The Follow-Up Study on the Impact of the 101s Positive Discipline Parent Training on First-Grade Children's Executive Function Development

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Abstract

The purposes of the current study were to investigate the impact of the 101s positive discipline parent training program; the national winning-award program in the U.S. for training parent, teachers, and early childhood educators on the maintenance of the parenting practices and their first-grade children's executive function skills. It contains 101 techniques for caregivers to respond to their children with warmth and respect in order to promote children's social-emotional and cognitive skills. A follow-up research design with comparison group was utilized in one school setting where the 101s positive discipline for parent training had been implemented. The target group included 36 parents who had participated in the 101s training program for 3 years since their children were in the preschool periods and their 36 first-grade children. The comparison group included 39 parents who had never participated in the parent training program and their 39 first-grade children. The 101s Parent Interaction Checklist was used to measure the parents' interaction practices. The Behavior Rating Inventory of Executive Function was used to rate the first-grade children's executive function. A series of MANCOVA was employed to evaluate the mean difference scores on the parents' parenting practice and first-grade children's executive function between the sample in the target and comparison groups. The results showed that the 101s positive discipline parents training program had a strong positive impact on the maintenance of the parenting practice and children's executive function. The discussions, limitations, implications and suggestions are discussed.

Keywords: The 101s: A guide to positive discipline, Parenting practices, Executive function, BRIEF

Introduction

Presently, child abuse problem is steadily increasing in Thailand. The survey of One Stop Crisis Center (OSCC) in 2012 showed an increasing number of abused children recorded from 2005 to 2011. The record in 2005 showed that the number of abused children was 5,886 and increased to 11,491 in 2011. It indicated that child-abuse problem still could not be solved. The finding suggested that parenting knowledge in early childhood development as well as effective parenting skills should be put on the national agenda in order to reduce the number of abused child. It is important that the main caregivers, especially parents, realize that their parenting practices significantly impact their children's learning and development. Appropriate child rearing does not only keep the children safe from abuse, violence, and neglect, but it also provides them with a safe and secure environment that would support their social-emotional and cognitive skills, and psychological and high-order thinking development. Unfortunately, according to the national survey in 2011, Thai children had the scores on intelligence quotient (IQ) and emotional quotient (EQ) lower than the national standard (Ministry of Public Health of Thailand, 2011). Moreover, the report from Program for International Student Assessment (PISA, 2012) also showed that the scores of Thai children on Math, Science and reading were lower than averaged scores, comparing to other countries in Asia pacific. Therefore, intervention programs focusing on effective parenting practices for promoting children's social-emotional and cognitive development are needed.

A large amount of research indicated that early childhood is the critical period of social-emotional and cognitive development. Social-emotional and cognitive skills are related to the processes of Executive function (EF). EF refers to the set of cognitive processes for regulating thoughts and actions that lead to the goal-directed behaviors (Monette, Bigras, & Guay, 2011). The processes of EF rely on prefrontal cortex, the brain area developed dramatically in early childhood. There are 5 domains of EF including inhibit, shift, emotional control, working memory, and plan/organization (Gioia, Isquith, Guy, & Kenworthy, 2000). In early life, children use all the EF domains to regulate their emotions and behaviors in order to learn and adjust themselves to surrounded environments. As growing up, the children use their EF skills to retrieve their relevant experiences to relate to a current situation in order to manage their emotions and thoughts for attaining goal-directed behaviors.

EF plays an important role in children's life and school success. Previous research has showed the significant correlations between EF skills and academic achievements. For example, previous research found that working memory and inhibition were linked to children's English, Mathematics, and Science achievements (St. Clair-Thompson & Gathercole, 2006). Furthermore, the research conducted by Monette et al. (2011) studied the role of the EF skills in school achievement at the end of Grade 1. The results showed that Mathematics and reading skills of the first grade-children were significantly associated with their EF skills in preschool. Moreover, previous research found that EF skills in early childhood period were significant related to social-emotional skills and success in school in later ages of life (Monette et al., 2011). It could be concluded from the findings that since EF skills acquired in early ages significantly predict social-emotional and cognitive skills and academic achievement in later ages, it was significant to ensure that children's EF skills were promoted.

The significance of EF leads to the increasing numbers of research studies on the factors that have an influence on EF development in children. Pertinent in multidisciplinary research claimed that the main factor influencing EF development is nature and nurture. By nature, any abnormal growth and development in the prefrontal lobes of children leads to poor EF skills. For example, children diagnosed as having ADD/ADHD lack abilities to achieve a goal-directed behavior. They were unable to control their emotions and regulate their behaviors to the demands of the environment. They could not recall and follow multi-steps directions. They needed help to start, stay on, and complete tasks (Biederman, 2004). However, nurturing children with poor EF by nature with responsive care and understanding could help the children develop their EF skills. Parenting practice regarding as nurture is a significant factor that could either promote or inhibit EF development in children. Bernier et al. (2010) found that the autonomy-support parenting is the strongest predictor of children's EF skills including working memory, impulse control, and set shifting. The results from the research conducted by Rhoades et al. (2011) consistently showed that 36-month-old children who were exposed to more maternal positive engagement and lower negative intrusiveness were prone to have higher EF skills including working memory, inhibitory, and attention flexibility.

Increasing amount of research studies attempted to develop intervention programs for promoting parenting practices and investigate their impacts on children's social-emotional, cognitive, and EF development. One of the effective programs for promoting parenting practices was the 101s positive discipline parent training program, the national winning-award program in the U.S. for training parents, teachers, and early childhood educators. This program provided the trained caregivers with the 101s: A Guide to Positive Discipline techniques, authored by Dr. Katharine C. Kersey, for interacting with children with respect and responsive care instead of punishment and violence. The purpose of the 101s techniques was twofold: to respond to child's basic psychological needs and to teach and train expected behaviors. A growing body of research in the 101s positive discipline training program consistently showed the positive impact on caregivers' interaction practices and children's prosocial skills and EF development.

In 2008, Masterson found in her research, conducted to study the impact of the 101s teacher training on teacher interaction practices and children's prosocial skills with 34 teachers in an urban school in the United States, that the 101s had significantly positive impact on the teacher interaction practices and prosocial skills in their classroom (Masterson, 2008). In Thailand, Thanasetkorn (2009a) found that the teachers in 101s training group had significantly higher scores on positive interaction practices and lower scores on negative interaction practices. The children in 101s teacher training group also significantly had higher scores on positive teacher-child relationships, school adjustment skills, and academic achievement, comparing to children in the control group. Likewise, the research in the 101s parent training conducted by Thanasetkorn (2009b) also showed the significantly positive impacts of the 101s parent training on parent interaction practices, parent-child relationships, children's school adjustment and achievement. The findings from the previous research found that after receiving the 101s positive discipline training, the caregivers, both parents and teachers, were more likely to use the 101s positive discipline techniques to interaction with their children and less likely to use negative discipline

and punishment, comparing to their control groups. The researchers suggested that a replication of research was needed to confirm the reliability of the findings.

In later year, Thanasetkorn and colleagues (2015) conducted a replicating research, using the same methods of Thanasetkorn (2009b), with 54 parents and their 3 to 5-year-old children in 2 schools to study the impact of the 101s positive discipline parent training on parent interaction practices and preschooler's EF skills. In their research, replicating quasi-experimental pretest – posttest control group research design was utilized. One school was assigned to be The 101s training group and the other school was assigned to be the control group. Before implementing the training program, the parents in both groups were asked to rate their own parenting practice, using the 101s parent interaction checklist (101s PIC) and rate their children's EF skills, using the Behavior Rating Inventory of Executive Function (BRIEF®, 2003). A series of MANCOVA was performed to investigate the significant differences in the dependent variables between two groups.

The results showed that there were no significant differences in the mean scores on parent interaction practices and children's EF skills between The 101s training group and control group. The results from pretest indicated that the parents and their children in both groups were comparable. After the pretest data collection and analysis, the parents in The 101s training school (n = 27) received a 1 half-day session led by two certified trainers at the school library from 9:00 to 12:00 on Saturday in June, 2011. At the beginning of the session, the trained parents learn the impact of the nature and nurture on child development; using lecture and question and answer methods. Then, the trainers demonstrated the fifteen techniques of The 101s positive discipline related to creating emotional support environment and behavioral adjustment, using case studies and question and answer methods. At the end of the session, the trained parents participated in role play to show their understanding of the 101s techniques. In addition to the 1 half-day session, the trained parents had to record the 101s techniques they used with their children everyday, using the record forms, in order to keep track and check the correctness of using the 101s techniques. The trained parents also had to participate in the followed-up sessions every Friday at the school library from 4:00 p.m. to 6:00 p.m. until the end of March, 2012 to discuss the use of the 101s techniques with the two trainers.

After the 40 followed-up sessions, posttest data was collected. Consistently with previous research, the results showed that the parents in The 101s training program had significantly higher scores on positive interaction practices and lower scores on negative interaction practices, comparing to the parents in the control group, as measured by the 101s PIC. Moreover, the results also showed that the parents in The 101s training group rated their children as having less problem behaviors related to EF where as the parents in the control group rated their children as having more problem behaviors related to EF, as measured by the BRIEF. This replicating research made a contribution to the confirmation of the effectiveness of the 101s training program.

The findings of previous research in the 101s positive discipline training program validated that the 101s positive discipline training program could induce the participants to change their own parenting interaction practice and engage in 101s positive discipline techniques. The findings also confirmed the positive impact of the 101s positive discipline training program on children's social-emotional and EF skills.

However, there was no follow-up research to investigate the maintenance of the skills the parents and children acquired. Therefore, the current research aimed to investigate the impact of The 101s parent training on the maintained skills in the trained parents and their children.

Methodology

Subjects

In the current study, the follow-up control group research design with purposive sampling method was utilized. The target population was the first-grade students enrolling in preschool program in the school assigned to be The 101s training group and their parents who had been continuously participating in The 101s parent training program for 3 years since their children were in the preschool levels. The sample was randomly assigned to be target group and comparison group. In the target group, there were 36 first-grade children and 36 parents who had been participated in the 101s positive discipline program for 3 years since their children were in preschool levels. In the comparison group, there were 39 first-grade children and 39 parents who had never participated in The 101s training program before.

Instruments

The General Information Questionnaires

The General information questionnaire consisted of 2 parts. First part has 8 items, regarding family background such as the highest level of parent's education, occupation, family's income, and the 101s training background. The second part has 11 items, regarding children background such as gender, age, health and daily activities.

The 101s Parent Interaction Checklist (101s PIC).

The 101s PIC is developed to observe how the parents interact with their children based on The 101s: A Guide to Positive Discipline for observing. It is a self-rating checklist, composing 25 items. The first part consisted of 15 items regarding the 101s Positive Discipline Techniques; including Emotional Support and Behavioral Adjustment. For example, "I give my child two acceptable choices when I want him/her to do something." "I look in to my child's eyes when I talk to him/her." The items are written in a 4 - point Likert-type scale, ranging from "Not at all true" (1) to "Very much tru" (4). The second part consisted of items 16 to 25, regarding the framework of Negative Discipline; including Verbal Punishment, Critical/Harsh, and Physical Punishment. For example, "I say NO! or Stop! when my child conducts inappropriate behaviors." "I intimidate my child when he/she doesn't listen to me" "I spank my child." The items were written in a 4-point Likert-type scale, ranging from "Not at all true" (4) to "Very much true" (1) (Thanasetkorn, 2009b).

The Behavior Rating Inventory of Executive Function (BRIEF®)

The BRIEF is a standardized rating scale that developed to assess EF behavior of children and adolescents ages 5 - 18 at home and at school environment, developed by Gioia, Isquith, Guy, & Kenworthy (2000). There are 86 items measuring different aspects of EF including Inhibit, Shift, Emotional Control, Initiate, Working Memory, Plan/Organize. The test is a rating checklist reported by teachers or parents with the separated forms for parents and teachers. The BRIEF contains validity with two scales, the Inconsistency and Negativity scales, high internal consistency (alphas = .80 - .98) and test-retest reliability (rs = .82 for parents, .88 for teachers). The high raw scores, T scores, and percentiles indicate the high level of impaired executive function.

Data Collection

After receiving the ethical permission from the faculty of Graduate Studies, the inform letter was sent to target school. At the beginning of the first semester, the inform consent and the general information questionnaires were distributed to parents. Then, the researchers collected the PIC and BRIEF of the parents who signed the inform consent as the secondary data from the target school.

Data Analyses

The descriptive statistic was calculated to explain the general information background of the subjects. Then, the inferential statistic of data analysis, using a series of MANCOVA was performed to evaluate the significant differences in the mean scores of the sample in the target and comparison groups on the parent interaction practices as measured by 101s PIC and EF skills as measured by BRIEF between the subjects.

Results

The Characteristics of the Participants

For parent background, demographic data of the parents in the target group showed that 10.7% (n = 8) of the parents who completed the questionnaires was father and 37.3% (n = 28) was mother. For the highest level of parent's education, most of the fathers had Master's degree (26.7%), 20% had Bachelor degree, and 1.3% had Doctorate degree. For mother, 26.7% of the mothers had Master's degree, and 21.3% had Bachelor degree. For parents' career, most of the fathers were officer worker (42.7%), whereas most of the mothers (29.3%) were housewife. Demographic data of the parents in the comparison group showed that 6.7% (n = 5) was father and 45.3% (n = 34) was mother who completed the questionnaires. For the highest level of parent's education, most of the fathers had Master's degree (29.3%), 21.3% had Bachelor degree and 1.3% had Doctorate. For mothers, 36% of the mothers had Master's degree, 14.7% had Bachelor degree and 1.3% had Doctorate degree. For parents' career, most of the fathers were officer worker (44%), whereas most of the mothers (24%) were housewife.

For children background, demographic data of the children in the target group showed that 22.7% (n = 17) was boy, and 25.3% (n=19) was girl. For health status, most of the children had no chronic disease (37.3%). 9.3 % of the children had allergy and only 1.3% had asthma. For the extra class, most of the children took extra class after school (32%). Demographic data of the children in the comparison group showed that 22.7% (n=17) was boy, and 29.3% (n=22) was girl. For health status, most of children had no chronic disease (37.3%). 5.3% of children had allergy and 1.3% had an asthma. For the extra class, most of the children took extra class after school (40%), while 12% had no extra class after school.

The Impact of the 101s Parent Training Program on the Maintenance of Parents' Interaction Practices.

A series of MANCOVA was performed to investigate the mean differences in the scores on the 101s parent interaction subscales between target and comparison groups. The multivariate test for group was significant (F = 110.093, p < .001). It indicated that Groups variable had a main effect on statistically significant differences between the mean scores on one or more than one of the EF subscales (i.e., Positive emotional support, Positive behavior management, Verbal punishment, Physical punishment and Critical/Harsh practices) (See Table 1).

Table 1 multivariate Test of PIC subscales

Effect of Pillai's trace	F	Hypothesis degree of freedom (df)	P-value	Observed power
Mother's education	2.005	5.000	.089	.637
Father's education	6.967***	5.000	.000	.997
Parents Groups	110.093***	5.000	.000	1.000

*** p< 0.001

The univariate followed-up F-test was performed to examine the effect of independent variables on each individual dependent variable. The results showed that the univariate followed-up F-tests for Positive emotional support, Positive behavior management, Verbal punishment, Physical punishment and Critical/Harsh practices were significant (F= 342.513, 203.680, 126.262, 301.013, 227.714, p < 0.001, consecutively), indicating that the parent interaction practices' subscales were significantly influenced by parent groups (See in Table 2).

Table 2 Univariate F- test of PIC subscales

Factor	Dependent Variable	*df*	*F*	*P-value*
Groups	Emotional Support	1	203.680***	.000
	Behavioral management	1	342.513***	.000
	Verbal punishment	1	301.013***	.000
	Physical punishment	1	126.262***	.000
	Critical/Harsh	1	227.714***	.000

The descriptive statistic of PIC subscales showed in the Table 3 that the parents in the target group had significantly higher mean scores on positive subscales including positive emotional support (M = 3.68, SD = .33) and Positive behavior management (M = 3.53, SD = .315), comparing to the mean scores of the parents in the comparison group on positive subscales including positive emotional support (M = 1.82, SD = .69)

and positive behavior management (*M* = 1.71, *SD* = .51). Moreover, it also showed that the parents in the target group had significantly lower mean scores on negative subscales including verbal punishment (*M* = 2.02, *SD* = .52), physical punishment (*M* = 1.44, *SD* =.50), and critical/Harsh (*M* = 1.47, *SD* = .38), comparing to the mean scores of the parents in comparison group on negative subscales including verbal punishment (*M* = 3.75, *SD* = .34*)*, physical punishment (*M* = 2.94, *SD*= .68) and critical/harsh (*M* = 3.07, *SD* =.57).

Table 3 Descriptive statistics of PIC subscales

	Target group (n=36)		Comparison group (n=39)	
	Mean	Std. Deviation	Mean	Std. Deviation
emotional support	3.68	.34	1.83	.69
behavior management	3.53	.31	1.72	.52
verbal punishment	2.02	.52	3.76	.35
physical punishment	1.44	.50	2.95	.68
critical and Harsh	1.47	.38	3.07	.58

The Impact of the 101s Parent Training Program on the Maintenance of Children's EF Skills

A series of MANCOVA was performed to investigate the mean differences between target and comparison groups. The multivariate test for children groups was significant (*F* = 81.474, *p*<.001). It indicated that Groups variable had a main effect on statistically significant differences between the mean scores on one or more than one of the executive function subscales (i.e., inhibition, shifting, working memory, emotional control and plan/organization) (See Table 4).

Table 4 Multivariate Test of executive functions subscales

Effect of Pillai's trace	F	Hypothesis degree of freedom (df)	P-value	Observed power
Gender of children	.856	5.000	.516	.288
Children Groups	81.474***	5.000	.000	1.000

*** p< 0.001

The univariate followed-up F-test was performed to examine the effect of independent variables on each individual dependent variable. The results showed that the univariate followed-up F - tests for inhibition, shifting, working memory, emotional control and plan/organization were significant (*F* = 287.34, 273.04, 99.65, 135.58, 201.09, *p* < 0.001, consecutively). It indicated that the children's EF subscales were significantly influenced by parent groups (See in Table 5).

Table 5 Univariate F- test of executive functions subscales

Factor	Dependent Variable	*df*	*F*	*P-value*
Groups	Inhibition	1	287.348***	.000
	shifting	1	273.048***	.000
	Working memory	1	99.655***	.000
	Emotional control	1	135.584***	.000
	plan/organization	1	201.098***	.000

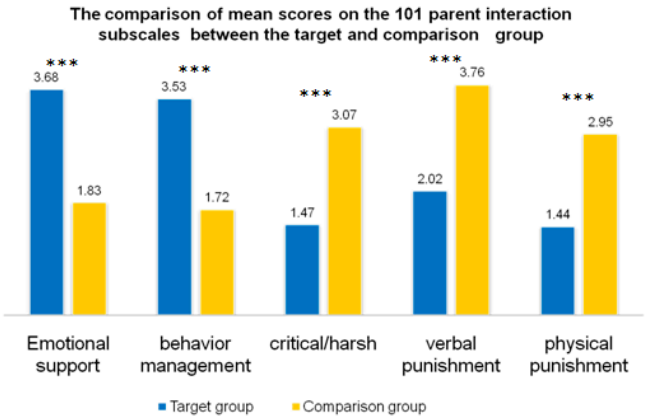
It is important to note that the mean scores on EF skills reflect the misbehaviors related to EF skills. Therefore, high mean score on each subscale shows less ability to regulate their appropriate behaviors, and vice versa. The descriptive statistic of EF subscales showed that children in the target had significantly lower mean scores on executive function subscales including inhibition (M = 1.34, SD = .26), shifting (M = 1.23, SD = .22), working memory (M = 1.37, SD = .31), emotional control (M = 1.23, SD = .22) and plan/organization (M = 1.36, SD = .21) than the mean scores of the children in comparison group on EF subscales including inhibition (M = 2.19, SD = .16), shifting (M = 2.05, SD = .19), working memory (M = 1.99, SD = .21), emotional control (M = 1.92, SD = .28) and plan/organization(M = 2, SD = .18) (See in Table 6).

Table 6 Descriptive statistics of executive functions subscales

	Target group (n=36)		Comparison group (n=39)	
	Mean	Std. Deviation	Mean	Std. Deviation
Inhibition	1.34	.26	2.19	.16
shifting	1.23	.23	2.05	.19
Working memory	2.05	.20	1.99	.21
Emotional control	1.23	.22	1.93	.29
plan/organization	1.36	.21	2.00	.18

Conclusion and Discussions

Overall, the 101s positive discipline parents training program had a strong effect on the maintenance of parent interaction practices and the children's EF skills. Figure 1 presents the comparisons of the mean scores on the 101s parents interaction practice subscales between the parents who had participated in the 101s positive discipline parents training program for three years and the parents who had never received the 101s positive discipline parents training program (comparison group) as measured by the PIC. The trained parent in the target group had significantly higher mean scores on positive subscales (i.e., Positive emotional control and Positive behavior management skills), and had significantly lower mean scores on negative subscales (i.e., Critical/Harsh, verbal punishment and physical punishment practices), comparing to the parents in the comparison group. It indicated that the parents in the target group use the positive interaction practice more often than the parents in the comparison group, and use negative interaction practices less than the parents in the comparison group.



*** $p < .001$

Figure 1 The comparison between the parents in the target group and comparison group on the 101s parent interaction subscale mean scores

For children's EF, figure 2 presents the comparisons of mean scores of EF subscales between the children in the target group and the comparison group. The children in the target group had significantly lower mean scores on inhibit, shifting, emotional control, working memory, and plan/organize, comparing to the children in the comparison group. It indicated that the children in the target group were more likely to conduct appropriate behaviors related to EF skills, comparing to the children in comparison group.

*** $p < .001$

Figure 2 The comparison between the children in the target group and comparison group on the executive function subscales mean scores

The findings of the current research were consistent with previous research conducted by Thanasetkorn (2009b) and Thanasetkorn et al. (2015). Previous research showed the increase of the positive parenting practices and the decrease of the negative parenting practices after The 101s parent training. The findings from the current study showed that the parents who had participated in The 101s training program still used the positive parental practices more often and use negative parental practices less often than did the parents in the comparison group. The result indicated that the positive parenting practices could be maintained after receiving the training for 3 years. It could be possibly explained that since the parents in the 101 training group had practiced the 101s techniques for 3 years, they became familiar with the 101

techniques and use the techniques regularly to discipline their children. It also could be possibly explained that the trained parents used the 101s techniques instead of negative discipline because they were aware of the impact of negative practice on children behavior problems. The trained parents witnessed the changes in behavioral development as they observed their children's behaviors by rating the BRIEF so that they maintained using the 101s techniques to discipline their children. In addition, the 101s techniques could be the tools that helped the parents to control their emotions; therefore, they were able to discipline their children without punishment and violence.

Moreover, the findings from this research were consistent with previous research conducted by Thanasetkorn et al. (2015). Previous research showed that The 101s training program had a positive impact on EF skills in children whose parents participated in The 101s training program (Thanasetkorn et al., 2015). The current research also showed that the children's EF skills in the target group were maintained when they moved to first grade. It could possibly be explained that the 101s positive discipline techniques had provided the children with emotional support environment in which the children were able to practice their emotional control and self-regulations. As a result, they were able to control their emotions and conduct expected behaviors. Furthermore, it also could be explained, according to Rhoades et al. (2011), that the 101s positive discipline techniques provided the children with clear expected directions but still warm and respect communications. Thus, the children were encouraged to cooperate to their parents and practice expected behaviors related to EF skills. As they had practiced their EF skills, their EF skills were maintained when they move to first grade.

Limitations and suggestions for future study

The limitation of this research was a short period of time. The suggestion for future study were the replication of research method with qualitative research design. The parent interview would provide further information in more deep details regarding the processes they acquired the 101s positive discipline techniques and the motivation for changing their behaviors. The results would benefit the researchers who are interested to develop a training program and also benefit the caregivers who are interested in an alternative way to nurture their children.

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References

Bernier, A., Carlson, S., & Whipple, N. (2010). From external regulation to self-regulation: Early parenting precursors of young children's executive functioning. *Child Development, 81*, 326–339.

Biederman, J., Monuteaux, M.C., Doyle., A.E., Seidman, L.J., Wilens., T.E., Ferrero, F., et.al. (2004). *Impact of executive function deficits and attention_deficit hyperactivity disorder (ADHD) on academic outcomes in children*. Journal of Consulting and Clinical Psychology, 72, 757-766.

Gioia G. A., Isquith, P. K., Guy, S. C., & Kenworthy, L. (2000). *Behavior Rating Inventory of Executive Function (BRIEF)*. USA: Psychological Assessment Resources Inc.

Masterson, M. L. (2008). *The impact of The 101s: A Guide to Positive Discipline training on teacher interaction practices, attitudes and prosocial skill outcomes in preschool classroom. (Doctoral dissertation).* Old Dominion University, USA. Available from ProQuest Dissertations & Theses database. (UMI No. 3348343).

Monette, S., Bigras, M., & Guay, M. C. (2011). The role of the executive functions in school achievement at the end of Grade 1. *Journal of Experimental Child Psychology, 109*, 158–173.

PISA. (2012). *Results in Focus: What 15-year-olds knowand what they can do with what they know*. Retrieved August 20, 2014, from http://www.oecd.org/pisa/keyfindings/pisa-2012-results.htm

Rhoades, B. L., Greenberg, M. T., Lanza, S. T. & Blair, C. (2010). Demographic and Familial Predictors of Early Executive Function Development: Contribution of a person-centered perspective. *Journal of Experimental Child Psychology, 108*(3): 638–662.

St. Clair-Thompson, H. L. & Gathercole, S. E. (2006). Executive functions and achievements in school:Shifting, updating, inhibition, and working memory. *The quarterly journal of experimental psychology, 59* (4), 745 – 759

Ministry of Public Health of Thailand. (2011). *National Health Accounts of Thailand 2011.* Retrieved February 25, 2014, from http://ihppthaigov.net/DB/publication/attachresearch/326/chapter3.pdf

The PISA. (2009) *Profiles by country/economy*. Retrieved August 23, 2011, from http://stats.oecd.org/PISA2009Profiles/

Thanasetkorn, P. (2009a). *The Impact of The 101s: A Guide to Positive Discipline parent training: A case study of kindergarteners and their parents in Bangkok, Thailand.* (Doctoral dissertation). Old Dominion University, USA. Available from ProQuest Dissertations & Theses database. (UMI No. 3391762)

Thanasetkorn, P. (2009b). *The Impact of The 101s: A Guide to Positive Discipline parent training: A case study of kindergarteners and their parents in Bangkok,*

Thailand. (Doctoral dissertation). Old Dominion University, USA. Available from ProQuest Dissertations & Theses database. (UMI No. 3391761).

Thanasetkorn, P, Suttho, J., Chumchua, V., & Chutabhakdikul, N. (2015). The preliminary research study on the impact of the 101s: A Guide to Positive Discipline Parent Training on parenting practices and preschooler's executive function. *Asia-Pacific Journal of Research in Early Childhood Education,* 9(1), 65-89.

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