002).

Validity

Construct validity of confirmatory factor analysis of responses of 762 children and adolescents from private and public schools supported a model consisting of four distinct relating to physical threat, social threat, personal failure and hostility (Schniering & Rapee, 2002). The discriminant validity of the measure was assessed by comparing the responses of clinically depressed children and adolescents with young people from the community sample. The analysis indicated significant differences between groups on all factors (Schniering & Rapee, 2002).

Reliability

Schniering and Rapee (2002) reported internal consistency of CATS with Conbach's alpha coefficient of 0.95. Internal consistency of the subscales was 0.85 for physical threat, 0.92 for social threat, 0.92 for personal failure, and 0.85 for hostility. Test-retest reliability was demonstrated and reassessed 1 and 3 months after the initial administration of the questionnaire. The test-retest correlation coefficient for the total score was 0.79 at 1 month, and 0.76 at 3 months (Schniering & Rapee, 2002). Test-retest correlation coefficients on CATS for subscale at 1 month was 0.74 for physical threat, 0.78 for social threat, 0.80 for personal failure, and 0.66 for hostility. Similarly, test-retest correlation coefficients on CATS for subscale at 3 months was also adequate at 0.77 for physical threat, 0.73 for social threat, 0.74 for personal failure, and 0.68 for hostility.

The CATS was translated into Thai by Thapinta and Songmuang (2004) and accuracy was confirmed by a bilingual translator. Another bilingual translator translated from the Thai language back to the English language. The agreement that

the translation and back translation were equivalent was confirmed. They conducted a reliability test with 316 school students aged between 11 and 15. The internal reliability was supported by Cronbach's Coefficient of 0.97.

In this study, Cronbach's Alpha Coefficient was used to analyze the internal consistency reliability for the 70 participants included in the present study. The results revealed that the Cronbach's Alpha Coefficient ranged from .91 to .93 for the scales as a whole. Internal consistency of the subscales ranged from .75 to .78 for physical threat, .74 to .88 for social threat, .84 to .85 for personal failure, and .83 to .84 for hostility.

The test-retest analysis revealed 1-month test-retest reliability correlation coefficient ranged from .67 to .73. Test-retest reliability correlation coefficient of the subscales ranged from .71 to .72 for physical threat, .64 to .67 for social threat, .65 to .88 for personal failure, and .56 to .67 for hostility.

Instrument 4: Child and Adolescent Social and Adaptive Functioning Scale (CASAFS)

Child and Adolescent Social and Adaptive Functioning Scale (CASAFS) was developed by Price, Spence, Sheffield, and Donovan (2000). CASAFS is a self-report inventory consisting of 24 items designed to examine the social and adaptive functioning of children and adolescents, aged 10-17 years. The instrument comprises four subscales examining functioning in four key social role areas relevant to children and adolescents, namely, school performance, peer relationships, family relationships, and home duties/ self-care. Respondents are asked to respond on a 4-point scale of 1 (never), 2 (sometimes), 3 (often), and 4 (always) for each social and adaptive

functioning item (Price, Spence, Sheffield, & Donovan, 2000). Negatively worded items required reverse-scoring before calculation of the total. The total score ranges from 24 to 96, with high score reflecting a higher level of social functioning.

Validity

The construct validity of the CASAFS was examined through the inter-correlation of CASAFS scores with a measure of depressive symptoms (BDI). The results showed a significant negative correlation between CASAFS total scores and the scores on the BDI (r = -.34), revealing that higher level of social functioning were related to lower levels of depressive symptoms (Price et al., 2000).

The concurrent validity of CASAFS in terms of differential response of clinically depressed, sub-clinical, and non-clinical control adolescents was examined by Price and colleagues (2002). The results revealed that the clinical group reported significantly lower scores than the sub-clinical group. The sub-clinical group reported significantly lower scores than the non-clinical control group on CASAFS total scores.

Reliability

Price and colleagues (2002) reported internal consistency and test-retest reliability of CASAFS with 1,478 adolescents. There was a coefficient alpha of .81 for the scale as a whole. The internal consistency of the subscales revealed coefficient alpha of .81 (school performance), .67 (peer relationships), .74 (family relationships), .69 (home duties/self-care) (Price et al., 2000).

The test-retest analysis revealed a 12-month test-retest reliability correlation coefficient of 0.58 for the total score on the CASAFS. The correlation (temporal stability) of the subscale scores were .63 for school performance, .59 for peer relationships, .54 for family relationships, and .48 for home duties/self-care (Price et al., 2000).

The CASAFS was translated into Thai language by the investigator after obtaining permission to use the instrument. To assure the translation is equivalent to the original CASAFS, the back translation through which the translation of the CASAFS was translated again into English. The back translation was carried out by one bilingual psychologist and two nurse instructors with language skills in Thai and the English. Both versions (original and back translated) are compared in the equivalent aspects to the original (Guillemin, Bombardier, & Beaton, 1993). If there were discrepancies, the researcher sought consensus among three translators to reach a final agreement.

In this study, Cronbach's Alpha Coefficient was used to analyze the internal consistency reliability for the 70 participants included in the present study. The results revealed that the Cronbach's Alpha Coefficient ranged from .75 to .78 for the scales as a whole. The internal consistency of the subscales revealed coefficient alpha ranged from .65 to .79 for school performance, .61 to .51 for peer relationships, .75 to .68 from family relationships, .62 to .63 for home duties/self-care.

To assure the stability of the instrument, the test-retest method was applied. A significant correlation (r = 0.78 to r = .79) was found between CASAFS scores at the time of first participation and four weeks later. The test-retest correlation coefficient of the subscales revealed significant correlation ranged from .66 to .79 for

school performance, .59 to .73 for peer relationships, .58 to .73 for family relationships, .56 to .72 for home duties/self-care.

Instrument 5: Focus Group Guideline

The investigator developed a focus group guideline from reviewing literature in order to explore participant's opinions gained from this study. The questions were reviewed and critiques by two experts in the CBT and one expert in focus group method. One expert suggested rewriting two questions for better understanding. The questions were rewriting as suggested. The focus group question guidelines consisted of 5 open-ended questions:

(1) How valuable was the information presented in this program?

(2) How did this program affect your mood, thoughts, and behaviors?

(3) How did you apply or practice the skills presented in this study?

(4) What did you think of the length of the sessions and overall 12-week?

(5) What would be your suggestions about any activity after the completion of the study?

Instruments for intervention

1. The School-based Cognitive Behavior Therapy for Thai Adolescents with Depression Manual

The School-based CBT for Thai Adolescents with Depression manual was

developed by the investigator on the basis of Beck's cognitive theory and social cognitive learning theory of Bandura, the CBT manual (original version) developed by Curry and colleagues (2000) to use in the research study of treatments for depressive disorder in teenagers is named TADS (the Treatment for Adolescents with Depression Study), and literature related to a school-based CBT and adolescents' depression. The Curry and colleagues manual was developed to use in the research study of treatments for depressive disorder in teenagers is named TADS (the Treatment for Adolescents with Depression Study). The investigator received permission to utilize CBT manual in this study, including adapting as necessary for Thai adolescents. This present manual was developed for Thai high school settings in helping depressed Thai adolescents to decrease depressive symptoms and negative automatic thought, and then improve social and adaptive functioning. The key constructs and concepts covered in the CBT intervention (overall design, structure to the process of CBT, and main cognitive and behavioral contents), investigator modified from the CBT manual (original version). The behavioral and social activities such as role plays, discussion related topics, learning tasks, and homework in the topic of increasing pleasant activities, problem-solving, relaxation, and social skills training, investigator developed from the literature reviewed to suite with Thai adolescent with depression context, learning and living styles, and culture.

The School-based CBT Program for Thai Adolescents with Depression consists of twelve 1-hour sessions over twelve weeks. Sessions are held once a week. Groups consist of eight to ten participants with leaded by an investigator. Follow-up sessions are held one month after the program terminated to collect information on

improvement. All sessions are structured, and a leader's manual provides scripts, exercises, and guidelines for running the course.

The contents of the School-based CBT for Thai Adolescent with Depression were organized into two major components comprising cognitive and behavioral components. Each component included various related topics which were administered in the sequence of the twelve intervention sessions.

Validity of the Program

The content of the School-based CBT Program for Thai Adolescents with Depression was validated by a panel of five experts: one psychologist; two nursing faculty members with clinical experience and skills in CBT strategies; and two child and adolescent psychiatrists, including one with CBT training. After receiving suggestions, the investigator corrected the program for the appropriateness of the language and the process of the program. This CBT program tried out with ten depressed adolescents who have similar characteristics to participants of the study but study at the different school.

Instrument 2: Material for Thai Adolescents with Depression

Information materials provided to participants were comprised of one Workbook and one compact disc. The Workbook was developed based on the CBT Workbook developed by Curry et al. (2000) and the literature review. The Workbook contains forms used during the intervention period by the participants. Forms are included in the order in which participants are used in the sequence of sessions.

Copies of forms used in multiple sessions, Emotion Thermometer forms (labeled and unlabeled), and four different mood monitoring forms, are also included in a section at the back of the adolescents' Workbook. Index cards are also included with the Workbook, so the adolescent can write down Homework or other material. The compact disc was related to "Autogenic Training Relaxation" which developed by the Department of Mental Health, Ministry of Public Health, Thailand.

Validity of the Workbook

The work book was validated by the same panel of experts as for the School-based CBT manual. The Workbook was revised following the experts' recommendations. Then it was tried out with ten depressed adolescents and was revised for ease of understanding.

Preparation of Research Assistants

The aims to have research assistants in this study were for minimizing biases in the data collection processes and facilitating in the CBT group. There were two research assistants for data collection procedures. The investigator selected research assistants who are psychiatric and mental health nurses with the research knowledge. One research assistant was mainly in the data collection process. She was informed about the study objectives, activities, and data collecting procedures. Another one achieved role to facilitate in the School-based CBT Program for Thai Adolescents with Depression group. She was trained about the School-based CBT program

objectives, contents, human subject issues, tool administration, as well as her role as a note taker during the group process.

Protection of Human Rights

The Institutional Review Board (IRB) of Faculty of Nursing, Chiang Mai University, approved the study procedures (Appendix B). An effort to protect human subjects was made using several procedures. All students in the 2009 academic year ages between 14 and 17 were eligible to participate in the study upon parental or legal guardians approval. All students' parents or legal guardians were informed on a one-on-one basis outlining the purposes and procedures of the study, potential risks and benefits expected from taking part in the study, assurance that participation is unforced and voluntary, and assurance that the participant may withdraw consent and discontinue participation at any time without any affecting their progress in their classes and grades. Participants and their legal guardians were provided with a copy of informed consent prior to the study. Participants' confidentiality was assured through many means: information collected from questionnaires and instruments were private and shared only with the research team; all identifying information was removed after recording the data; the investigator numerically coded questionnaires and instrument data for identification; and all questionnaires and instrument data kept in a separate locked file.

In order to protect the rights of participants in the control group, they received treatment as school nurses' usual care from school nurses. They were also offered a chance to participate in the school-based CBT Program after the completion

of the post-program data collection. However, after the completion of post-program of this study, it took place during the school break and participants in the control group refused to participate in the school-based CBT program. Therefore, the investigator offered a school-based package consisting of manual, workbook, and a relaxation CD to all of them.

Each time of depressive symptoms assessment, if participants are assessed with high depressive symptoms scores, they were referred to school counselor for further consultation or treatment and their names were reported to school administrators.

Procedures of Data Collection

Data collection was conducted after receiving permissions from the administrators of each school involved in the study. Then, the process of data collection started.

Intervention Group

After the recruitment, thirty five participants were obtained for the completion of the intervention group. The investigator divided the intervention participants into six groups based on the time available for attending the study intervention program. Each intervention group contained 8-10 participants because this number is suggested by Yalom (1995) as the ideal size for interaction in group therapy based on the clinical literature. Then the protocol of school-based CBT

program that lasted in 12 sessions with an hour per session for 12 weeks was implemented. Data collection employed as described below:

Week 1

Participants were registered to enter in the intervention program and received the School-based CBT for adolescent with depression Workbook. The investigator started with program orientation and established therapeutic relationship with participants. The main purpose of this session was to enhance participants' understanding about depression, the School-based CBT for Thai Adolescent with Depression program, guidelines for this class, and setting goals, as well as giving a Workbook and Relaxation compact disc. The activities of this session were as follows:

1. Introduced the leader and get the names of participants. Then, the leader introduced participants to the Get-Acquainted Activity.

2. Introduce rules that must be observed in this program by writing these rules on the blackboard. These 4 rules are avoiding depressive talk, allowing each person to have equal time, not sharing personal things talked about in the group outside this group, and offering support to group.

3. Introduce structure and routine session format that consist of three portions. The first portion (10 minutes) includes Issues and Incidents and Homework Review. The middle portion (40 minutes) includes learning new skills. And, the last portion (10 minutes) includes continued work on the Issues and Incidents, and planning for the next week's Homework.

4. Instruct information and knowledge of depression, symptoms, causes, effective treatment, and main changes.

5. Instruct and discuss on the topic of "school-based CBT.

6. Explain and discuss treatment goals and encourage participants to set their goals.

7. Ask participants to take one goal and identify a part of that goal they could work on the next session.

8. Check participants if they understood and help them summarize the main points.

Participants accepted rules of CBT group. They can identify their own depressive symptoms. Some participants can identify causes of their depression such as family conflicts, school problems, or problems with boyfriend/girlfriend. They can identify that actions and thoughts affect emotions and actions and thoughts are easiest to control.

Participants understood the main points of goal setting. They can take one goal and identified a part of that goal they could work on the next session.

Week 2

The investigator started the session with reviewing last session participants' already covered (10 minutes). Then, taught and trained skills in mood monitoring by using Emotion Thermometer and Mood Monitor (40 minutes). The last 10 minutes, the investigator checked participants' understanding and concerns and helped them to summarize knowledge and learned-skills from this session. Then, assigned homework and planned for the next session. The session followed with the activities below:

1. Reviewed knowledge from the first session and asked participants to describe their feeling recently or over the past week both bad and happy including situation involved.

2. Introduced Mood Monitoring as a skill that participants pay attention to how they feel. This skill will help participants to see what situations and thoughts are connected with feeling better or feeling happy.

3. Introduced the "Emotion Thermometer:" Explained that Emotion Thermometer helps to understand how strong participants' feeling are. Then, gave an example of experiences in which he felt good and happy and a time in which the emotion was mild and demonstrated participants to fill out lines on the Thermometer.

4. Discussed the range of emotions from "Emotion Thermometer."

5. Introduced "Mood Monitor" form and the linkage with the Emotions Thermometer.

6. Explained, demonstrated, and practiced how to fill out daily "Mood Monitor."

7. Encouraged participants to summarize points through the session and what has been done in the session.

8. Assigned participants homework to notice and record the "Emotions Thermometer" and the "Mood Monitor" record. Then, informed the next session.

Participants described their past week good and bad mood and rated emotion scores both good and bad mood. Their past week bad mood involved problems such as conflicts with family members, friends, or boy or girlfriend. Investigator helped them to point the range of their emotion on Emotion Thermometer and explained the linkage among situation, thought, emotion, and behavior. Investigator assigned

homework to them for filling out daily mood monitor and seeing the fluctuation of their mood.

Week 3

The session started with discussing about issues and incidents and reviewing homework (10 minutes). Then, taught and trained skills in the process of setting goals (40 minutes). The last 10 minutes, the investigator checked participants' understanding and concerns and helped them to summarize knowledge and learned-skills from this session. Then, assigned homework and planned for the next session. The session followed with the activities below:

1. Ask participants what events or concerns they would like to work on this session. Then, discuss with participants in putting issues and incidents into an order for discussion after new skill has been practiced.

2. Have participants shared their experience in using the daily mood monitoring. Inquire participants what they did to make at least partially successful outcome. If the participants were less successful or not at all successful, assure them that one of the reasons for homework is to help participants to understand what gets in the way of the participants being able to reach his/her goals.

3. Ask participants to review their initial goals and their efforts to reach their goals. Then, point out instance when participants reached goals from breaking down the goals into small or more concrete.

4. Ask participants to take one goal and identify a part of that goal they could work on the next session.

5. Check participants if they understood and help them summarize the main points.

6. Assign participants to work on the Sub-Goal listed.

Participants understood the main points of goal setting. They can take one goal and identified a part of that goal they could work on the next session.

Week 4

The session started with discussing about issues and incidents and reviewing homework (10 minutes). Then, taught and discussed on how to baselining, identifying, and training skills in the process of increasing Pleasant Activities (40 minutes). The last 10 minutes, the investigator checked participants' understanding and concerns and helped them to summarize knowledge and learned-skills from this session. Then, assigned homework and planned for the next session. The session followed with the activities below:

1. Ask participants what events or concerns they would like to work on this session. Then, discuss with participants in putting issues and incidents into an order for discussion after new skill has been practiced.

2. Have participants shared their experience and successes in their effort to attain their weekly goal in the days since the last session. Then, investigator gave them reinforcement what they did.

3. Draw "triangle" model of thoughts, emotions, and behaviors and "downward spirals" and "upward spirals" on the whiteboard. Investigator explained the model with the association of lacking enjoyable activities and depression.

4. Write down potential activities with participants on the whiteboard.

5. Chose pleasant social and success activities with participants to try to increase.

6. Assign participants to use daily mood record form and increase selected pleasant activities form.

7. Ask participants to summarize their main point understanding and plan for the next session.

At first, some participants wrote down a list of activities that they have enjoyed to do in the past and did by their own such as playing computer games, listening to music, or reading books or magazines. Investigator helped them to create a list of activities that were more pleasant social and success activities such as phoning a friend, preparing a meal for family, or reading books with friends. They selected activities from the lists to try to increase.

Week 5

The session started with discussing about issues and incidents and reviewing homework (10 minutes). Then, taught and trained skills in the process of problem-solving (40 minutes). The last 10 minutes, the investigator checked participants' understanding and concerns and helped them to summarize knowledge and learned-skills from this session. Then, assigned homework and planned for the next session. The session followed with the activities below:

1. Ask and discuss issues and incidents that participants need to work on this session after new skill has been practiced.

2. Discuss daily mood monitoring and note changes. Then, have participants share their increasing pleasant activities recorded.

3. Explain steps of problem-solving: brainstorming, not evaluating, evaluating, choosing, and encouraging. Then, participants practiced to identify and think of solutions by reading a scenario of one student who has problems.

4. Apply problem-solving to one incident that is not highly anxiety provoking, or too difficult, so that participants are to have success with the method.

5. Assign participants to integrate problem-solving with increasing pleasant activities by applying the problem-solving steps to solve barriers to pleasant activities.

Most participants expressed problems at school from grades, class assignments or homework, teachers, and peers or boy or girlfriends. Some participants expressed problems with family. After applying steps of problem-solving to three participants' listed incidents in group, they found the good enough solutions.

Week 6

The session started with discussing about issues and incidents and reviewing homework (10 minutes). Then, taught and developed skills to recognize, identify, and label negative automatic thoughts and distortion. (40 minutes). The last 10 minutes, the investigator checked participants' understanding and concerns and helped them to summarize knowledge and learned-skills from this session. Then, assigned homework and planned for the next session. The session followed with the activities below:

1. Ask participants what events or concerns they would like to work on this session. Then, discuss participants' experience with attempts to increase pleasant activities and on understanding behaviors and thoughts associated with their mood.

2. Explain ways to change actions and mood by learning how to change thoughts relating this explanation to the "triangle" of behavior, emotions, and thoughts.

3. Explain and discuss lists of cognitive distortions.

4. Teach participants to recognize, record, and challenge negative automatic thoughts to see if they are really accurate.

5. Assign to work on increasing pleasant activities, mood monitor, and practice fill out three column mood monitor that includes the names of negative automatic thoughts.

6. Summarize and complete the forms in the session.

Participants can identify their unrealistic negative automatic thoughts such as black and white thinking, jumping to conclusions, missing the positive, and should's. They practiced to examine the linkage among actions, thinking, and feelings.

The second data collection

At the end of this session, a research assistant measured the improvement of participants by using CES-D, CATS, and CASAFS.

Week 7

The session started with discussing about issues and incidents and reviewing homework (10 minutes). Then, taught and trained skills to formulate and use realistic counter-thoughts (40 minutes). The last 10 minutes, the investigator checked participants' understanding and concerns and helped them to summarize knowledge and learned-skills from this session. Then, assigned homework and planned for the next session. The session followed with the activities below:

1. Ask participants what events or concerns they would like to work on this session. Discuss with participants in putting issues and incidents into an order for discussion after new skill has been practiced. Tell participants some items need to be deferred until later sessions.

2. Check to see whether participants were able to recognize any negative automatic thoughts using three column mood monitor homework.

3. Explain how to question and talk back to negative automatic thoughts that are one-sided or exaggerated and depressing. By practicing using methods of Socratic questioning, looking for contradictory evidence, and applying the double standard, participants can identify and make a list of possible counter-thoughts that are realistic and positive. Then, participants role-play and reverse role-play to practice replacing irrational thoughts with positive counter thoughts that are more realistic.

4. Write down the most effective counter-thoughts on index cards to work at home.

5. Ask participants to review goals that were written down earlier session. Check progress toward goals.

6. Assign participants to practice saying the most effective realistic counter-thoughts to themselves each day. This is to help the thoughts become more "automatic."

Participants discussed and looked for evidence to support or question their negative automatic thoughts. Then, they practiced and shared writing realistic and positive lists to challenge or talk back to negative thoughts. They practiced role plays to change ways of responding to negative thoughts to positive and realistic thoughts.

Week 8

The session started with discussing about issues and incidents and reviewing homework (10 minutes). Then, taught, demonstrated, discussed, role-played and reversed role-playing, and feedback to improve participants' basic skills for meeting people, joining, continuing, and leaving a conversation (40 minutes). The last 10 minutes, the investigator checked participants' understanding and concerns and helped them to summarize knowledge and learned-skills from this session. Then, assigned homework and planned for the next session. The session followed with the activities below:

1. Ask participants what events or concerns they would like to work on this session. Discuss with participants in putting issues and incidents into an order for discussion after new skill has been practiced.

2. Check to see whether participants were able to record and talk back with realistic and positive counter-thoughts. Review what participants did to make the task successful and what thoughts, behaviors, emotions got in the way.

3. Explain rationale for social skills training that is a way to change emotions.

4. Write sample situations for exercising on the whiteboard and make a list of skills to start good conversation, joining conversation, and feeling comfortable leaving conversation.

5. Ask participants to volunteer some role-play situations with someone just met, a conversation with a group of people.

7. Demonstrate good and poor listening skills, and then have participant's comments.

8. Create take-home handout and homework by participants to practice the skills in need.

Participants role-played meeting people activities. After receiving comments about eye contact, starting conversation, friendly behavior and making friends from the group, participants tried again to improve their interaction with others. Then participants wrote a list of helpful skills on their cards to practice as homework.

Week 9

The session started with discussing about issues and incidents and reviewing homework (10 minutes). Then, taught, demonstrated, discussed, role-played and reversed role-playing, and feedback to improve participants' assertive skills (40 minutes). The last 10 minutes, the investigator checked participants' understanding and concerns and helped them to summarize knowledge and learned-skills from this session. Then, assigned homework and planned for the next session. The session followed with the activities below:

1. Ask participants what events or concerns they would like to work on this session. Then, discuss with participants in putting issues and incidents into an order for discussion after the assertive skill has been practiced.

2. Check to see whether participants were able to practice conversation as needed. Then, reviewed what participants did to make the task successful.

3. Discuss situations that make difficulties or pressure to participants to stand for themselves. Rationale for changing non-assertive behavior to assertive behavior is to lead participant to feel better.

4. Generate examples of assertive and non-assertive responses. Ask participants to tell how they would react in each situation. Then ask them to think

about how their friends might react differently. Relate this exercise to the three parts of the personality and the CBT model.

5. Explain ways to response to situations. Assertiveness is the middle between passive and aggressive but you can stand up for yourselves in a strong way and effective.

6. Teach main steps in assertiveness such as recognize your own emotion, express your own emotion, and ask for some course of action.

7. Role-play assertiveness and tailored to the needs of participants.

8. Write down cues or tips on index card to practice at home.

Participants talked and shared their own situations that needed assertive responses such as misunderstanding with parents, pressuring situations with boyfriends or friends, and problems with teachers. After role-playing one of the problems participants' listed and reversed role-playing, participants tailored their responses to fit with themselves.

Week 10

The session started with discussing about issues and incidents and reviewing homework (10 minutes). Then, taught, demonstrated, discussed, role-played and reversed role-playing, and feedback to improve participants' skills in listening and understanding, even when disagreeing, and compromising (40 minutes). The last 10 minutes, the investigator checked participants' understanding and concerns and helped them to summarize knowledge and learned-skills from this session. Then, assigned homework and planned for the next session. The session followed with the activities below:

1. Discuss with participants in putting issues and incidents into an order for discussion after this session skill has been practiced.

2. Check to see whether participants were able to practice assertive skills as needed. Review what participants did to make the task successful.

3. Explain participants that difficulty in communication and compromising may be contributing to depression. Changing argumentative communication to positive and constructive is one way to change behavior that can lead to positive change in emotions.

4. Explain three keys of listening: 1) the distinction between listening carefully and agreeing; 2) the distinction between understanding another person's viewpoint and agreeing with it; 3) the connection between negative automatic thoughts and inflexibility in communication.

5. Present the ability to listen even when upset, or even when disagreeing, as an important skill that can be learned or improved with practice.

6. Encourage participants role-play two "debates" on current controversial issues.

7. Relate difficulties in communication and/or compromise to possible negative automatic thoughts.

8. Explain that inability to compromise is costing participants' support, increasing family discord, peer conflict, or difficulty with teachers, and thereby contributing to depression. Illustrate that compromise is necessary in all relationships.

9. Relate compromising to problem-solving. Encourage participants role-play situations involving the need to compromise. Then, relate difficulties in compromising to possible negative automatic thoughts.

10. Design with participants a homework exercise that will require practicing compromise skills.

Participants selected one conflicts with a father to practice and resolve conflicts. Participants wrote down suggestions on the whiteboard. They took turns playing the roles of themselves and parents. They practiced defined a problem, active listening, brain storming for finding solutions. Investigator reminded them to try to find some solutions that parents would find acceptable. They selected one agreement solution and tried. Investigator and group members provided feedback. Participants expressed more positive to approach their parents.

Week 11

The session started with discussing about issues and incidents and reviewing homework (10 minutes). Then, taught, demonstrated, discussed, practiced, and feedback to improve participants' ability to relax (40 minutes). The last 10 minutes, the investigator checked participants' understanding and concerns and helped them to summarize knowledge and learned-skills from this session. Then, assigned homework and planned for the next session. The session followed with the activities below:

1. Ask participants what events or concerns they would like to work on this session. Discuss with participants in putting issues and incidents into an order for discussion after relaxation skill has been practiced.

2. Check to see whether participants were able to practice compromising skills as needed. Review what participants did to make the task successful.

3. Explain participants that feeling tense or stress makes it hard to cope with issues. Write down situations that produce anger, irritability, lack of self-control. Explain that relaxation can be use to reduce this feeling and so can prevent depression from starting or getting worse and control these problems.

4. Explore with participants what are the ways they currently use to relax. Encourage participants to continue using effective methods. Explain that the methods to be introduced in this session can be added to the skills that participants already uses.

5. Teach and train participants several methods of relaxing briefly that can be used in stressful situations such as deep breathing with a self-statement, leaving the scene for a break, and guided imagery for relaxation.

6. Decide which relaxation method to practice during the coming week. On index cards, write brief reminders or guidelines for how to practice the method(s). Use Emotions Thermometer: A low score (0) would here represent considerable distress, tension, anxiety, and a high score (10), total relaxation. Demonstrate how to rate tension before and after a relaxation practice.

Participants can identify situations that need to use relaxation techniques. They discussed situations to use with each technique such as deep breathing for a fast calm down and autogenic or progressive muscle relaxation when they have time. After practicing relaxation techniques, all participants revealed higher score on emotion thermometer.

Week 12

The session started with discussing about issues and incidents and reviewing homework (10 minutes). This session focused on two points: 1 teach and train skill to improve participants' ability to control affective arousal or affective lability and to develop a plan with specific steps for coping with situations; 2 review progress toward intervention goals and reviewing skills covered in intervention and determine which skills have been most helpful to participants.. The provision of information was by means of explanation, demonstration, practicing, and feedback. The session followed with the activities below:

1. Ask participants what events or concerns they would like to work on this session. Discuss with participants in putting issues and incidents into an order for discussion after new skill has been practiced.

2. Check to see whether participants were able to practice relaxation skills as needed. Review what participants did to make the task successful.

3. Discuss how to keep emotions under control will enable participants to use the other skills they have including problem-solving, assertion, relaxation, communication, and others.

4. Apply the emotions thermometer to the feeling that participants label as leading to loss of control. Ask participants to indicate at what point things have gotten "too hot too handle." Then ask participants to pick a point where they are still to use their skills to avoid an outburst.

5. Work with participants to identify specific steps they can take at the point where they are still to use their skills to avoid an outburst. Clarify with participants the links between this skill and others they can use. Rehearse with participants a

scenario similar to one that might trigger intense affect, and walk through each step of the plan.

6. Create an index card listing each step the teen is to take when their emotions get close to the "Action Point."

7. Explain participants this session ends today, it is the time to review with them the progress made toward the original intervention goals. Review those goals that were listed at the start of intervention and any other goals that have emerged during intervention.

8. List on the form the skills that have been covered in the program. Review each skill and ask participants if the skill proved to be helpful for them. Anticipate with participants any challenges or stressors that may be coming up in the future. Plan how to use the Tools to cope with these challenges or stressors.

Participants reviewed key skills learned and to engage in ending activities. They developed their plan for dealing with future feeling down or depressed such as to increase pleasant and social activities, continue using mood monitor.

The third data collection

At the end of this session, a research assistant measured the improvement of adolescents by using CES-D, CATS, and CASAFS.

The forth data collection

One month after completing the School-based CBT program, a research assistant measured the improvement of adolescents by using CES-D, CATS, and

CASAFS. After completing the self-report instruments, an investigator conducted focus group with participants to explore participant's opinions gained from this study.

Control Group

Each eligible participant who was able to participate in the control group received a package of documents including an invitation letter, the description of the study, the study consent form to both adolescent and his/her parent or key care taker, and the researcher's address and telephone number. The consent forms of both participants and their parents or key care takers were returned to the investigator at the schools participants studied a week after receiving the package. After the recruitment, thirty seven participants were obtained for the control group. At the end of the program, two participants in the control group who had the same matching criteria with two drop-out participants in the intervention group were excluded. Therefore, thirty five participants in the control group completed all data collection.

Data collection was conducted at the control group four times: the time of enrollment (Time 1), six weeks after enrollment (Time 2), twelve weeks after enrollment (Time 3), and 16 weeks after enrollment (Time 4). The package of questionnaires comprised of the CES-D, CATS, and CASAFS. During the intervention period, the control group received school nurses' usual care which composed of psychological problem assessment and giving advice or individual counseling as needed.

After receiving the forth data sets, the investigator expressed appreciation to the participants and sending appreciation letters to their parents or key care takers. In addition, the investigator informed that they were welcome to join the School-based

CBT program after the completion the present program. However, after the completion of this study, it was during school break and participants in the control group refused to participate in the school-based CBT program. Therefore, investigator offered a school-based package consisted of manual, workbook, and relaxation CD to all of them.

Data Analysis

Data from questionnaires and focus group interviews with intervention group are processed and analyzed. The details of data analyses are as follows:

Quantitative Data

The Statistical Package for the Social for Windows (SPSS/FW), version 11.5 was utilized to analyze quantitative data. Statistical analyses were conducted using 0.05 as the standard for statistical significance. The details for data analyses are summarized as follows:

1. Demographic characteristics of participants

Data on demographic characteristics of the participants was analyzed using descriptive statistics. Frequency and percentage were utilized to describe the variables which were in nominal and ordinal scales namely gender, religion, and household income. The mean and standard deviation were utilized to describe the variables in interval scales including age, grade, and CES-D score.

2. Testing similarity between the experimental and the control group

Prior to testing the hypotheses, the two groups were examined the difference of demographic characteristics and depressive symptoms score. The Chi-square statistic test was utilized to test the variables in nominal and ordinal scales. These variables included gender, religion, and household income. For the variables of interval scale, the *t*-test was utilized to test the differences between two groups including age, the baseline score of depressive symptoms score, and GPA.

At the end of the study, it was found that thirty five participants in the control and the intervention group fully participated and completed all administrations. After calculating the similarities, it could be postulated that there was no statistically significant difference between the two groups and data from these participants could be utilized for testing hypotheses.

3. Testing hypothesis

The multivariate analysis of variance (MANOVA) was utilized for testing the differences of depressive symptoms, negative automatic thought, and social and adaptive functioning between the intervention and the control group.

Before using the MANOVA testing, the assumption of the MANOVA was tested to avoid the error due to violation of assumption. (see Appendix F) The Box's Test of Equality of covariance matrices were non-significant ($p > 0.05$) indicating that there were no significant differences in the variance, covariance matrices for the two independent groups. The Bartlett Test of Sphericity was significant ($p < 0.05$) indicating the correlation matrix was different from an identity matrix. The basic assumptions for using MANOVA were not violated both the Box's Test of Equality

of covariance matrices and the Bartlett Test of Sphericity. Thus, they were appropriate to be tested by the MANOVA in this study (Tabanick, & Fidell, 2000).

Qualitative Data

The data from focus group was analyzed using content analysis (Streubert & Carpenter, 2003). The focus group was conducted in order to evaluate the intervention program at immediate the completion of the study. The stages of the content analysis are as follow:

1. *Coding*. As data received, an investigator applied a system of open coding by examining the data line by line. The investigator wrote code words in the margin of the field notes. The investigator identified persistent words and phrases within the data. Thereafter, the data was ready to be categorized.

2. *Categorizing of the data.* This stage, investigator compared coded data with other data and assigned the data to clusters or categories according to obvious fit. Categories resulted from the condensing of coding stage.

3. *Integrating the categories and finding themes.* The investigator discovered relationship between categories and found common themes through the data.

4. *Integrating data from all sources.* The investigator put data from the focus group interviews with field notes while the focus group interviews were taking place. The investigator considered the contradictions between data retrieved from the two different sources.

5. *Re-categorizing and re-framing*. The investigator re-categorized the data and re-framed relationships between data categories if they were found to be unclear or unfit.