Journal of Science, Technology, and Humanities : 2014, Vol. 12, No 1 pp. 33-42

ASSOCIATION BETWEEN SELECTED FAMILY AND SOCIAL FACTORS AND HEALTH BEHAVIOR OF SCHOOL-AGE CHILDREN IN THAILAND.

Nujjaree Chaimongkol* and Yunee Pongjaturawit

Faculty of Nursing, Burapha University, Chon Buri 20131, Thailand.

ABSTRACT

Health behaviors of school going children are resulted in their grown-up health-risk behaviors, while little is known about health behavior of these young children. This study aimed to determine the association among selected family, social factors, and health behavior of school-age children. This analytical cross-sectional study resulted from a multi-stage random sampling, which was used to recruit the sample of 246 school-age children that were currently studying in grade four to six at several elementary schools in the municipal areas of Chon Buri, Thailand. Using self-report questionnaires collected data, where descriptive statistics, an univariate general linear model and Pearson correlation were used to analyze the data. It was found that mean scores of school-age children's overall health behavior, its subscales of daily care, and social and risk behaviors were at moderate to high levels. Girls who were either the second-born children or children who were living in a family with two children had more appropriate health behaviors than boys who were either the first or the third or later born children, or children living in a family with one and three or more children, respectively. However, grade levels and types of family were not significantly different, whereas child temperament of task persistence and motor activity, social support, and perceived self-efficacy were significantly associated with health behavior. It was also shown that child age, temperament of negative reactivity, year of study, GPA, and family income were not significant correlation. These findings suggest that several family and social factors are associated with health behavior of school-age children in Thailand. Further studies are needed to deeply explore. Wellness policy focusing on health of school-age children and role of school nurses to influence individual, family and social resilience need to be reformed for enhancing and strengthen school-age children's healthy behaviors.

Keywords: Health behavior, school-age children, family and social factors, wellness policy, Thailand.

*Corresponding author. E-mail address: nujjaree@buu.ac.th

INTRODUCTION

Health behavior refers to any activity of an individual on daily living, including eating, physical activity, drinking, smoking, social, and sexual activities, that could effect on either positive or negative health outcomes of one-self, family and/or community (Cartland and Ruch-Ross, 2006). School-age children are about 6-12 years old and usually studying in an elementary level. They spend their life both at home and school. Peers and teachers have increased impact on the children's health behavior in addition to their family members. When school-age children are at home, they obtain their lifestyle, including behaviors related to health, from their parents, siblings and other family members. The children would have breakfast everyday as usual if their parents provided. They also go to bed and have enough sleep hours when their parents ask them to do, and that make them have a healthy behavior, while school-age children spend some time at school. They also obtain lifestyle and behavior-related to health from their peer group and teachers, for example, they like to have fried potatoes, sodas, sweets more often which are not good for health behaviors.

Several studies suggested that health behavior during young children could be used to predict health-risk behaviors in adolescents. However, little is known about health behavior of the school children. It is also unclear whether which family and social factors that associated with health behavior of these young children. Most studies that were dealing with health behavior were primarily focused on adults or adolescents' lifestyle. It is possible that adults and adolescents are more independent and prefer to have their own choices. In contrary, younger children still depend partly on their family-routine behaviors and yet spend sometime on their own at school.

A common belief concerning school-age children is that they are generally healthy. They are capable of performing general daily care for themselves, such as showering, putting on clothes and shoes, and having meals, etc. Influences from culture, society, internet, peer group and child rearing practice from family can shape the children's health behavior at present and later in their life. According to Piaget's cognitive development (1969) suggested that children during school-age have their own ability to think and do more things. They are learning which behaviors are acceptable and which behaviors are not. However, critical thinking and problem solving still limited. As a result, they still need guidance for more appropriate health behavior from parents or other adults.

The youth resilience framework (Rew and Horner, 2003) confirmed that resilience explained interaction between individual and social factors, including risk and protective. Risk factors refer to individual and sociocultural determinants that influence on negative health outcomes of the children, such as gender, difficult temperament and family characteristics. Protective factors are internal and environmental resources that can promote or hinder positive and negative health outcomes, including, self-efficacy, social support, and school competence or grade point average. Children with many risk factors and few protective factors may result in poor health outcome. This study was aimed to examine health behavior of school-age children in Thailand, which had been dramatically changed in socioeconomic, technology and modern lifestyle. Selected family and social factors based on the youth resilience framework were also determined their associated with the school children's health behavior. Consequently, better understanding concerning health behavior and an association between selected family, social factors, and health behavior would be beneficial for suggestion and planning a proper intervention for school nurses or related healthcare personnel to enhance and promote healthy behavior of school-age children in Thailand.

METHODOLOGY

Population and sample

This analytical cross-sectional study used a multi-stage random sampling method, where the target population was children attending school and their parents in the municipal areas of Chon Buri province, Thailand, which had been resided in this

area for at least six months. The study sample was then recruit by using a multi-stage random sampling method from the population consisting of 246 school-age children studying in grade 4-6 of elementary schools during March to April 2013. Stages of sample recruitment were done in a subsequent manner started from the first stage, where three out of 10 sub-districts in the municipal areas of Chon Buri province were randomly selected using drawing their name tags followed a rule of thumb of 1:3 proportion of a sample to the population. One elementary school in each sub-district was randomly selected in the second stage, where it was drawn one elementary school from one sub-district. One classroom each was selected from grades 4, 5, and 6 of each school in the third stage. This made up to be a total of nine classrooms from three elementary schools. In general, one classroom contained about 25-30 students. All students in the selected classrooms were asked to participate in the study on voluntary basis.

Sample size was calculated by using a formula of $N \geq m^2 + 50$ (Thorndike, 1978, p. 184) where N was referred to a size of sample, m was numbers of the study variables (= 13). The minimum sample size appeared to be 219 after the calculation. However, a total of 246 samples in this study included school-age children and their parents were recruited by using the above-mentioned method.

Setting

Chon Buri province is situated in the eastern part of Thailand, a Southeast Asian country. It is about 1- $1^1/_2$ hour by car from Bangkok, the capital city. Chon Buri has developed its tourism and logistics infrastructure, where it is a home to Thailand's largest tourist oriented city with a long coastal area to the west of the province. It is also a home to Thailand's largest and primary seaport, and is located adjacent to the country's largest airport. In the municipal areas of Chon Buri province, social and environment have been much more modified following globalization, and infrastructure has increasingly developed along the rapidly growing city. These have been made up the city of Chon Buri and school children living in the municipal areas have to integrate into a modern city's lifestyle.

Research instruments

A demographic self-report questionnaire was completed by each of the selected sample included student and their parent. Details of demographic characteristics, i.e., child gender, age, year of study, grade point average (GPA), birth order, number of children aged 18 years or younger living in the same home, family type, and family income were included. Data obtained from this questionnaire mostly were independent variables of the study.

The researchers developed a questionnaire regarding to health behavior for Thai school children, which was based on a scale of national survey for standard health behavior in school children (Division of Health Education, Ministry of Public Health, 2009) and the health behavior scale of Cartland and Ruch-Ross (2006). It was used to measure health behavior of school-age children or children with age about 8-12 years old. It contained 27 items relevant to school children's health activities, which were categorized into three subscales of 14 items of daily care, whereas the social and risk taking behaviors were categorized into 6 and 7 items, respectively. The sample was asked to complete the questionnaire by a rating scale on 1 to 5 according to the frequency of the child activities, where 1 = never or hardly, 2 = a few times, 3 = some times, 4 = often, and 5 = always. The total score was ranged from 27 to 135. In addition, its score was divided into 3 levels of appropriateness, where the low score was between 27 - 63, the moderate one was between 63.1 – 99, and the high score was from 99.1 - 135). Its Cronbach's alpha reliability was 0.71.

A Teacher School-Age Temperament Inventory (T-SATI) that had been developed by Lyons-Thomas and McClowry (2012) was used to measure temperament of the school children as perceived by teachers. This measurement of temperament had been given a permission to translate and use from the owners of

T-SATI. Back-translation method was used to translate from English into Thai to be used in a questionnaire and then back translated into English. The translation procedure was recommended by Cha et al. (2007) to ensure that the content and cultural comparability were maintained between the original and the target language of a research tool, especially for using in cross-cultural research. There were 33 items of 4 subscales, including negative reactivity (11 items), task persistence (9 items), withdrawal activity (8 items) and motor activity (5 items). The teachers were asked to rate the frequency of the student's responses to others at school ranging from 1 to 5, where 1 = never or hardly, 2 = a few times, 3 = some times, 4 = often, and 5 = always. Its subscales' Cronbach's alpha reliabilities were 0.93, 0.97, 0.50, and 0.94. However, a subscale of withdrawal activity was deleted from subsequent analysis due to its unacceptable value of reliability.

The researchers also developed a questionnaire dealing with a social support for children, which was based on Gordon's study (Gordon, 2011). It was used to measure several kinds of supports that the children received from persons, things and others. It included 50 items pertaining to the children's receiving support regarding to emotion, materials, and information, where 10 items each from parents, teachers, relatives, peers, and siblings to make a total of 50 items. The participant completed this scale based on frequency of received supports, where 0 = never or hardly to, 3 = always. The total score was ranged from 0 to150. Its Cronbach's alpha reliability was 0.96.

A questionnaire dealing with self-efficacy for school-age children questionnaire was developed based on the concept of self-efficacy (Bandura, 1997). It was used to measure the capability of the school-age children. It comprised 16 items related to the perception about own ability to do things. The participant was asked to rate scores from 1 to 4 of how much he/she could do, where 1 = very difficult, 2 = difficult, 3 = easy, and 4 = very easy. The total score was ranged from 16 - 64. Its Cronbach's alpha reliability was 0.70.

Ethical considerations

Ethical approval for this study was obtained from the Institutional Review Board (IRB) of the Research Ethics Committee of Burapha University, Thailand. All participants and their parents were informed about their right to participate in the study. The participation was done on voluntary basis and anonymously. They had the right to end their participation at any time without any penalty, and not necessary to inform the researchers. They might refuse to answer any specific questions, remain silent, or leave this study at any time. Any information received from this study, including their identity, was kept confidential. A coding number was assigned to each participant and the participant's name was not used. Findings from the study were presented as a group of participants with no specific information from any individual participant. Upon their agreement and willingness to participate, written consent form was obtained from all participants and their parents, and oral agreement was also obtained from teachers.

Data collection procedure

An English version of T-SATI was translated into Thai language version using back-translation technique that recommended by Cha et al. (2007). Then it was used as a pilot test with 30 school-age children who had the same characteristics as the study sample to determine cultural comparability of content in the translated scale. The researchers were then visited the participants at selected schools, provided information and informed consents for the study to them, and asked the children to bring a hard copy of informed consent along with a demographic questionnaire for their parents at home. An appointment to collect the informed consent in the following day, where the researchers obtained signed inform consents from the children and their parents, and received completed demographic information from parents. At the school, the researchers read out loud of each item in questionnaires for all children in front of the selected classroom and asked the children to

independently fill their answers until completion. Later, teachers were asked to complete the T-SATI for each child in the classroom. Data were collected from the parents, the school children, and the teachers according to the instruction in each questionnaire. It took about 5, 30, and 10 minutes to complete a set of questionnaires for parent, student, and teacher, respectively. The researchers were available nearby the children's classrooms, and standby to answer via mobile phone for parents and teachers in case of they wanted to ask some things relevant to items in questionnaires. Data were then checked for completeness and managed for proper subsequent analyses.

Data analyses

Data were analyzed by using the IBM SPSS statistic 21. A significant level was set at 0.05. Descriptive statistics of frequency, percent, mean, standard deviation and range were used to describe demographic information, school children health behavior, temperament, social support, and self-efficacy. The Univariate general linear model and Pearson correlation coefficients were used to examine an association between health behavior, and selected social and family factors for categorical and continuous variables, respectively.

RESULTS

Results of an analysis showed that the mean age of the sample was 11.28 years (*S.D.* = 0.89, range = 9-14), where 53.7% of the samples were boy. It was found that 35.4%, 31.3%, and 33.3% of the children's were in the grade levels of 4, 5, and 6, respectively, where the mean of duration of studying was 4.97 years (*S.D.* = .84, range = 4-6). It was also shown that 47% and 33% of the samples were the first and the second born child of the family, whereas 46 % had two siblings (including the sample), 21% were the only child, and 20% had three siblings. There were 2.25 children (*S.D.* = 1.50, range = 1-10) on the average with 18 years old or less living in the same home, where most of them lived in a nuclear family (58.9%). The average of family income per month was 18,701.40 Thai Baht, where the values of *S.D.* = 23,992.46 and ranging from 2,000 to 300,000 Baht.

A total mean score of the sample's health behavior was at a high level with a mean of 103.74 (*S.D.* = 10.61). It was shown that mean scores of daily care and risk-taking behaviors were also at a high level when considering each subscale of health behaviors, but the social behavior was at a moderate level. It could be implied that in general, Thai school-age children had acceptable health behavior. Details regarding each variable are presented in Table 1.

Table 1. Results showing mean, standard deviation, range, possible range and level of total health behavior, daily care, social and risky behaviors.

Variable	*M*	*S.D.*	range	possible range	level
Health behavior (total)	103.74	10.61	72-127	27-135	high
Daily care	53.70	6.60	23-70	14-70	high
Social behavior	20.72	3.95	6-30	6-30	moderate
Risky behavior	29.33	3.06	20-35	7-35	high

Results of an analysis of general linear model regarding the variation in health behavior related to categorical social variables are summarized in Table 2. Each of the variables contributed uniquely to significantly explained variance in health behavior, including child gender ($F_{1,244}$ = 8.097, $p < 0.01$), birth order ($F_{2,241}$= 3.860, $p < 0.05$), and number of children aged 18 years or less in the family ($F_{2,232}$= 3.491, $p < 0.05$), whereas the grade levels and types of family were not significant association. Results of general-linear-model-based follow-up Tukey multiple comparisons for birth order and number of children in the family

showed that the means for health behavior between the first and the second born school children were statistically significant differences at the level $p < 0.05$, whereas there were no statistically significant differences between the first and the third or more born children at the level $p > 0.05$, and between the second and the third or more born children at the level $p > 0.05$. Health behaviors between children living in a family with 2 children and 3 or more children were statistically significant differences at the level $p < 0.05$, but there were no statistically significant differences of health behavior between children living in a family with 1 and 2 children at the level $p > 0.05$ and between children living in a family with 1 and 3 or more children at the level $p > 0.05$.

Table 2. Showing results of general linear model for categorical social factors main-effects model on health behavior.

Variable		n	*M*	S.E.	S.D.	95% CI	F_{df}	*p*
Gender	Boys	132	101.98	0.90	10.37	100.20-103.77	$F_{1,244}$= 8.097	0.005
	Girls	114	105.78	0.98	10.51	103.83-107.73		
Grade level*	4	87	104.17	1.16	10.81	101.87-106.48	$F_{2,243}$= .314	ns
	5	77	104.06	1.25	11.01	101.57-106.56		
	6	82	102.99	1.11	10.01	100.79-105.19		
Birth order*	1[a]	114	101.75	0.98	10.43	99.81-103.68	$F_{2,241}$= 3.860	0.022
	2[b]	81	105.48	1.14	10.23	103.22-107.74		
	≥ 3[a,b]	49	105.49	1.58	11.33	102.32-108.66		
Number of	1[a,b]	74	103.97	1.38	11.83	101.40-106.71	$F_{2,232}$= 3.491	0.032
children in	2[a]	94	105.32	0.89	8.67	103.54-107.10		
the family*	≥ 3[b]	67	100.91	1.38	11.32	98.15-103.67		
Family type	Nuclear	142	104.47	0.86	10.31	102.01-105.31	$F_{1,239}$= 2.480	ns
	Extended	99	102.30	1.09	10.82	100.24-104.54		

* Tukey multiple comparison,

[a,b,c] Variables on the same subscripts showed no difference; different subscripts showed different significance.

Health behavior was significantly correlated with social factors of task persistence and motor activity subscales of temperament, where the values of $r = 0.169$, $p < 0.01$, and $r = -0.122$, $p < 0.05$, respectively, while the values of $r = 0.306$, $p < 0.001$ for social support, and $r = 0.458$, $p < 0.001$ for self-efficacy. Other factors, i.e., child age, negative reactivity subscale of temperament, year of study, family income and GPA), were not significantly correlated at the level $p > 0.05$ (Table 3).

Table 3. Showing results of Bivariate Pearson's correlation for continuous social factors and health behavior.

Variable	Health behavior (*r*)
Child age	-0.039
Temperament	
Negative reactivity	0.059
Task persistence	0.169**
Motor activity	-0.122*
Year of study	-0.025
Family income	0.111
Social support	0.306***
Self-efficacy	0.458***
GPA	0.077

*($p < 0.05$), **($p < 0.01$), ***($p < 0.001$)

DISCUSSION

Health behaviors of Thai school-age children were appropriated with a high level of acceptability. Three dimensions of health behavior, including daily care and risk-taking behaviors were also acceptable with a high level (Table 1). These findings were consistent with general perception that school-going children are healthy (Cartland and Ruch-Ross, 2006; Yen et al, 2006). When considering in details of each dimension, daily care, the children studying at grade 4 - 6 were old enough to perform this care for themselves, such as washing hand before eating, taking shower at least two times a day and brushing their teeth at least two times for one each in the morning and before bedtime. However, there were some daily activities that the scores were below average, which included eating sweets, cakes, cookies and soda, watching TV for 4 - 5 hours every day, and playing computer or video games for many hours a day, which could be implied that they tend to practice inappropriate behavior. These findings were similar to that of Taiwanese students in the 4th grade, which had less ideal positive behaviors than the researchers that expected by Yen et al. (2006). However, these activities need to be modified for more appropriate activity, while other activities, i.e., fasten seat belt, and wearing helmet of risk-taking behavior also needs to be modified. Interestingly, it was found that social behavior was acceptable but at a moderate level (Table 1). Several good examples of items that supported the aforementioned behaviors were 'when I have a problem that really bother me, I talk to a friend or my parents' and 'when my classmate are talking to me, I wait for them to finish before I start talking'. These findings indicate that school-age children are ready for physical activities like daily care and follow safety rules as recommended by adults, but may not have reached optimal social and emotional maturity development. Parents and teachers who are close to the children should provide guidance and suggestions to them for better social behaviors and emotional judgment.

There were significant differences of Thai school children's health behavior based on gender, birth order and number of children in the family. It is not surprising that girls (M = 105.78) had better health behavior than boys (M = 101.98). Girls in a period of school-age were more physically mature and responsible for home and school assignments than boys at the same age. This is consistent with a study by Rew et al. (2010), which reported that girls in middle childhood engaged in more health behavior than did boys, and a longitudinal study by Magee and Roy (2008) who found that boys were more likely

to have behavior problems at school-age. These provide evidence that boys could have more unhealthy and inappropriate behaviors. Parents, teachers, and health care providers as well as wellness policy makers for school-age children should promote healthy behavior based on and aware of gender differences. However, grade levels were not significantly different. This could be explained that grade levels of 4, 5 and 6 are fairly narrow interval, which the development of the children of 2 - 3 years interval resulting in finding no difference.

Health behavior between the first- and the second-born children, and between having 2 and 3 or more children in the family were significant differences, but not for family types. These factors were within the family context and related to family characteristics and parenting style. The first-born children had the least mean score of health behavior (M = 101.75) comparing to the second and the third or later born children (M = 105.48 and M = 105.49, respectively). It could be explained that parents may allow their 1st-born school-age children to behave whichever they prefer and that may not be for healthy lifestyle, for example, playing internet/computer games for many hours, drinking and eating non-nutritious foods, like soda, sweets, and high fat food, etc. These eldest children might use to be spoiled for many things and behaviors since they were born.

Number of children in a family might have somewhat overlap with birth order. However, this finding shows that health behavior of children living in a family with 2 children (M = 105.32) were different from those living in a family with 3 or more children (M = 100.91). School-age children living in a family with 3 or more children may follow older children to conduct unhealthy behaviors. This factor may need to be further explored since children in this study referred to anyone who were 18 years of age or younger, and that make a year range of age 0 - 18 very wide. Moreover, a family with 2 children or fewer may be an appropriate number for parent to accommodate both roles of parenting within the home and working outside the home.

There was no difference of health behavior between school-age children living in nuclear and those that were living in extended families. It could be explained that although most families in this study were nuclear families, which had only parents and their children in the home, while in extended families there were other relatives, like grandparents, in the same home. Family members in these nuclear families always keep closed contact with their relatives. It may be that, in Thai culture, collectivism is seen as usual rather than individualism as in European or American culture. As a result, Thai children living in either type of families may not be matter on differences of their health behavior.

School children's health behavior were positively correlated with the temperament of task persistence (r = 0.169, p < 0.01) and negatively correlated with motor activity (r = -0.122, p < 0.05), but there was no correlation between health behavior and the children's negative reactivity (p > 0.05). The children with high task persistence referred that they have high responsible on assignments for doing things until completion without many reminders for both at home and school works, pay more attention on what parents or teachers asking and suggestion, and respect rules. These could be the reasons that high task persistence children have more appropriate health behaviors. In contrary, the children with high motor activity may focus more on playing sports, games and physical actions while pay less attention on their health, and that could have less appropriate health behavior (Cartland and Ruch-Ross, 2006; McClowry, 2003). However, negative reactivity is about actions or responses on bad-tempered, frustrated or unsatisfied feelings, which is not related to health behavior.

Social support and self-efficacy were found to have significantly positive correlation with health behavior of Thai school-age children (r = 0.306 and r = 0.458, p < 0.001, respectively). The children with high social support had better health behavior. This social support included emotional, information, and material that obtained from parents, relatives, adults, peers and siblings. The children with more support,

especially information, materials, media, and encouragement, were more likely to practice positive health behaviors, which was not surprising. Many studies suggested that social support was a good-based source of healthy behaviors. Moreover, the children who perceived high self-efficacy had more appropriate health behavior. These findings were consistent with studies of Phrombhachat (2013), Appleyard et al. (2007), Cartland and Ruch-Ross (2006), and Rew et al. (2010), where they found that social support and perceived self-efficacy had influences on school children's health behavior.

Several factors, i.e., child age, year of study, GPA, and family income were not significantly correlated with health behavior of Thai school-age children ($p > 0.05$). The age of children and year of study can be explained similarly to grade level as discussed earlier. The cognitive development of school-going children to perform health behavior may be not much different enough to obtain significance. Cartland and Ruch-Ross (2006) found the same results in that year of study of the U.S children in elementary schools, which were not significantly correlated. They suggested that as children progress through elementary school, they were more knowledgeable of good health behavior but did not necessary practice it more. Moreover, health behaviors that declined over the course of elementary school tend to be those that one might associate with later adolescent risk behavior. In the case of family income, Nakorndhub (2008) suggested that appropriate health behavior in young children depend largely on parenting practice, and role models of parents, in which are not related to how much or little money the family has.

In conclusion, health behavior of Thai school-age children was associated with several social and family factors. Significant differences between children's health behaviors and child gender, birth order and number of children in the family were found. The children's health behavior was significantly correlated with child temperament of task persistence and motor activity, social support, and self-efficacy. Nurses and health care personnel who are responsible for child health should promote and encourage school children, as well as parental role models, to have healthy behavior. Further studies need to be deeply explored. Wellness policy focusing on health of school-age children and role of school nurses to influence individual, family, and social resilience need to be reformed for enhance and strengthen school children's healthy behavior.

ACKNOWLEDGEMENTS

The authors would like to thank the participation of all school-age children, parents, teachers and the school principals for their willingness and make this study possible. Great appreciation and thankfulness to Prof. Dr. McClowry for giving permission of use the T-SATI. Funding support from Faculty of Nursing, Burapha University, Thailand was also thankful.

REFERENCES

Appleyard, K., Egeland, B., and Sroufe, L.A. 2007. Direct social support for young high risk children: Relations with behavioral and emotional outcomes across time. *Journal of Abnormal Psychology* 35: 443-457.

Bandura, A. 1997. *Self-efficacy: The Exercise of Control.* Freeman, New York.

Cartland, J. and Ruch-Ross, H.S. 2006. Health behaviors of school-age children: Evidence from one large city. *Journal of School Health* 76: 175-180.

Cha, E.K., Kim, K.H., and Erlen, J.A. 2007. Translation of scales in cross-cultural research: issues and techniques. *Journal of Advanced Nursing* 58: 386-395.

Division of Health Education, Ministry of Public Health. 2009. *Guidelines for Promoting Health Behaviors in School Based on National Health Commandments.* O-Vidhya (Thailand), Nonthaburi (in Thai).

Gordon, A.T. 2011. Assessing social support in children: Development and initial validation of the social support questionnaire for children. Doctoral degree dissertation. Louisiana State University and Agricultural and Mechanical College, Louisiana, U.S.A.

Lyons-Thomas, J. and McClowry, S. 2012. The examination of the validity and reliability of the teacher school-age temperament Inventory. *Journal of Classroom Interaction* 47: 25-32.

Magee, T. and Roy, S.C. 2008. Predicting school-age behavior problems: The role of early childhood risk factors. Pediatric Nursing 34: 37-44.

McClowry, S. G. 2003. Your child's unique temperament: Insights and strategies for responsive parenting. Champaign, Illinois: Research Press.

Nakorndhub, A. 2008. *Study of Community Course: A Synthesis of Community Studies' Experiences in Multi-Research Projects.* Thailand Research Funds, Bangkok, Thailand (in Thai).

Piaget, J. 1969. *The Theory of Stages in Cognitive Development.* McGraw-Hill, New York.

Phrombhachatm, S. 2013. Health behaviors according to national health commandments of Prathomsuksa 4-6 students at Banrantadpom school in Songpeenong subdistrict, Tha Sae district, Chumphon province. *Veridian E-Journal* 6: 881-893 (in Thai).

Rew, L. and Horner, S.D. 2003. Youth resilience framework for reducing health-risk behavior in adolescents. *Journal of Pediatric Nursing* 18: 379-388.

Rew, L., Horner, S.D., and Fouladi, R.T. 2010. Factors associated with health behaviors in middle childhood. *Journal of Pediatric Nursing* 25: 157-166.

Thorndike, R.M. 1978. Correlation procedures for research. New York: Gardner Press.

Yen, L., Chiu, C., Wu, W., and Pan L. 2006. Aggregation of health behaviors among fourth grades in northern Taiwan. *Journal of Adolescent Health* 39: 435-442.