BREAKFAST AND CLASSROOM BEHAVIOUR: AN OBSERVATIONAL STUDY OFGRADE 3 STUDENTS IN A BILINGUAL DEMONSTRATION SCHOOL, IN THAILAND

Jonathan Richard Webb
Faculty of Education, Rangsit University, Bangkok, Thailand
Jonwebb73@gmail.com

Abstract

This study investigated what students consumed for breakfast and their behaviours within the classroom. It attempted to determine whether there is a relationship with inappropriate, off-task or non-compliant behaviour of students and what they had consumed that morning. Recent literature suggests there is. This was observed using a time sampling, coding system. Breakfast Consumption was recorded by a self-completion questionnaire, using the Australian guide to healthy eating (AGHE) as a dietary guide. Correlational analysis was used to determine the relationship between breakfasts and behaviour, and ANOVA (analysis of variance) was used to determine if any significant relationships existed between each behaviour type and diet. The subjects were 23 Grade 3 students (19 boys, 4 girls) of a university affiliated bilingual school in Thailand. The coding of behaviour was done by trained professional observers using Revised Edition of School Observational Coding System (REDSOCS). The modified dietary recall questionnaire was administered at school over a period of 2 weeks. Upon reanalysis of the data there appeared to be a link between an unhealthy diet and off-task and non-compliant behaviours. However these data were not statistically significant. This study suggests that what

is consumed in the morning may not have an important affect on students' classroom behaviour. It is also possible that culture and socio economic factors may have obscured any effects. It is recommended that further research be done to see if these present findings would hold for more varied populations and other types of Thai schools.

Keywords

Classroom Behavior, Breakfast Consumption

1. Introduction

Thailand's Educational Act 1999, states that;

"....All individuals shall have equal rights and opportunities to receive basic education for the duration of at least 12 years. Such education shall be of quality......Persons with physical, mental, intellectual, emotional, social and learning deficiencies...shall have the rights to have basic special education provided," (National Education Commission, 1999).

In order for students to learn to the best of their potential they need to be in control of their mind and their body, learning occurs all the time, but optimal learning occurs at optimal times and in optimal conditions. The act goes onto say in section 30 that Educational institutions must encourage instructors to carry out research for the development of learning for learners. (National Education Commission, 1999) This is the starting point of this researcher's study.

Affective variables like 'anxiety', 'self-confidence', 'attitude' and 'motivation' can affect language acquisition and production (Temel & Özkan,2016).The challenges of teaching and learning in a bilingual school within bilingual classroom are too numerous and convoluted to begin to unravel within the context of just one piece of research. It is fair to say however that the students who struggle to focus, keep still or stay awake in an English Secondary Language (ESL) class, are severely restricted in their ability to learn no matter how good the instruction. EFL learners' lack of motivation poses a serious challenge to the teachers who aim at developing learners' interest and curiosity in language learning (Gulnaz, Ahmad & Mandouh, 2015). Likewise students that act disruptively or inappropriately within such confines as the ESL classroom will also become additional impediments to the progress and learning of not only themselves but to all other members of the classroom.

Within this context of teaching within a bilingual classroom as successfully as possible, overcoming classroom behavioural issues and helping underperforming students improve, this

researcher would like to look at just one factor that he believes contributes to some of these problems, making language acquisition harder, that factor being nutrition.

The inquiry (Forum, 2008) found that, Omega-3 deficiency is important for children's behaviour because the ability to focus attention is vital for sequencing letters and numbers, skilled movements. Also that it is known that constitutional factors, including gender (male sex), affect the efficiency of synthesis of essential fatty acids (EFAs). Many behavioural disorders, such as ADHD, dyslexia, dyspraxia and autism are more common in males than females.

The food colouring Tartrazine has been shown to reduce the levels of Zinc within children (Ward, 1990), this is especially important in the case of ADHD children who already have low levels of Zinc, other food additives and dyes have been linked to blocking of nutrient absorption from food that is eaten (Forum, 2008). If EFA's (Omega-3) is important for brain function and structure, glucose is vital as the brains fuel. The Glycaemic index is a system for the classification of carbohydrate containing foods that is based on their blood glucose raising potential. The rate of glucose utilization is approximately twice as high in children aged 4–10 years compared with adult (Chugani, 1998). This fact along with the confirmation that children's longer overnight fasting period, due to higher sleep demands compared with adults, can deplete glycogen stores overnight (Thorleifsdottir, Bjornsson, Benediktsdottir, & Gislason, 2002), suggest the importance of what children eat for breakfast. Furthermore evidence has been found that eating a low glycaemic load breakfast is associated with children having better attention in class (Benton & Jarvis, 2007).

It is surprising to note that even though nutritional studies have been made in Thailand, resulting in such important things; as the School Lunch Program (SLP) being implemented more than 30 years ago (Kai, Pongpanich & Sinawat, 2008) . The studies that have been made in Thailand have focused mainly on obesity and academic performance levels, not on behaviour. For a culture in which eating is deeply bound, socially and spiritually, this seems unusual. Especially as 'in most other Asian countries, traditional Thai culture places a very high value on learning.'(Nguyen, 2002)

In this study the researcher gave a questionnaire/checklist to the parents of the grade 3 students' research group. The questionnaire/checklist was completed over the period of two weeks and was only be related to what the students were consuming for breakfast. A master copy designed for categorising purposes was held by the researcher, it used values from the Glycaemic

index (Brand-Miller, Atkinson, & Foster-Powell, 2015) and Yale University's Overall Nutritional Quality index (Derby, 2007) to create breakfast quality groups using a numerical rating scale (NRS).

A modified Revised Edition of the School Observation coding system (REDSOCS) (Jacobs, et al., 2000). Two cameras were set up in the classroom and used to unobtrusively observe two groups of students and record a time segment of 10 minutes. This was repeated for all 4 groups of students in the classroom. The entire process was duplicated 3 times over a 10 day period.

The recordings were passed to the professional observers who coded the behaviour observed having received training in the REDSOC coding system. The Data received from the observers were then analysed by the researcher.

This study was conducted at Satit Bilingual School of Rangsit University. Satit Bilingual School (SBS) is a Thai private school which offers a curriculum in both Thai and English languages. This curriculum follows national and international standards, by having the annual examinations required by the Thai Ministry of Education (MoE), but also by taking the Cambridge IGCSE and International Baccalaureate (IB) tests.

1.1 Research Objectives

This study aimed to:

- Determine if there is a correlation between observed behaviour of children in a bilingual classroom and breakfast eating habits.
- To systematically observe and codify 23 students behaviour over a period of 10 days.
- To survey grade 3 students, to obtain an accurate indication of what Grade 3 students eat for breakfast during a normal period of 2 weeks.

2. Literature review

Much attention is currently given to improving students' academic achievement addresses issues of curriculum, instructional strategies, and interventions or services for struggling learners, and rightfully so. However, even after addressing these issues, barriers still remain for some students (Epstein, Atkins, Cullinan, Kutash, & Weaver, 2008).

Epstein et al (2008) go on to note that an estimated 1/3rd of children fail to learn because of psychosocial problems they fail to engage with others including the teacher, act appropriately or remain on task. This alarming figure is part of the reason why in many parts of the world there has been a call for "new directions for addressing barriers to learning" (Aldelman & Taylor, 2005).

Disruptive, oppositional, distracted, or defiant behaviours, stem from many sources; in their study 'Student's Response and Behaviour in the Classroom Environment' (Joshi, Gokhale, & Ancharya, 2012), make a case that the success of a behavioural intervention hinges on identifying the specific conditions that prompt the problem behaviour. It can be done by careful observation of the conditions in which the problem behaviour is likely to occur and not occur.

2.1 Influence of diet on Behaviour

Studies rarely investigate the acute effects of breakfast on behaviour in the classroom and there remains a lack of research in this area (Adolphus, Lawton, & Dye, 2013). Moreover there is evidence that breakfast positively affects learning in children in terms of behaviour, cognitive, and school performance (Hoyland, Dye, & Lawton, 2009).

The researcher understands that cognitive, behavioural and academic outcomes are not independent, and that children may be particularly vulnerable to the nutritional effects of breakfast on their brain activity in these areas (Adolphus, Lawton, & Dye, 2013), but this study will focuses only on behaviour.

2.2 Observational studies

The measures used to observe and code classroom behaviour are often invalidated, non-standardized coding methods developed for the purpose of the research, and often the inter-rater reliability is unspecified or merely recorded as acceptable (Adolphus, Lawton, & Dye, 2013). There is a lack of studies that use systematic, validated, and reliable coding systems to measure classroom behaviour. (Volpe, Diperna, Hintze, & Shapiro, 2005)

This researcher wishes to avoid such a comparison and so only existing, proven and tested observations systems were compared and contrasted until a suitable instrument was found. The Revised Edition of the School Observation Coding System (REDSOCS) was tested for tested for psychometric properties and reference point data by (Jacobs et al., 2000). This system is a revision of School Observation Coding System (SOCS; McNeil, Eyberg, Eisenstadt,

Newcomb, & Funderburk, 1991). The REDSOCS yields three scores for each observed child: Percent Inappropriate Behavior, Percent Noncompliant Behavior and Percent Off-task.

The researcher was concerned about an intrusive observation method due to the reactive nature of the observation process; the Hawthorne effect may be present, such that children and teachers change their behavior because they are under observation (Roethlisberger & Lombard, 1977). The use of a video recorded classroom observation also has have the advantage of increased accuracy via the ability to replay, review, and control observer fatigue (Haidet, Tate, Kolanowski, & Happ, 2009).

3. Methodology

The population of this study was Grade 3 Bilingual students (8 years old). The study numbered 22 students 4 girls and 18 boys. Typically students come from middle-class wealthy families. These students often go on holiday abroad, and are therefore more exposed to different cultures than the average Thai student.

This was a quasi-exploratory observational study. The researcher used appropriate statistical techniques to determine the levels of the relationships between the behaviour types of the bilingual students and their breakfast consumption. The students' breakfast diet score was the predictor variable (independent variable), and their three categories of behaviour was the criterion variable (dependent variable). The relationship between breakfast and behaviour was investigated by using bivariate correlational analysis. The different types of behaviour and breakfast type were further investigated by using a bivariate analysis of variances between behaviour type (inappropriate, non-compliance, off task) and breakfast level type.

Prior to the observations, a self-completion questionnaire was given to the research group everyday for 10 days. With same-day reporting on self completion questionnaires, validity and agreement have been found to be much higher (Moore, et al 2007).
The questionnaire was shortened from the original Moore, et al 2007 study to be only related to what the students were consuming for breakfast, not the entire day as it was used by Moore. Portion sizes were not included in the questionnaire as children's accounts of portion size are generally unreliable (Lytle et al,, 1993; Livingstone and Robson, 2000).

A breakfast quality scoring method was used, the final aggregated score (1-5) was based on the five core food groups and two none core groups, as defined by the Australian Guide to

Healthy eating AGHE (Smith A, et al 1998). The breakfast quality scoring method previously validated in several studies relating to students mental health, school performance and breakfast consumption (Radcliffe, et al 2004; Moore, et al 2006; Lozano and Ballesteros, 2006; O'Sullivan, et al 2008).

The researcher used the Revised Edition of the School Observation coding system (REDSOCS): This observation system looked at three areas of student classroom behaviour; inappropriate, non compliant and off-task. This time sampling system divides the three behaviour streams into discrete, 10 second scored intervals over a period of 10 minutes, giving total scoring opportunity of 60 in each behaviour category, this was repeated 3 times on each student over a 10 day period. Time sampling is well suited for discrete behaviour observation, such as over behaviours (e.g. on task, off task) (Ostrov and Hart, 2014).

Due to the complexity and opportunity for error of observing three types of behaviour at the same time, cameras were used. The recordings were then given to the observers to observe and score independently.

The video recordings were analysed by two professional observers, both of whom carry current teaching licenses. One was a specialist in children's behavioral problems and worked in the special needs department. The other is a M.Ed and holds qualified teaching status (QTS) in England. They both underwent two hours training from the REDSOCS manual conducted by the researcher for intra-observer reliability purposes. Observer expectancy effect (Hartmann & Pelzel, 2005), was avoided as the observers were unaware of the study goal or hypothesis and had never taught the students in the population previously.

4. Results

The results from the questionnaire were coded and categorised according to the AGHE food groups (Radcliffe, et al 2004; Moore, et al 2006; Lozano and Ballesteros, 2006; O'Sullivan, et al 2008). The observers' results were collated and used to create percentages of behaviour occurrences over applicable periods of time, as was done in a previous study by Jacobs et al (2000). After the data were collected they were processed by a web-based statistical software package to determine if a correlation, as measured by the Pearson's r, existed.

4.1 Questionnaire Validity and Reliability

Table 1: *Mean of means, standard deviations & reliabilities of breakfast food group*

Food group	N of items	Means	SD	Cronbach's alpha
Vegetables	2	.91	1.231	0.902
Grains	2	6.36	3.23	0.975
Dairy	2	6.45	3.582	0.990
Meat/fish/egg	2	8.09	3.676	0.973
Fruit	2	.55	1.503	0.959
Snacks	2	2.41	3.699	0.982
Water	2	6.50	3.036	0.979
Group	2	97.43	68.69	0.949

The questionnaire was previously validated with 7 – 9 year old students (Moore, et al 2006; Edmunds and Ziebland, 2002). Reliability was verified by calculating the Cronbach's alpha coefficient of the questionnaires reported food group items (7 items) on both an individual and group level. For social studies a minimum Cronbach's alpha coefficient of 0.7 is commonly used, as being considered an acceptable value (e.g. Nunnally & Bernstein, 1994). A value between 0.8 and 0.9 is considered to be good (George & Mallery, 2003). It can be seen (Table 4.1) that the questionnaire's reliability was good-excellent in all items on an individual and group level.

4.2 Observer Reliability

Inter rater reliability was tested for each behavior code using interclass correlation coefficient in SPSS (see table 4.6) this ranged from .721 (Off task) to .993 (No command), where ICC can be interpreted as follows: 0.5-0.6 indicates moderate agreement; 0.7-0.8 indicates strong agreement; and >0.8 indicates almost perfect agreement (Koch, 1982). A strong agreement was found across the coded behaviours between observers, the researcher felt that this was important and justified the training the observers received from the REDSOCS manual, the use of recordings to do the observations and post hoc group discussions with themselves and the researcher.

Table 2: *Inter-rater percentage reliability*

Behaviour	OB-Disagree	OB-Agree	Agree+ Disagree	% Agreement*
Appropriate	72	3699	3771	98%
Inappropriate	40	149	189	79%
Compliance	99	428	527	81%
Non-compliance	29	113	142	79%
No command given	0	3291	3291	100%
On task	450	2249	2699	83%
Off task	251	576	827	70%
Not applicable	50	384	434	88%

4.3 Correlations between Breakfast and Behaviour

As used in previous studies (O'Sullivan et al. 2008; Morales et al. 2008; Lozano & Bellesteros. 2006), a parametric (Pearson's coefficient) instrument was used to investigate the relationship between the two constructs. In the expectation that as one variable increased the other would show some form of activity. The correlation was made with all 6 behaviour categories, both positive and negative types in order to give comprehensive set of findings.

The results of the correlation analysis (Table 3) show that there were no statistically significant correlations (p values lower than 0.05) between each behavior type and breakfast quality. As a result the researcher also conducted tests using a non- parametric instrument (Spearman's coefficient), these results were also included in (Table 3) and were similarly non-significant. Interpreting the correlation strength (Evans, 1996); very weak 0 - .19 (0 to 4%) weak .20 - .39 (4 to 16%) moderate .40 - .59 (16 to 36%) strong .60 - .79 (36% to 64%) very strong .80 - 1.00 (64% to 100%). It was seen that 5 behavioural types demonstrated weak correlations and only the off task behaviour showed a moderate coefficient value of .488. The researcher did note however that the considered good behaviours all showed negative correlations and the bad behaviours all showed positive correlations.

Table 3: *Correlation results of breakfast (AGHE) groups and behavior types*

Behaviour	N	Pearson's	Significance (2-tailed)*	Spearman's	Significance (2-tailed)*
Appropriate	22	-.193	.376	-.190	.312
In-App	22	.186	.406	.180	.424
Compliant	22	-.163	.566	-.148	.633
Non-Comp	22	.071	.755	.068	.780
On Task	22	-.167	.675	-.161	.165
Off Task	22	.480	.510	.251	.260

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

5. Discussion

The three objectives of the study were to question and obtain an accurate indication of what Grade 3 students eat for breakfast during a normal period of 2 weeks, to systematically observe and codify 22 students behaviour of a period of 10 days and to determine if there is a correlation between observed behaviour of children in a bilingual classroom and breakfast eating habits.

The study was successful in gaining a very accurate indication of what the entire population of grade 3 bilingual students consumed for breakfast. The instrument used, achieved a highly reliable set of data (Table 1), was engaging and accessible to the language ability and age of its target group. When aggregated and coded the resulting data showed an excellent range in scores throughout the population.

The Study was also successful in conducting a time sampling observation and coding system (REDSOCS), according to observation best practice recommendations (Ostrov & Hart, 2014.). The instrument used was effective for a classroom size population (though it is not limited to that size) and provided a set of strong to very strong data (Table 2), which showed a good percentile range of behaviours.

The study showed no significant relationships between breakfast consumption and classroom behaviour with this population of bilingual students. It was hypothesised that poor

quality breakfasts could lead to disruptive behaviour. The study did not confirm this. Both descriptive and inferential statistics showed no significant relationships between the observed behaviour types and any breakfast quality category consumed by the students. There were small positive correlations with all three types of negative behaviour, inappropriate 0.186, non compliance 0.071 and off task 0.480, however weak to moderate correlations with no relationship of significance, were not expected outcomes for the study.

The mixed findings of studies in the past that have looked at this relationship, support the idea that there are times/groups/populations/environments when behaviour and morning diet relationships could not be found (Milich and Pelham, 1986; Wender and Solanto, 1991; Murphy et al., 2012; Miller et al., 2012). Yet at other times researchers have found significant and highly insightful relationships (Overby and Hoigaard., 2012; Benton and Jarvis., 2007; Richter et al., 1997).

Certainly socio-economic factors are involved; studies done on undernourished subjects have seen more successful results (Chang et al, 1996; Benton et al 2007).However in all situations regarding studies of this type, mixed findings are common. An example of this being, of the 19 studies examined by Adolphus et al 2013, directly related to behaviour and breakfast relationships, only 11 demonstrated significant findings.

6. Conclusion

The researcher feels that it is highly important appropriate research instruments are used in further studies to gather accurate information in this field. Also procedures of best practice in conducting an observation and or intervention must be followed more consistently, in order that an accurate assessment of classroom behavior and what influences it can be developed.

Future studies should consider factors, such as bias (observer, student, parental, institutional), periods of observational sampling, refinement of observational software, cost of interventions and construct validity.

The importance of this type of study in the education of future generations cannot be understated and as such the scientific process used to gather data must be given the upmost thought and respect.

Further research on the effect of socio-economic status and the range of breakfast quality applicable to such status, would also contribute greatly to data in this field. This study for

instance was not performed in a typical bilingual school. It was done in a university demonstration school and one filled by predominantly upper-middle class or upper class students from wealthy families. It is recommended that further studies be conducted in less affluent institutions and the results compared.

A more holistic approach to further studies is also recommended in which the assumption that breakfast is the most important meal of the day is removed. All meals over the entire course of the day could be analysed and then compared against behaviour patterns. In this way a larger picture will be built that may yield more significant results.

Approaches aimed at improving school and classroom environments, including reducing the negative effects of disruptive or distracting behaviours, can enhance the chances that effective teaching and learning will occur, (Epstein, Atkins, Cullinan, Kutash, & Weaver, 2008). The researcher believes that further studies should be implemented that build upon the current data and information that is available in order that the quality of learning in bilingual education can be enhanced and or improved upon.

References

Adolphus, K., Lawton, C., & Dye, L. (2013). The effects of breakfast on behaviour and academic performance in Children and adolescents. *Frontiers in Human Neuroscience*, August, 67-83

Aldelman, H., & Taylor, L. (2005). New directions for addressing barriers to learning. *The school leader's guide to student learning*. (pp.203-237). Thousand Oaks: Corwin Press.

Benton, D., & Jarvis, M. (2007). The role of breakfast and a mid-morning snack on the ability of children to concentrate at school. *Physiology & Behavior*, *90*(2), 382-385.

Brand-Miller, J., Atkinson, F., & Foster-Powell, K. (2015). Glycemic index and glycemic load for 100+ foods. *Harvard Health* 2(3), 28-38. Retrieved from http://www.health.harvard.edu/healthyeating/glycemic_index_and_glycemic_load

Chang, S. M., Walker, S. P., Himes, J., and Grantham-McGregor, S. M. (1996). Effects of breakfast on classroom behaviour in rural Jamaican schoolchildren. *Food Nutrition. Bulletin17,* 248–257.

Chugani, H. (1998). A critical period of brain development: Studies of glucose utilisation with PET. *Prevalent Medicine,* (27), 184-188.

Derby, C. T. (2007). Overall Nutritional Quality Index. A*merican Journal of Health Promotion*, *24*(2), 133-143.

Edmunds, L. D., & Ziebland, S. (2002). Development and validation of the Day in the Life Questionnaire (DILQ) as a measure of fruit and vegetable questionnaire for 7–9 year olds. *Health Education Research*, *17*(2), 211-220.

Epstein, M., Atkins, M., Cullinan, D., Kutash, K., & Weaver, K. (2008). Reducing behavior problems in the elementary school classroom. *IES Practice Guide*, *20*(8),12-22.

Evans, J. (1996) *Straightforward statistics for behavioral science.* NY, Brooks/Cole Publishing Company.

Forum, A. P. (2008) The Links Between Diet and Behaviour. *Food and Health*. London: British Government. Retrieved from www.fhf.org.uk.

Funderburk, B. W., Eyberg, S. M., Newcomb, K., McNeil, C. B., Hembree-Kigin, T., &Capage, L. (1998). Parent-child interaction therapy with behavior problem children: Maintenance of treatment effects in the school setting. *Child and Family Behaviour Therapy*, *20*(2), 17-38.

George, D., & Mallery, P. (2003) *SPSS for Windows step by step: A simple guide.*Boston: Allyn & Bacon.

Gulnaz, F., Ahmad, A., & Mandouh, S. Y. (2015). An Exploration ofthe demotivationalFactors Affecting Teaching and Learning of English as a Foreign Language of EFL Learners in Gulf Countries. *People*, *2*(1), 17-32. doi: 10.20319/pijss.2016.21.33-61

Haidet, K., Tate, J., Kolanowski, A., & Happ, M. (2009)Methods to improve reliability of video recorded behavioral Data. *Nurses Health 13*, 465-474.

Hartmann, D. P., & Pelzel, K. (2005). *Developmental science: An advanced textbook*. (pp. 57-63), Boston: Harvard University Press, 57-63.

Hoyland, A., Dye, L., & Lawton, C. (2009) A systematic review of the effect of Breakfast on the Cognitive performance of Children and adolescents. *Nutrition Research Reviews*, 2(2), 220-243.

Jacobs, R., Boggs, S., Eyberg, S., Edwards, D., Durning, P., Querido, J., Funderburk, B. (2000).Psychometric Properties and Reference Point Data for the Revised Edition of the School Observation Coding System. *Behaviour Therapy (31*), 695-712.

Joshi, D., Gokhale, V., & Ancharya, A. (2012) Student's Response and Behavior in the ClassroomEnvironment. *International Journal for Cross-Disciplinary Subjects in Education* (IJCDSE), 2(1), 926-934.

Kai, Eri, S. Pongpanich, and S. Sinawat.(2008) A comparison study of the school lunch program in the public primary schools belong to Bangkok Metropolitan Administration (BMA) and Thai Ministry of Education (MOE).*J Health Res* 22.3, 147-150.

Koch, G. G. (1982) Intraclass corellation coefficient. In S. Kotz, & N. L. Johnson (EDs). *Encyclopedia of Statistical sciences(*pp. 213-217). New York: John Wiley andSons.

Livingstone, M.B.E. and Robson, P.J. (2007) 'Measurement of dietary intake in children',*Proceedings of the Nutrition Society*, 59(2), 279–293. doi: 10.1017/S0029665100000318.

Lozano, H, R., & Ballesteros, F, J, C. (2006) Estudio sobre el desayuno y el rendimiento escolar en un grupo de adolescentes. *Nutrición Hospitalaria*21(3), 346-352.

Lytle, L. A., Nichaman, M. Z., Obarzanek, E., Glovsky, E., Montgomery, D., Nicklas, T & Feldman, H. (1993). Validation of 24-hour recalls assisted by food records in third-grade children. *Journal of the American Dietetic Association*, *93*(12), 1431-1436.

McNeil, C. B., Eyberg, S., Hembree Eisenstadt, T., Newcomb, K., & Funderburk, B. (1991). Parent-child interaction therapy with behavior problem children: Generalization of treatment effects to the school setting. *Journal of Clinical Child and Adolescent Psychology*, *20*(2), 140-151.

Milich, R., & Pelham, W. E. (1986) Effects of sugar ingestion on the classroom and playgroup behavior of attention deficit disordered boys. *Journal of Consulting and Clinical Psychology, Vol 54(5)*, 714-718.

Miller, D., Waldfogel, J., & Han, W. (2012) Family meals and child academic and behavioral outcomes.*Journal of Child Development 83*, 104-120.

Moore, G.F., Tapper, K., Murphy, S., Clark, R., Moore, L. (2007) Validation of a self completion measure of breakfast foods, snacks and fruit and vegetables consumed by 9- to 11- year-old school children. *European Journal of Clinical Nuitrition*,61, 420- 430.

Murphy, S., Moore, G. F., Tapper, K., Lynch, R., Clarke, R., & Raisanen, L. (2011) Free healthy breakfasts in primary schools: a cluster randomised controlled trial of a policy intervention in Wales. *UK Public Health Nutrition 14*, 219-226.

National Education Commission: NEC. (1999). *National Education Act*. Bangkok: Office of the NEC.

Nguyen, Tuong Hung. (2016).Thailand: Cultural background for ESL/EFL teachers.*CuyahogaCommunityCollege.*Retrievedfrom http://www.hmongstudiestudies.org/ThaiCulture.pdf

Nunnally, J. C., & Bernstein, I. H. (1994) *Psychometric theory (3rd ed,pp. 126-132).* New York: MacGraw- Hill.

Ostrov, J. M., & Hart, E. (2014). Observational methods. *The Oxford Handbook of Quantative Methods,*), Todd.D, & T. D. Little (Ed.),(Vol.1, pp.285-302). Oxford, USA: Oxford University Press..

O'Sullivan, Therese A., et al. (2009) A good-quality breakfast is associated with better mental health in adolescence.*Public Health Nutrition* 12(02), 249-258.

Overby, N., & Hoigaard, R. (2012). Diet and behavioral problems at school in Norwegian adolescents. *Food and Nutrition research, 56*, 20-43.

Radcliffe, Barbara C., et al. (2004) Breakfast consumption patterns of upper primary school students in 14 Queensland schools. *Nutrition & Dietetics: The Journal of the Dietitians Association of Australia* 61.3, 151-159.

Richter, L. M., Rose, C., and Griesel, R. D. (1997). Cognitive and behavioural effects of a school breakfast. *South Africa Medical Journal.* 87(1), 93–100.

Roethlisberger, F. J., & Lombard, G.(1977) *The Elusive Phenomena: an Autobiographical Account of My Work in the Field of Organizational Behavior.*(pp. 57-63) Boston: Harvard University Press.

Smith, A., Schmerlaib, Y., & Kellett, E. (1998). *The Australian guide to healthy eating: background information for nutrition educators*. Commonwealth Department of Health and Family Services.

Temel, M., & Özkan, Y. (2016). The Comparison of the Affective Strategies Used by Turkish and International University Students in Preparatory Classes in Turkey in Speaking English1.People, 2(1), 17-32. Doi: 10.20319/pijss.2016.21.17.32

Thorleifsdottir, B., Bjornsson, J., Benediktsdottir, B., Gislason, T. (2002). Sleep and sleep habits from childhood to young adulthood over a ten year period. *Psychosom. Res.(53)*, 529-537.

Volpe, R., Diperna, J., Hintze, J., & Shapiro, E. (2005)Observing Students in Classroom Settings: A review of Seven Coding Schemes.*School Psychology Review*, 454-474.

Ward, N. (1990). The influence of the chemical additive tartrazine on zinc status of hyperactive children- a double-blind placebo-controlled study. *Journal of Nutrition,*51-57.

Wender, E., & Solanto, M. (1991) Effects of sugar on aggressive and inattentive behavior in children with attention deficit disorder with hyperactivity and normal children. *Journal of Pediatrics*, 9, 60-6.