

ORIGINAL ARTICLE

**AN EVALUATION STUDY OF PARENT MANAGEMENT
TRAINING (PMT) PROGRAM IN NORTHERN THAI**

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Abstract

Objectives: To examine the effectiveness of parent management training in Northern Thai parents in both the short and long term and to evaluate parental and environmental factors which contribute and maintain the effectiveness of parenting skills. ***Methods:*** A total of 41 primary caregivers were enrolled. All of them had children between 2-15 years old to care for. Enrolled participants had to complete PPT (parent practice test), home situation questionnaire (HSQ) and the oppositional defiant disorder (ODD) part in Swanson, Nolan and Pelham short form (SNAP-IV) questionnaire and were interviewed with the researchers prior to the program, at week 8, week 24 and week 54. They had to join PMT group which was conducted for 3 hours each week for 7 consecutive weeks. ***Result:*** The means scores of PPT which measured parenting skills outcome had increased significantly from the baseline and still maintained up to one year while HSQ scores, HSQ troublesome situations and SNAP-IV scores which measured troublesome home situations and disruptive child behaviors, respectively had decreased significantly from baseline and also maintained up to one year. Gender of the children, family income, educational level of the caregivers, activity hours and staying hours showed correlation effects to PPT scores, HSQ scores, HSQ situations and SNAP-IV scores at least p-value <0.05. Overall, sixty- six percent of caregivers who had consistently and continually practiced PMT in correct techniques and appropriate manners had the most benefits while the rest had limited benefits. ***Conclusion:*** PMT showed the most immediate benefits and modest benefits in long term up to one year in caregivers who had continually practiced PMT techniques with the correct techniques and appropriate manners. PMT had limited outcomes in families which had depressive primary caregivers, inconsistent parenting style, mal-practicing caregivers, low income, low parent-child activity hours, low parent-child staying hours and low parental education. In terms of child factors, PMT had limited effects in untreated ADHD, adolescent conduct disorder and Pervasive developmental disorder not otherwise specified (PDD NOS) children. *ASEAN Journal of Psychiatry, Vol. 13 (1): January – June 2012: XX XX.*

Keywords: Parent Management Training, Northern Thai Parents, Evaluation Study

Introduction

During 1960-1980, there was a shift in addressing children's problem behaviors [1]. This shift was because the DSM II (Diagnostic and Statistical Manual of Mental Disorders II) had been launched. In DSM II, the diagnostic criteria for behavior disorders of childhood and adolescence were proposed for the first time. One of the childhood and adolescent behavior disorders which was classified that might be derived from child rearing was unsocialized aggressive reactions of childhood. This behavior was characterized by overt or covert hostile disobedience, quarrelsomeness, physical and verbal aggressiveness, vengefulness and destructiveness, temper tantrums, solitary stealing, lying and hostile teasing. At the footnote of the criteria, it mentioned that the children who have these behaviors were from the families which parents usually have no consistent parental acceptance and discipline [2]. This statement in the criteria emphasized that parents play an important role to moderate children's delinquent behavior. This was according to study from Farrington & West [3], Patterson [4] and Wahler, Leske, & Roger [5] who reported that family variables could determine antisocial behavior in children. In addition, parents who were trained could change the problem behavior of their own child (Patterson, McNeal, Hawkins & Phelps,[6]; Wahler, Winkle, Peterson, and Morrison [7].

In order to encourage parenting skills, Forehand and McMahon [8] and Patterson et al.[9] introduced extensive and empirically based interventions in parent management training (PMT), which focused on how parents manage and behave the child misbehaviors while encouraging prosocial child behaviors. Since then, their approach has been accepted and implied in multiple settings by independent teams of investigators and has proved beneficial in altering oppositional/defiant behavior and conduct disorders while enhancing prosocial behavior in children at home and in school. Even though parent training programs were developed widely and claimed their successfulness, a recent meta-analysis review [10] reported that behavioral parenting programs (a program that

establishes a shift in social contingencies) and non-behavioral parenting programs (a program that attempts to alter parents' communication patterns and attitudes toward child rearing) had small to moderate effect (effect sizes were 0.42-0.66). For follow-up effects, non-behavioral programs had insufficient information while behavioral programs were small in magnitude. However, the children's behaviors and parental perception demonstrated clinically and statistically significant changes compared to the control group [11]. As the behavior parenting program showed distinct beneficial effects above nonbehavioral parenting program, we used this model in the study.

Parenting programs have different programs emphasizing different contents [12] (e.g. knowledge of typical child development, parenting self-efficacy, communication skills, discipline or behavior management strategies), delivery settings (e.g. clinic-based therapy, community-based group sessions, individual home visits), delivery techniques used to engage parents and teach relevant content (e.g. group discussions, homework assignments, role playing), and types of families served (e.g. children with identified behavior problems, low-income adolescent parents, primiparous mothers). Moreover, the objectives of parent training programs have also extended to the parents who have cognitive development [13], anxiety [14], and physical health [15] issues in their children. However, since there have been limited availability of parenting programs in Thailand, the study will focus only on the program which contains basic concepts of child rearing, which could be adapted or adjusted to every child's age group, and a program that manages externalized behaviors of the children.

In Thailand, parent training programs were introduced around 10 years ago. Most of the programs were developed from the evidence-based parent training manual guides and literatures and added up with expert's opinions and experiences. Even though different parent training practices were developed, there have been a few institutes which have developed a robust parenting manual and a professional training course. Siriraj parenting program is the

one of them. In this study, researchers used the Siriraj parenting program as a prototype to develop a parent training program; this program was robust in terms of short-term effectiveness. Furthermore, its separated sessions are ordered from basic to complicated techniques. Therefore, it is easy for the researcher to modify or adjust the content.

Although PMT has been introduced in Thailand for 10 years, the number of studies of the effectiveness of PMT is limited, especially in terms of its long term effectiveness. Furthermore, there was no study of PMT in Northern part of Thailand which could be a reference for further studies. The study was conducted to examine the effectiveness of parent management training in Northern Thai parents in both the short and the long term and to evaluate parental and environmental factors which contribute and maintain the effectiveness of parenting skills.

Background: Problems in Northern Thai child rearing style

Although there is no published literature on the problems of child rearing practices in Thailand, my observation as a researcher with 4 years' experience working with Thai parents in Central Thailand and 3 years with northern Thai parents, is that there are some parenting problems which affect children's behaviors. Regardless of the education level which may affect the quality of parenting care, some Northern Thai parenting styles may bring a child toward misbehaviors. Northern Thai parents often see that children's misbehaviors are normal developmental behaviors according to the children's age, which are transient and will disappear when the children grow up. Therefore, they tend to wait and see rather than react to the children's misbehaviors. For example, one mother said that a father allowed a 3-year old daughter to hit him when she was angry and when she tried to stop her daughter, she was blamed by her husband. However, some behaviors need to be shaped before they are too late or turn into bad habits. The pinching and hitting behaviors of the toddlers should be inhibited by caregivers every time when they do these behaviors, otherwise they may learn that they can do these to others.

Furthermore, Northern parents tend to allow more freedom to their children and punish less. For example, one mother said during the weekend she did not see her 9-years old son at all. Her son left the house in the morning and came back in the evening. She did not know where he was or what he did and she couldn't prohibit her son from going out. However, the freedom itself should be counter-balanced with boundaries otherwise the children will lack in discipline and become spoiled. Spoiled children come from families which give them love and freedom but no rules or boundaries to control them. Another issue is Thai parents often have difficulties understanding and supporting their children's emotions. When the parents have to deal with the emotional situations, some of them get angry and upset, some focus only on stopping the situations, some ignore them, some use sarcasm towards their children's behaviors while some have no idea at all how to deal with these situations. One reason that would explain this situation is because Thai people have been taught to limit their emotional expression. For example, a boy would be taught to stop crying by being told 'You are a boy. Stop crying. A boy should be strong and must not cry in front of others. Therefore, when the parents face an emotional situation, they handle it by using their instincts rather than by using their reasoning or giving emotional support to their children. For example, when the child is upset with the school grade report, most of the parents will tell the child 'had you studied as I had told you, you would not be upset today, 'you should have studied more', or 'I would reduce computer time so that you can have more time to study', 'Why did not you pay more attention like your sister did?', etc. Although the parent's intention is to encourage their child to study more, the sarcastic wording without any empathic response may lead to discouragement. This issue has been raised by Thai therapists because they have been faced with the same problem. Furthermore, most of the parents forget to recognize or praise their children's good behaviors. In our culture, parents believe that if the children are praised too much, they will become arrogant. The good behaviors such as doing housework or doing homework are the children's duties. Therefore, in the parent's ideas, there is no need to praise

the children if they are responsible for their regular duties.

Parent management training (PMT) is the intervention in which parents are taught about behavioral shaping techniques in order to change the behavior problems of children and adolescents. Even though, there are many forms of PMT treatments, PMT usually refers to the program where parents and therapist work together. It generally does not include the program where parents and children are seen in the same sessions [16]. PMT may be conducted in individual or group sessions. The group format is more evidence-based than the individual format [11]. PMT comprises of 4 components (1) a conceptual view about how to change social, behavioral and emotional problem; (2) a set of principles and techniques that follow from that conceptual view; (3) development of specific skills in parents through practices, role play, and other active methods of techniques; and (4) integration of assessment and evaluation in treatment and treatment decision making [16]. The first two components are explained by 4 learning theories which are operant learning theory, classical learning theory, social learning theory and cognitive theory bases while the latter two components explain how to apply from the theories to practice.

Operant learning theory is used to explain why misbehaviors of the children are maintained. Children maintain their behavior because they receive reinforcements in response to their behaviors [17]. For example, when the children annoy their parents, the parents would pay attention to them by complaining or blaming them. Although these behaviors seem to cause negative consequences to them, the children learn that they can draw attention from their parents by annoying them. Therefore, training parent to ignore the children's annoying behavior reduced the children's misbehaviors. Classical learning theory is used to explain the causes of the children's behaviors, by paying attention to prior stimuli and controlling them. By controlling them, the children's misbehaviors are reduced [17]. Therefore, PMT will train parents to find the stimuli which caused the

children's behaviors then learn how to effectively control them. Social learning theory is used to explain that children's behaviors are shaped by their surrounding people and environment. Children learn social behaviors by imitating their significant others and superiors, understanding the surrounding contexts and following an idol's behaviors [18]. Therefore, teaching parents to be a good role model is crucial because if the children imitate parent's positive behaviors, their misbehaviors will be reduced.

Cognitive theory is used to explain that children's misbehaviors may come from their parents negative attitudes toward them [17]. Parents whose views are marked by negative attitudes toward their children won't see the positive behaviors, but will easily and immediately recognize the negative behaviors while tending to interpret the children's behaviors pessimistically. When children continuously receive negative reactions from their parents for a long time, they will develop negative attitudes toward themselves and increase their misbehavior. Therefore, training parents to change their negative attitudes toward their children and reconstruct their distorted thoughts and perceptions toward the children's behaviors, while encouraging them to manage their negative thoughts toward their children's behaviors will decrease their biases toward their children's behaviors.

Northern Thailand's parent management training program

The Northern Thai Parent Management Training Program was modified from Siriraj Parent Management Training Program which was modified from Dr. James Windell's parenting program guideline book "8 Weeks to a Well-Behaved Child: Putting Discipline Skills to Work" [19]. The Siriraj Parent Training comprises of 8 sessions which are general parenting skills, basic enneagram, communication skills and empathetic skills, praising techniques, giving of rewards and privileges, time-out, withdrawing rewards and privileges, token economy and conclusion session. Northern Thai Parent Management

Training Program has only 7 sessions because the developer skips basic enneagram session since it is not generally contained in a standard PMT program. Furthermore, the lesser number of sessions conducted, the greater the compliance of the participants.

Although contents in some sessions have been reduced, adjusted and developed, the key concepts remain the same.

In the program, therapist and co-therapist will lead each session according to the topic by explaining and giving an example while participants will have a chance to discuss, exchange, and learn new parenting techniques through the focused topics and case studies. Moreover, in each session, participants will be given case studies to discuss in a small group of 3-4 people, act in role plays and receive feedback from other groups and therapists. At the end of each session, participants are given homework which they need to bring back to discuss in a group in the following week. Each session, therapists and co-therapist provide 30 minutes for discussion of the homework in a group before starting the next topic.

In the first 6 weeks, the topics are the same as the Siriraj Parent Training program, except the basic enneagram session is removed. The last session is also different: participants will be given complex case studies in which they need to integrate techniques that they had learnt from all the previous sessions to solve the problems. In order to smoothen the communication, Northern Thai language was used in the entire program.

Methods

All voluntary participants were included by meeting this inclusion criteria which were (i) they were primary carers, (ii) they had children whose age were between 2-15 years old and (iii) they could read and write in Thai.

The PMT was held in the child and adolescent clinic for 7 consecutive weeks with 3-hour sessions each week. Around 20 participants enrolled in each group. The group was conducted as a closed group so a new participant

was not allowed to join after the group had started.

To measure the primary outcome of PMT, participants were asked to fill out a demographic data form, parent practice test questionnaire (PPT), home situation questionnaire (HSQ) and Swanson, the Oppositional defiant disorder (ODD) part in Nolan and Pelham short form (SNAP-IV) questionnaire and were interviewed by therapist, co-therapist and 2 assisted researchers before the program started and a repeat of this was carried out at week 8, week 24 and week 54. For the qualitative part, participants were asked to answer 3 questions after they completed the questionnaires. These three questions were 1. What are the current (within 2 weeks) behavioral problems of your children? 2. How did you manage them? 3. What were the results? All the answers were recorded and transcribed word for word.

The demographic data form which the primary carer needed to fill was divided into three parts. The first part questioned a primary carer's demographic data which included sex, age, relationship to the child, marital status, educational level, occupation and illnesses. The second part was corresponding to the first part but for the spouse of the primary carer. The third part was the family part which included the number of the children in the house, type of family, the number of family members, income, staying hours and activity hours. Staying hour means the total hours per day that parents stay with the children in the same place whereas activity hours count only the amount of times that parents stay and participate in the same activities with the children. In other words, the activity hours means the quality time spent together. The child demographic data included their sexes and ages.

Parent practice test (PPT) was translated from Dr. James Windell's book; 8 Weeks to a Well-Behaved Child: Putting Discipline Skills to Work [19]. It has good internal consistency; Cronbach's Alpha Coefficient of PPT is 0.841 (Chanvit Pornoppadol MD., unpublished). The questionnaire was developed to evaluate the effectiveness of parent management training

program by relying on parent self-report on how well parents interact or manage their children's behaviors. It has 20 items. Likert scale is used for each item where 0= never, 1= sometime to 2=often. Parents were asked to rate the score which was corresponding to their present situations within the past 2 weeks such as 'parents conduct a clear and certain house rule,' 'parents have consistently responded to the child's behavior,' 'parents praise or talk about good behavior of the child more than once a day'. The scores range from 0 to 40 where the higher scores represent better parenting practice. Home Situation Questionnaire (HSQ) was developed and tested normative data, reliability, and validity by G. J. DuPaul, 1990 unpublished manuscript, University of Massachusetts Medical Center, Worcester [20]. This questionnaire has a free downloaded version. The questionnaire was translated into Thai language. The HSQ Thai version has good internal consistency; Cronbach's Alpha Coefficient of HSQ is 0.910 (NuttornPittayratsatient MD, unpublished). The objective of the questionnaire is to evaluate the children's behaviors and severity of their behaviors in different situations at home. The HSQ assesses the children in these situations at home such as 'while playing alone', 'while playing with other children', 'at mealtimes', 'while getting dressed', 'when asked to do chores at home'). The questionnaire has 16 items. Each item is rated on this behavior is 'present' or 'absent' in each situation and if 'present', how severe is this behavior. Parents rate which one is corresponding to their situation within past 2 weeks. If parents mark 'present', they need to rate the severity of the children's behavior based on a 9-point scale where minimal number represent less severity. The 16 items are compiled as home situations and summed up as home situation scores. The home situations range from 0-16 while the home situation scores range from 0 to 144. The higher number of situations and the higher scores represent worse home situation.

Oppositional defiant disorder part (ODD) in Swanson, Nolan and Pelham (SNAP-IV) questionnaire

The SNAP-IV was developed by Swanson M. James, Ph.D., University of California, Irvine, CA. The original version contains 90 items whereas the SNAP-IV short form [21] which was used in many studies to access and follow-up children's behaviors such as in Multimodal Treatment Study for ADHD (MTA; [22],[23],[24]) and also in genetic studies [25],[26] has 26 items. This questionnaire combines ADHD (Attention Deficit hyperactivity disorder) and ODD (oppositional defiant disorder) subscale where rating indices are constructed for inattentive, hyperactive/impulsive, combined ADHD, and ODD subscales. The scores above the 95th percentile are labeled clinically relevant. This short form questionnaire was translated to Thai. The SNAP-IV Thai version has a good internal consistency; Cronbach's Alpha Coefficient of SNAP-IV is 0.927 (Nuttorn Pittayratsatient MD., unpublished). However, since this questionnaire has two separate parts which can be used separately to access ADHD and ODD, in this research, we decided to use only ODD part because researcher paid attention to the defiant behaviors of the children rather than ADHD symptoms. The SNAP-IV short form ODD part has 8 items which was adapted from DSM-IV diagnostic criteria for ODD such as 'often loses temper', 'often argues with adults', 'often actively defies or refuses to comply with adults' requests or rules', 'often deliberately annoys people'. Parents rate which one corresponds to their children's current behaviors. Each question is rated based on a 4-point scale from (0) not at all to (3) very much. The 8 items are summed to yield an ODD score ranging from 0 to 24 where higher score indicates severe symptoms and if the score is higher than 95th percentile of the child's age, it is clinically significant.

The SPSS program version 14 was used for statistical calculation. One pair t-test, paired t-test, one way ANOVA and correlation were used to compare the difference of the means, as well as determine the factors associated with the effectiveness of PMT, respectively.

Participants were classified into 4 groups by using the norm and cut-off points of each questionnaire. Post intervention scores from

each questionnaire were used to classify participants into a group while the transcribed interview of each participant was used for qualitative analysis.

Results

Forty-one females were enrolled. Thirty-seven were mothers while three of them were aunts. Majority of them were around 35-44 years old, employed and had at least a bachelor's degree. More than half of the participants were in a nuclear family which had less than 5 family members. Ninety percent of the providers had 1 to 2 children to care for. Seventy-five percent have their income around 20000-100000 baht

per month which meant that they were middle to high class families. Seventy-five percent had 2 to 12 stay hours with their children and sixty-five percent of them had one to more than three activity hours with their children. More than half of them joined more than eighty percent of all sessions.

Sixty-four children were evaluated by their providers. Sixty percent were females. Almost half were six to ten years old while a third was eleven to fifteen years old and a fifth was two to five years old. The data is showed in table 1. Fortunately, 41 participants completed the questionnaires and interviews throughout the 1-year research process.

Table 1. Caregiver demographic data

Variables	Frequency	Percent	cumulative percent
1. Sex Female	41	100	100
2. Age 25-34 35-44 45-54 Total	8 28 5 41	19.5 68.3 12.2 100.0	19.5 87.8 100.0
3. Relationship Parent Uncle-aunt Total	39 2 41	95.1 4.9 100.0	95.1 100.0
4. Marital status Married Widow Separate Single Total	36 1 1 3 41	87.8 2.4 2.4 7.3 100.0	87.8 90.2 92.7 100.0
5. Occupation Governmental/bank/state officers Enterprise employee Own business Other Total	27 12 1 1 41	65.9 39.3 2.4 2.4 100.0	65.9 95.1 97.6 100.0
6. Education High school BA MA Total	8 30 3 41	19.5 73.2 7.3 100.0	19.5 92.7 100.0
7. Chronic sickness None Cases Total	32 9 41	78 22 100.0	78 100.0
8. Spouse's age 25-34 35-44 45-54 Missing data total	8 21 8 4 41	19.5 51.2 19.5 9.8 100.0	19.5 70.7 90.2 100.0
9. Occupation's spouse Governmental/bank/state officers Enterprise employee Own business Missing data Total	20 11 6 4 41	48.8 26.8 14.6 9.8 100.0	48.8 75.6 90.2 100.0
10. Education's spouse Secondary school High school Higher vocation diploma Bachelor degree Master degree Missing data Total	2 8 3 17 7 4 41	4.9 19.5 7.3 41.5 17 9.8 100.0	4.9 24.4 31.7 73.2 90.2 100.0

Table 1. Continued.

11. Chronic sickness of spouse			
Negative	33	80.5	80.5
Positive	4	9.75	90.25
Missing data	4	9.75	
Total	41	100.0	100.0
12. Type of family			
Nuclear	24	58.5	58.5
Extended	17	41.5	100.0
Total	41	100.0	
13. Have kids			
1	10	24.4	24.4
2	28	68.3	92.7
3	3	7.3	100.0
Total	41	100.0	
14. Family number			
2	1	2.4	2.4
3	4	9.8	12.2
4	12	29.3	41.5
5	12	29.3	70.7
6	7	17.1	87.8
7	4	9.8	97.6
8	1	2.4	100.0
Total	41	100.0	
15. Income (bath)			
<3000	1	2.4	2.4
3001-8000	4	9.8	12.2
8001-20000	5	12.2	24.4
20001-50000	15	36.6	61.0
50001-100000	15	36.6	97.6
>100000	1	2.4	100.0
Total	41	100.0	
16. Staying hours/ day			
2-6	20	48.8	48.8
6-12	11	26.8	75.6
>12	7	17.1	92.7
Missing data	3	7.3	100.0
Total	41	100.0	
17. Activity hours/week			
0-2 hr/wk	1	2.4	2.4
>2-6hr/wk	12	29.3	31.7
1hr/day	2	4.9	36.6
>1-3hr/day	11	26.8	63.4
>3hr/day	14	34.2	97.8
Missing	1	2.4	100.0
Total	41	100.0	
18. Seminar times(joining parenting class)			
3	4	9.8	9.8
4	2	4.9	14.6
5	9	22	36.6
6	7	17.1	53.7
7	19	46.3	100.0
Total	41	100.0	

Behavior outcomes from 3 questionnaires were divided into 4 parts. The first part, PPT scores measured parenting skills outcome while the second to the fourth part were HSQ scores, HSQ situations and SNAPIV scores which measured troublesome home situations and scores and the children’s disruptive behaviors, respectively. The means of PPT scores showed statistically significant increase in each follow up. It was 30.54 at baseline, then reached to 34.31, 35.37 and 34.46 at week 8, week 24 and week 54 respectively. All of them had statistically significant difference from the baseline with $p\text{-value} < 0.001$. HSQ scores showed significant decrease from 33.03 at baseline to 24.52, 23.73

and 22 at week 8, week 24 and week 54 respectively. All of them had statistically significant difference from the baseline with $p\text{-value} < 0.001$. These two scores were demonstrated in figure 1. Figure 2 demonstrated HSQ situations and SNAPIV scores. Both of the scores showed statistically significant decreased mean scores from the baseline in each follow-up with $p\text{-value} < 0.001$. HSQ situation means decreased from 10.32 at baseline to 8.65, 9.59 and 8.92 at week 8, week 24 and week 54 respectively. Meanwhile, the means of SNAPIV scores decreased from 8.9 at baseline to 6.93, 7.29 and 6.71 at week 8, week 24 and week 54 respectively.

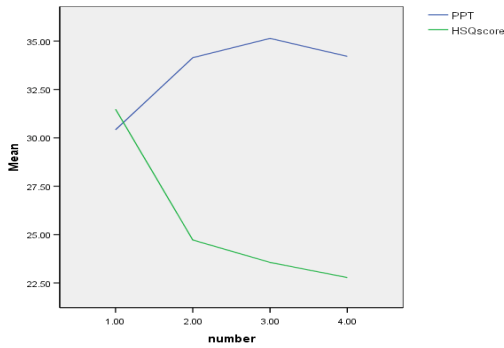


Figure 1. Demonstrating PPT and HSQscores prior to the intervention and follow up at 8th wk, 24th wk and 54th wk

Blue line- PPT score (the higher scores represent better practice)
 Green line –HSQ score (the higher scores represent severity of home situation)

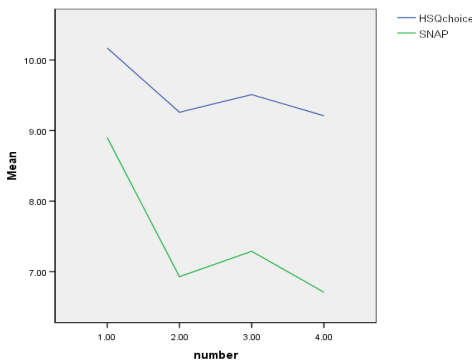


Figure 2. Demonstrating HSQ choices and SNAPIV prior to the intervention and follow up at 8th wk, 24th wk and 54th wk

Blue line- HSQ choice (the higher scores represent more problems)
 Green line- SNAP score (the higher scores represent severity of ODD)

Table 2 showed the correlation of parenting skills (PPT), child's disruptive behavior (SNAP-IV) and troublesome home situations (HSQ situations and HSQ scores) to parental factors and children's factors. Only final follow-up scores of PPT, HSQ situation, HSQ and SNAP-IV were analysed to demonstrate the factors which could maintain the long term effect (1-year) of PMT. The parental and child factors which correlated to the parenting skills outcome (PPT), child's disruptive behavior outcomes (SNAP-IV) and troublesome home situations outcomes (HSQ situations and HSQ scores) were sex of the children, family income, educational level of the caregivers, activity hour and staying hour. Sex of the children, family

income, educational level of the caregivers and activity hours had low to moderate relationship with parenting skills outcome (PPT) with Pearson correlation coefficient, $r = 0.384$, 0.458 and 0.446 , respectively, $p < 0.01$. Activity hours had moderate relationship with HSQ troublesome situations (HSQch) with Pearson correlation coefficient, $r = 0.559$, $p < 0.05$ while stay hours had fairly low relationship with HSQ situations, HSQ score and SNAP IV scores with correlation $r = -0.327$, -0.329 and -0.281 respectively, $p < 0.05$. Family income had strong relationship with educational level of caregiver ($r = 0.616$, $p < 0.01$) and moderate relationship with activity hours ($r = 0.431$, $p < 0.01$).

Table 2. Correlation of parenting skills (PPT), child's disruptive behavior (SNAP-IV) and troublesome home situations (HSQ situations and HSQ scores) to parental factors and children's factors.

	Sex	Income	Educare giver	Activity hour	Stay hour	PPT	HSQch	HSQ
Income	0.147							
Educare giver	0.181	0.616(**)						
Activity hour	-0.030	0.431(**)	0.504(**)					
Stay hour	0.034	0.116	0.080	.559(**)				
PPT last	0.384(**)	0.458(**)	0.446(**)	.351(**)	.088			
HSQ chlast	-0.116	-0.169	0.067	-.238	-.327(*)	-.245		
HSQ last	-0.131	-0.200	0.062	-.171	-.329(*)	-.296(*)	.695(**)	
SNAP last	-0.094	0.027	0.064	-.229	-.281(*)	-.033	.437(**)	.425(**)

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

* Correlation is significant at the 0.05 level (2-tailed).

[Educare giver = educational level of the caregivers]

From the post intervention scores of each primary caregiver, care givers were analyzed by classifying them into 4 groups. The first group had the best results which included care givers who rated high PPT scores (high parenting skill outcome) with low HSQ situations, low HSQ scores and low SNAP IV scores (low child's disruptive behavior outcomes). The second group which included caregivers who rated high PPT scores (high parenting skills outcome) but high HSQ situations, high HSQ scores and high SNAP IV scores (high child's disruptive behavior outcomes) demonstrated conflict between high parent practice scores but had poor

children's behaviors outcome. The third group showed the worst results which included care givers who rated low PPT scores (low parenting skill outcomes) with high HSQ situations, high HSQ scores and high SNAP IV scores (high child's disruptive behavior outcomes). The last group which included carers who rated low PPT scores (low parenting skills outcome)but low HSQ situations, low HSQ scores and low SNAP IV scores (low child's disruptive behavior outcomes)demonstrated the conflict between poor parent practice scores but had good children's behaviors outcomes. These categories are demonstrated in table 3.

Table 3 categories of parenting skills vs. children’s misbehaviors and troublesome home situations

Group	Parenting skills	Children’s misbehaviors and troublesome Home situations
1.	high	low
2.	high	high
3.	low	high
4.	low	low

Sixty-six percent of care givers were in group 1. Care givers who were in the first group shaped their children in accordance with PMT patterns with correct techniques and appropriate manners. They reported that PMT techniques which they had used were still effective, even at 1 year. Techniques that they had used were communication and empathetic skills, praising techniques, giving of rewards and privileges and time-out, withdrawing rewards and privileges. For example, one care giver said that she trained her 5 years old child to stop teasing her sister while her sister was doing her homework by creating a rule that “she won’t be allowed to tease her sister while her sister is doing homework and if she cooperates well, she will get a star”. Her stars will be collected and then exchanged for a reward which had been agreed in advance. Another care giver reported that she helped her 10 years old girl who was ambitious while she was anxious about her test result. She said she used empathic listening, reflected her child emotions and explained to her such as “I saw that you looked unhappy after the test”, “Could you tell me what has happened to you?” “I understand that you were worried about your exam and I saw that you had taken it seriously for many days but I’d like to remind you that no one is perfect in everything, right?”,... etc.

Fourteen percent of care providers fell into the second group. Care givers who were in the second group said that they had followed PMT techniques by creating the rules, giving

privileges or rewards to the children and withdrawing the rewards techniques but their children behaved only a little better. The interview revealed that three care givers had ADHD children who had been treated by a child psychiatrist. One of the three who had ADHD had inadequate treatment because her child often forgot to take his medicine while one of them had a hot tempered caregiver who was inconsistent and impatient in creating the rules and rewarding her child’s behavior. Four care givers in this group reported that they suspected that their children might have ADHD but hadn’t been diagnosed yet. Other caregiver reported that she had little success because when she used PMT techniques to deal with her children’s behaviors, her husband who is a guidance teacher and believed in harsh punishment disagreed. She could only use PMT techniques when her husband was going out. Three of them reported that star charts that they used didn’t show effective results. However, in the interviews we found that one of them irregularly gave the scores to the children while two of them misunderstood about the star chart and they used the star chart in inappropriate situations such as to negotiate the children when they misbehaved.

Fifteen percent of carers were in group 3. Care givers in this group had poorest outcomes because they had low PPT scores, had high troubled home situations (high HSQ situations

and high HSQ scores) and had poor SNAP IV scores. One of the care givers in this group had depression and was continuing her treatment with a psychiatrist. Moreover, from the interview, although a depressed mother reported that she did sometimes praise her children, she couldn't give an interviewer a relevant example or clarify the situations which showed that she did it correctly. Although her manners were doubted about their correctness, her children's behaviors showed a little improvement in their scores. One of them had a 13 year-old boy with conduct disorder, and a 7 years old boy with ADHD with LD (learning disorder). This mother said that she could control some behaviors of the child with ADHD, such as creating a rule or a contract with her child. But it didn't work well with her adolescent's conduct. Finally, she gave up with her adolescent. One of the caregivers in this group had an abusive and hot tempered husband who frequently had harsh argument with her and didn't get along well with his children. Therefore, she couldn't create any rules in the house and didn't receive any cooperation from her husband. One of them had a PDD NOS (Pervasive developmental disorder not otherwise specified) child. Parent reported that she tried to use PMT's rewarding system to reduce her son's obsession with exactness and symmetry. However, she said that she had to give up because she did not see any changes. Two of them who reported less satisfaction said that PMT techniques were ineffective. One of these two reported that her 6 years old boy still needed her to feed and dress at home, even though, he did help himself at school. She said that she gave him a score to encourage him to do these behaviors. However, it showed effective outcomes only for a few days. After that he didn't cooperate. Then he got minus scores more than positive scores. Thus, she had to complain and be sarcastic to him about his behaviors every day by saying "You are a big boy now. Why don't you behave like a baby?". But it did not matter to him. Finally she said that she and her mother needed to help him feed or dress every time that he called. Otherwise she said "we were all stressed". Another one reported that she couldn't follow the rules which she and her child had committed to because if she had to time-out the child, a grandmother

would get involved and ruin her rules. Consequently, they gave up.

Five percent of care givers were in group 4. Care givers in this group reported that even though they had poor PMT scores, the troublesome home situations (HSQ situations and HSQ scores) and child misbehaviors (SNAP-IV score) were low. One of two people in this group reported that she didn't see her 3 years old child's behaviors as a problem. She thought that the behaviors of her child were normal and if they were problems, she thought that they will remit or be reduced when the child is growing up. Moreover, she thought that her son was too young for applying PMT techniques on him. She mentioned that her child didn't understand the contracts when she set a star chart for him. Another one said that both of her children were well-behaved, even when "she did nothing". She reported that both of her children had never quarreled or fought. Her older son always took care of his younger brother. Moreover, when they had a conflict, the older child would comply with his younger brother.

Discussion

In this study, PMT technique significantly increased parenting skills and decreased troublesome home situations and children's disruptive behaviors up to one year. This conclusion was concordant with a meta-analysis of parent training of Lundahl [11] and Kaminski [27] that in general, parent training designed to modify disruptive child behavior is a robust intervention. It produced effect sizes in the moderate range in immediately following treatment while, up to 1 year the effects were small in magnitude. However, the effects remained meaningful compared to the control groups.

Factors that correlated in maintaining PMT outcomes in 1- year were sex of child, family income, primary care giver education, caregiver-child activity hours and caregiver-child staying hours. Family income's relationship with parenting skills was supported by Dix [28] and Ispa et al., [29] that lowly educated parents accompanied by poverty may lead to an overly

controlling style of interaction with children. While Tamis-LeMonda, Shannon, Cabrera, & Lamb, [30] concluded that the mothers with higher education achieved greater maternal sensitivity and less control. Furthermore, Linver, Grooks-Gunn, & Kohen, [31]; Mistry, Vandewater, Huston, & McLoyd, [32]; Mistry, Biesanz, Taylor, Burchinal, & Cox, [33]; Yeung, Linver, & Brooks-Gunn, [34] concluded that family income was an interesting factor because it affected parental stress and aspects of parent behavior such as harsh discipline or warmth. Another one is the time that caregivers spent with the children. This was supported by Sanders et al., [35] that the strategies for improving parent-child relationships were spending quality time with children including talking with children and showing affection. Furthermore, from the result we could see that education level was correlated with income and activity time. This relation was confirmed from the interview that caregivers, who had less income needed to do more overtime or extra jobs which therefore, decreased parent-child activity time. In other words, parents who had high income had more time with the children. Since activity time correlated with PPT score, decreased parent-child time related to limited parenting outcomes from PMT.

From the qualitative analysis, parents who practiced PMT techniques in correctly and in appropriate situations had the most benefit compared to those who did incorrectly or those who didn't practice it. Parents who had less benefit may be because of (1) child's factors; untreated ADHD. This was according to MTA study [23] which reported that behavioral therapy (parent, school, and child components, with therapist involvement) alone could not reduce the core symptoms such as fidget, hyperactive, irritability. Behavioral therapy provided modest advantages for non-ADHD symptoms. The best results were the group with combined therapy which was medication plus intensive behavioral treatment. Thus if the children whom their caregiver suspected to have ADHD or they were on appropriate ADHD treatment, their troublesome home situations and their defiant behavior outcomes might be improved. For a PDD child, since a child with

PDD NOS needs other specific behavior treatments for them such as ABA (applied behavior analysis) to improve their behaviors [36] rather than PMT alone, a caregiver with PDD NOS child in this study reported little effect from PMT. (2) Caregiver factors; non-cooperating care givers were other factors that led to failure to apply PMT techniques. A rule which was set by one care giver would be ruined by another care giver who disagreed with the rule. This was supported by a study by Ernest N. Jouriles et al. [37] that child rearing disagreement correlated with a greater variety of behavioral problems of the child than non-disagreement child rearing. The other factor that effects PMT skills was the depressed caregiver. Study from Goodman and Gotlib [38], Cicchetti and Toth [39] and Patterson et al. [40] reported that parental depressive disorder affected child rearing and parenting skills. Moreover, depressive disorder itself might impair cognitive function of patients and interrupt learning process [41]. Therefore, in this study, depressed caregiver may not learn and practice PMT techniques well.

This study showed that majority of PMT participants had impressive outcomes. This conclusion contrasted meta-analysis results from Lundahl [11] and Kaminski [27] which concluded that PMT had small to modest results and was least effective in economically disadvantaged families. It was more successful because majority of participants in this study were educated and were in middle to high class status. With high education level, they may be assumed that they have high learning ability to new techniques. This summary was concordant with Lundahl [11] who said that PMT had more advantages in family with high educational parents and high income. Furthermore, as discussed above, high income correlated with high activity hours so caregivers who are educated would have more time to practice parenting skills which they had learnt with their children. Thus it resulted in a good outcome. However, participants in this study did not represent the Northern Thai parent-population. Therefore, conducting a community based PMT group would demonstrate the effectiveness of

PMT in Northern Thai parents better than in a clinic.

Conclusion

PMT showed the immediate benefits and long term benefits up to one year in caregivers who continued to practice PMT techniques correctly and appropriately. PMT had limited outcomes in families who had depressive disorder in the primary caregiver, disagreeing parenting style, low income, low parent-child activity hours, low parent-child staying hours and low parental education. In terms of child factors, PMT had limited effectiveness in families with untreated ADHD, adolescent conduct disorder and children with PDD NOS. Since the participants in this group might not represent Northern Thai parents, a community based group is suggested.

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*An Evaluation Study Of Parent Management Training (PMT) Program In Northern Thai
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