

Predicting Adolescent Healthy Eating Behavior Using Attitude, Subjective Norm, Intention, and Self-schema

Parnnarat Sangperm, Rutja Phuphaibul, Fongcum Tilokskulchai, Thavatchai Vorapongsathon, Karen F. Stein

Abstract: Eating behavior established in adolescence has been linked to the risks of many chronic illnesses in adulthood. The present study aims to predict healthy eating behavior in Thai early adolescents using attitude, subjective norm, intention, and self-schema. The participants were 191 early adolescents studying in grade 7-9 in public schools in Bangkok Metropolitan.

The questionnaires consist of the Attitude towards Healthy Eating Scale, the Subjective Norm for Healthy Eating Scale, the Intention to Eat Healthily Scale, and the Healthy Eater Self-Schema Scale. The Healthy Eating Index, using the Nutrition Flag and Dietary Reference Intake for Thai (DRI) 2003 as references, was used to determine healthy eating behavior of all participants through a 3-days food diary. All participants were also trained for food recording to ensure the accuracy of their intake data.

Results from hierarchical multiple regression revealed that subjective norm was the only significant predictor of healthy eating intention in all participants ($p < .05$). Only in the girls group that attitude could predict healthy eating intention. However, self-schema could predict healthy eating behavior in the boys group ($p < .05$).

These findings suggest that factors predicting healthy eating behavior among early adolescent girls and adolescent boys are different. Thus, different strategies based on specific cognitive factors should be employed when promoting healthy eating behavior in early adolescents.

Thai J Nurs Res 2008; 12 (2) 95-106

KeyWords: adolescent, healthy eating , Theory of planned behavior, self-schema

Introduction

Many studies depict healthy eating as optimizing child and adolescent growth and development^{1,2} because it helps them meet their energy and nutrient requirements.^{3,4} It is also believed that healthy eating relates to prevention of many chronic illnesses such as hypertension, cardiovascular disease, diabetes, obesity, and osteoporosis.⁵⁻⁸ Thus, many strategies have been used to establish healthy eating behavior

Parnnarat Sangperm, R.N., PhD. Candidate Faculty of Nursing, Mahidol University, Thailand

Rutja Phuphaibul, R.N., D.N.S., Professor Department of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand

Fongcum Tilokskulchai, R.N., Ph.D., Associate Professor Faculty of Nursing, Mahidol University, Thailand

Thavatchai Vorapongsathon, Ph.D., Associate Professor Faculty of Public Health, Mahidol University, Thailand

Karen F. Stein, R.N., Ph.D., Professor University of Michigan School of Nursing, U.S.A.

in children and adolescents early in their lives because it is likely to affect not only their health and well-being then, but also further along into their adulthood.⁹

Although healthy eating habit carries many health benefits, many studies suggest that adolescents do not adhere to it.^{3, 10-11} They were found to adhere to unhealthy eating behavior such as rarely consuming any fruits or vegetables, taking only low fiber diets too often, consuming large amount of carbohydrates and fats, and drinking too much soft drinks.¹²⁻¹⁴ In addition, many of them also follow deviant eating behavior such as dieting and skipping meals.¹⁵⁻¹⁶

Many investigators have examined factors that influence adolescent eating behavior and used their findings to improve the effectiveness of the intervention programs designed to promote healthy eating behavior in adolescents. However, most studies focused only on the eating behavior of adolescents in western societies which is very different from that in Thai society. Findings from these studies might not be appropriate as a guide to healthy eating for Thai adolescent. In addition, a handful of studies related to eating behavior in Thai adolescent treated eating behavior as only one part of the risky behaviors to some illnesses. The determinants of eating behavior in adolescents are not examined. To fulfill these gaps, more research is needed to provide information on healthy eating behavior of Thai adolescents and its determinants. Thus, this study was conducted to determine the factors influencing healthy eating behavior of early adolescents living in the Bangkok Metropolitan area. Some cognitive variables were selected to test their ability to predict adolescent healthy eating behavior. In addition, as many authors suggested a difference in social development and

eating behavior between adolescent boys and girls, all selected variables were also tested separately for each gender.

Conceptual Frameworks

This study applied the Theory of Planned Behavior (TPB)¹⁷ with the implication of self-schema¹⁸ to examine healthy eating behavior in adolescents and its determinants. According to the TPB, an individual's action of a behavior is determined by his or her intention to perform that behavior. In turn, this intention is determined by three factors: attitude (the extent to which the individual evaluates the intended behavior as favorable or unfavorable), subjective norm (the perceived social pressure to perform or not perform the behavior), and perceived behavioral control (the perceived ease or difficulty of performing the particular behavior).

According to the TPB, individuals who evaluate a positive outcome of behavior, believe that significant others would approve the behavior, and perceive the actual control on performing a behavior, would likely to intend to perform that behavior. Correspondingly, the stronger the intention, the more likely the person is to perform the behavior. In this study, the behavior of interest is eating behavior, which many authors have suggested that it is a relatively volitional control behavior¹⁹ that intention alone should be sufficient to predict. Following this line of argument, perceived behavioral control is thus excluded from this study. The reason is that, since it has been shown that most adolescents reported having their diets without adults' supervision²⁰ and freely chose their foods anyway, it is unlikely that adding perceived behavioral control would contribute to any significant improvement of their behavioral intention.

Self-schema is a domain-specific cognitive concept of an individual's self that is derived from past experience and is regarded as important by the individual.¹⁸ It can be both very specific, where only individuals who focus on that domain can actually generate and process those structures, and generalized, where any individuals can develop some type of organization in the domain.²¹ Individuals can generate both specific and general self-schema in any aspect of one's self. A salient domain specific self-schema provides an individual with rich knowledge about procedural rules, strategies, and routines that direct and regulate behavior in the domain.²² This helps an individual to act in relation to their intentions in order to maintain one's self-conception.

Previous research employs the TPB to predict a wide range of health behaviors, including eating behavior, with marked success.²³⁻²⁴ Self-schema has also demonstrated to have an effect on healthy eating behavior.²⁵ In addition, some authors have claimed that self-schema improves the consistency of the relationship between TPB and such behavior.²⁶⁻²⁸ However, little is known about the power of the TPB constructs and self-schema to predict a particular healthy eating behavior in adolescent populations, especially in Thai adolescent population.

Therefore, this study was conducted to determine the influences on healthy eating behavior in early adolescents living in the Bangkok area. Two research questions were examined: 1) What are the relationships among attitude toward healthy eating behavior, subjective norm for healthy eating behavior, intention to eat healthily, healthy eater self- schema, and healthy eating behavior in adolescents? 2) Is having healthy eater self-schema associated with greater consistency between intention to eat healthily and healthy eating behavior in early adolescents?

Method

Participants

Three hundred and ninety six students in grade 7, 8, and 9 were recruited from six schools in Bangkok Metropolitan area. They were sampled by the stratified random sampling method. Only 191 students (48.23%) recorded proper and complete data in their 3-day food-consumption diary. Of all of the 191 participants, 70% were female with mean age of 13.33 years old (SD = .91). Their average BMI was 19.36 (SD = 3.07), with only 5.3% of them being overweight or obese. Most of the participants (75.4%) were living with both parents and the person who prepared the family meals most often was the mother (76.7 %).

Procedure

After gaining permission from the director of the Office of Basic Education Commission and each School Director, and with approval from the Human Research Review Committee of the Faculty of Graduate Studies, Mahidol University, data collecting was processed in four separate sessions. In the first session, information sheet and consent form were given out to all participants who passed them on to their parents to be read and signed. Students who returned their signed consent form were asked to complete all of the questionnaires on attitude, subjective norm, intention, self-schema, and demographic data; this was the second session. Two weeks later, as the third session, all participants were given a manual on how to record data and were trained to write their food diary. Many standard utensils and real foods were demonstrated as examples to help them to estimate the portion size of their food intake. In the last session, every food diary was collected

and every participant was given a small gift as a token of gratitude for their time and effort. All the responses to the questionnaires and every food diary from each student were collected and then matched according to the students' ID number, which were destroyed after completion of data management.

Instruments

An elicitation was conducted to obtain salient behavioral and normative beliefs following the suggestions for construction of the questionnaires for the TPB constructs.²⁹ The character and eating behavior of several persons who considered themselves to be healthy eaters were determined and used to describe healthy eater self-schema. Three focus groups with 29 students from the 7th, 8th, and 9th grade in a secondary school in Bangkok Metropolis provided information needed to develop the questionnaires used in this study. The most frequently mentioned elements were included in the questionnaires.

Intention

Intention was measured by the quantified responses to three statements regarding the participants' motivation to eat healthily. These responses were recorded as a score on a 5-point scale ranging from 1 to 5 (definitely not true to definitely true). The statements were as follows: "I plan to eat healthily during the next two weeks," "I will try to eat healthily during the next two weeks," and "I intend to eat healthily during the next two weeks." The summed total of the scores from all three items served as a measure of intention. The reliability coefficient (Cronbach's alpha) of this measure was .81.

Attitude

Attitude was measured by a 15-phrase questionnaire in which the responses were organized in two sessions for each phrase: Valued beliefs and outcome evaluation. A five-point scale ranging from 1 to 5 (strongly disagree to strongly agree) was used in the valued beliefs session and a five-point scale ranging from 1 to 5 (extremely unimportant to extremely important) was used in the outcome evaluation session. Responses from the negative phrases were recoded in both parts of the scale before calculating the total score of attitude. The summed product of the two parts for each item served as a measure of attitude. The reliability coefficients were .68, .71, and .81 for the valued beliefs part, evaluation part, and total score, respectively.

Subjective Norm

Subjective norm was measured by a 5-phrase questionnaire. Each phrase concerned one of the following groups of the significant others: Parents, siblings, close friends, teachers, and other family members (relatives). Participants were asked to enumerate their beliefs on how their significant others thought about their healthy eating behavior by choosing a response from a five-point scale ranging from 1 to 5 (extremely should not to extremely should). Every item also required participants to choose another response from another five-point scale ranging from 1 to 5 (not at all to very much). This response indicated the participant's degree of compliance with their significant others. The summed product of the two responses for each item served as a measure of subjective norm. The reliability coefficients were .92, .81, and .91 for the influence part, compliance part, and the total score, respectively.

Healthy Eater Self-Schema

Healthy Eater Self-Schema was the participants' self-descriptiveness with respect to healthy eating behavior in the past as well as the importance of that descriptiveness. It was measured from responses to the 6 following statements: "I am someone who usually eats three main meals a day;" "I am someone who likes to eat fruits;" "I am someone who likes to eat vegetables;" "I am someone who usually avoids eating greasy foods;" "I am someone who doesn't like to eat only a few kinds of foods;" "I am someone who eats proper amount of food, not too much, not too little."

To ensure the logical and theoretical strength of this measure in determining the healthy eater self-schema score, each item in the scale was given a score of 1 when the participants rated both descriptiveness and importance rating as a high (4 or 5 from a 5-point scale ranging from 1 to 5) rating. A sum of the scores from all six items generated the total score of healthy eater self-schema. The reliability coefficients were .60 and .71 for the self-descriptiveness and the importance rating, respectively.

Healthy Eating Behavior

A 3-day food diary was used to record the types and amounts of food taken by a participant during the period of this study. They were asked to record all meals, snacks, and beverages that they consumed each day on two weekdays and one weekend day. Portion sizes and amount of food and beverage consumed were estimated by using household measures following the guidelines they were trained in before the assignment. A manual containing details and suggestions on how to keep dietary records was also given to each participant. Data from the food diaries were coded and analyzed using the INMUCAL program.³⁰ The nutrients

taken, identified by the INMUCAL program, were subsequently assigned scores in accordance with the Healthy Eating Index in order to indicate the degree of healthy eating [the Healthy Eating Index (HEI) was developed by the United States Department of Agriculture, Center for Nutrition and Public Policy.³¹ It was selected to determine the healthy eating behavior of early adolescent in this study because its design and application are congruent with the DRI for Thais and Nutrition Flag.] This index consists of 10 components, each of which carries a maximum score of ten and a minimum score of zero. The total HEI was calculated from the sum score of all components, yielding a total score of up to 100. The higher score represents a healthier eating behavior. For this study, the HEI components used consists of the degree to which a participant's diet complies with the Nutrition Flag and DRI for Thais in terms of 5 major food groups, 4 kinds of nutrients taken (total fat, cholesterol, sodium, and sugar), and the variety in participant's diet.

Results

Table 1 displays means, standard deviations, and the correlations among all of the variables studied. It should be noticed that all of the TPB constructs and the self-schema were significantly correlated with each other (r_s value from .203 with .475, $p < .01$), but neither of them correlated with healthy eating behavior ($p > .05$). A further analysis was performed separately for each gender, and the findings revealed a slightly different result between the girl group and the boy group. On the whole, healthy eating behavior in both the girl group and the boy group did not correlate with any of the other four variables. Among all of the predictive variables, self-schema in adolescent boys did not correlate with attitude and subjective norm as it did in the case of adolescent girls.

Table 1 Range of scores, Means, SDs, and Correlation matrix of all study variables (n = 191)

	1	2	3	4	5	Range of scores	Mean	SD
1 Behavior	-					29.20-69.06	45.83	7.14
2 Attitude	-.117	-				144-306	212.85	33.36
3 Subjective norm	-.003	.475**	-			37-125	85.42	17.94
4 Intention	.050	.303**	.443**	-		3-15	10.64	2.03
5 Self-schema	.098	.250**	.203**	.324**	-	0-6	2.48	1.45

** $p < .01$

Predictors of intention

Intention to eat healthily could be predicted by attitude and subjective norm. It can be seen in **Table 2** that attitude and subjective norm together accounted for 20.7% of the variance in all participants. Subjective norm was the predictor

of intention for all groups of participants (bs ranged from .043 to .053, $p < .001$). Attitude failed to predict intention for all participants ($b=.007$, $p > .05$) and for the boys group ($b=.003$, $p > .05$) but the girls' attitude did correlate significantly ($b=.011$, $p < .05$) with their intention to eat healthily.

Table 2 Multiple regression of intention to eat healthily on attitude and subjective norm

	Step	Variable entered	Model 1		Model 2	
			<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>
All participants	1	Attitude	.018***	.004	.007	.004
	2	Subjective Norm			.044***	.008
		R ²	.092		.207	
		R ² change	.092		.116***	
		F	19.097***		24.603***	
Girls group	1	Attitude	.022***	.005	.011*	.005
	2	Subjective Norm			.043***	.010
		R ²	.129		.237	
		R ² change	.129		.108***	
		F	19.485***		20.195***	
Boys group	1	Attitude	.016	.008	.003	.008
	2	Subjective Norm			.053***	.014***
		R ²	.070		.260	
		R ² change	.070		.190***	
		F	4.127*		9.466***	

* $p < .05$, *** $p < .001$

Predictors of behavior

Four-step hierarchical multiple regressions were generated to predict healthy eating behavior. Attitude and subjective norm were entered into the equation in the first step. Intention was entered in the second step, followed by self-schema. The interaction between intention and self-schema was added in the equation in the last step.

Since the computed correlation indexes showed no significant relationship between healthy eating behavior and all of the predictors studied, the regressions accordingly followed the same trend. The result from the final regression step showed that all of the variables selected, including the

interaction between intention and self-schema, had failed to predict healthy eating behavior in every group of participants (all P value > .05). However, in the third step of the equation, attitude showed a significant beta on behavior ($b = -.038$, $p < .05$) (see **Table 3**). When regression was computed separately for each gender, the addition of self-schema in the third step produced a slight increase in the explained variance for the boys group (R^2 change = .088, F change = 5.173, $p < .05$). Although the overall equation could not explain healthy eating behavior, the self-schema did explain about 9 percent of the variance of HEB in the boy group.

Table 3 Hierarchical multiple regression of HEB on intention, self-schema, and interaction of intention and self-schema in all participants, girl group, and boy group

Step	Variable entered	b_1	b_2	b_3	b_4
All participants					
1	Attitude	-.032	-.034	-.038*	-.039
	Subjective norm	.027	.014	.014	.012
2	Intention		.290	.175	-.217
3	Self-schema			.591	-1.363
4	Intention x Self-Schema				.179
R^2		.017	.023	.035	.041
R^2 change		.017	.005	.012	.006
F		1.644	1.440	1.689	1.565
Girl group					
1	Attitude	-.029	-.035	-.035	-.036
	Subjective norm	.019	-.039	-.038	-.016
2	Intention		.536	.522	.068
3	Self-schema			.062	-2.211
4	Intention x Self-Schema				.211
R^2		.015	.034	.034	.043
R^2 change		.015	.018	.000	.009
F		1.010	1.495	1.118	1.128
Boy group					
1	Attitude	-.037	-.036	-.045	-.046
	Subjective norm	.039	.050	.054	.053
2	Intention		.201	.531	-.694
3	Self-schema			1.683*	.930
4	Intention x Self-Schema				.068
R^2		.022	.024	.122	.112
R^2 change		.022	.002	.088*	.000
F		.594	.428	1.639	1.292

* $p < .05$

HEB = Healthg Eating behavior

Discussion

The findings in this study revealed many empirical issues related to the utility of the TPB in predicting healthy eating behavior. They also provided some interesting points regarding the effect of self-schema on behavior and on intention-behavior relation.

Many previous studies have suggested a strong effect of attitude on intention, while subjective norm often did not attain significance and imparted less influence on intention than attitude and perceived behavioral control did.^{23,32} In contrast to those findings, the results of this study showed a stronger effect on intention of subjective norm than the effect of attitude, the latter of which was found only in the girl group. Cultural differences between the populations in prior studies and the population in this study might account for this conflicting finding. In Thai culture, close parents' supervision and strong family relationship greatly affect the decision and behavior of children and adolescents. As most adolescents in this study had reported that they were living with their own parents and that the person who prepared meals for them was their mother, it is likely that they would generate their intention to eat healthily following their parents' agreement about what is healthy eating behavior.

The fact that the attitude of the adolescents in this study did not correlate with their intention might be because they did not value the benefits of healthy eating highly enough. Although they might believe that practicing healthy eating behavior would reward them with many health benefits, some of these benefits—such as being strong, being immune to illnesses, and being in a state of healthy growth—took a long time to be realized. The

adolescents might not have experienced any of these benefits themselves. As a result, their attitude did not crystallize into intention because they devalued the benefits.

On the other hand, attitude did affect intention in the adolescent girl group. This might be a consequence of their social development in their adolescence years.³³ Many studies suggest that early adolescence is the time when girls pay more attention to their body image, focusing on things like shapely figure, good looks, and healthy skin. As these descriptions of a good body image were explicitly stated in the questionnaire on attitude, the girls in this study might perceive healthy eating as a way to maintain their good body image. Thus, it is reasonable that adolescent girls intended to eat healthily because they believed that healthy eating would provide them with this benefit.

Congruent with the results from the correlation analysis, intention failed to predict healthy eating behavior of the adolescents in this study. This finding conflicts with the findings from most of the previous studies that used TPB to predict wide ranges of behavior.^{32,34-35} One explanation for the null relationship between intention and healthy eating behavior may be the instability of the intention. As Ajzen²⁹ has stated, temporal stability of behavioral intention is a necessary condition for an accurate behavioral prediction. In this study, the participants' intention might have not been stable enough. Participants were trained to record the food they took for two weeks after the measurement of their intention, but some of them completed their food diaries later than that—at the end of the third week. During this extended period, the participants might

encounter some contradictory information or some obstacles to eating healthily that may change their intention. Thus the original measure of intention might not be an accurate predictor of their eating behavior afterwards.

When adding self-schema and the interaction term of intention and self-schema in the equation, findings did not support the view that self-schema moderates the effect of intention on behavior in the domain. This conflicts with the findings from prior studies that schematic participants held a significantly higher correlation between intention and behavior.²⁶⁻²⁸

The lack of moderator effect of self-schema on intention-behavior relation in this study might relate to the maturity of the participants which in turn reflects a self-schema that is not salient in early adolescents. Many authors suggest the view that only persons who hold a salient self-schema in the domain should have numerous strategies to complete the behavior following their intention.^{18,26-28} The self-schema score of the adolescents in this study could not be considered as salient self-schema because the mean score was only 2.48 from the total score of 6. The adolescents may also have little knowledge about nutrition and have little experience in healthy eating behavior. Thus, they may have difficulty in resolving some barriers or recovering from a lapse in order to practice healthy eating behavior.

Although self-schema did not affect the relationship between intention and behavior in this study, it did show a slight effect on healthy eating behavior in adolescent boys. That this phenomenon was not seen in adolescent girls suggests that their self-schema might be generated from different bases. For adolescent girl, healthy eater self-schema might reflect the way they maintain their weight such as not eating some types of food. On the other hand, adolescent boys,

whose ideal body image is a big, muscular, and firm body, are likely to consume foods that give them more energy and richer nutrients. This may cause the healthy eating behavior of the adolescent boys to be closer to the DRI for Thais. Taken together, it is reasonable that the actual eating behavior of adolescent boys is congruent with their healthy eater schema while the eating behavior in adolescent girls is not.

Conclusion and Recommendations

The results of this study largely fail to support the “Theory of Planned Behavior” in predicting healthy eating behavior in early adolescents. Self-schema also failed to perform a moderator effect on intention-behavior relationship. Fortunately, findings suggest a slight effect of significant others in encouraging adolescents’ intention to practice healthy eating behavior. The slight association between healthy eater self-schema and the actual behavior was also found in adolescent boys. This suggests some interesting issues that should be of concern regarding promoting healthy eating behavior in early adolescents.

Strategies used in any kinds of promotion of healthy eating behavior in early adolescents should take into account the particular social environment that the adolescents live in, such as their parents and their caregivers. These significant others can act as models of healthy eating behavior, and should provide the adolescents with healthy foods. Strict school policy on the easy availability of unhealthy foods, such as confectionery snacks, may also improve adolescent eating behavior. Proper nutrition education in the school program is also recommended. These strategies not only encourage adolescents to practice healthy eating behavior but also generate healthy eater self-schema within their mind which, in turn, strengthens their healthy eating habit.

Screening for the adolescents' healthy eater self-schema may also give nurses and other health care providers some clues about their dietary adherence. Close supervision and more support might be provided to adolescents who hold a low level of healthy eater self-schema while their counterparts might be able to ease implementation of healthy eating behavior themselves, especially adolescent boys. As this is the first study to examine the effect of particular TPB constructs, intention and self-schema on healthy eating behavior in early adolescents, further studies are required to explain the conflicts between the findings in this study and the findings from prior studies, and to find any confounding factors hidden from all of these studies. Further studies are also needed to identify other factors that influence healthy eating behavior in early adolescents. Lastly, longitudinal studies are needed in order to confidently apply TPB and self-schema to issues on healthy eating behavior. They are needed because both the beliefs in the benefits of healthy eating behavior and the salient development of self-schema in this domain are generated most effectively when individuals are repeatedly, over time, engaging in the actions pertaining to this domain; hence, a longitudinal study should yield a clearer picture of the effects on healthy eating behavior, over an extended period of time, of the TPB constructs and self-schema.

Acknowledgement

The authors would like to thank all students who were willing to participate in this study as well as their parents who approved their participation. This study was financially supported by the Thai Health Promotion Foundation.

References

1. Buttriss J. Diet and nutritional status of 4-18-year-olds: Public health implications. **Nutrition Bulletin** 2000; 25: 209-17.
2. Phu-Aree T. **Iron and Nutritional Status, Physical and Cognitive Performance of School Adolescents in Nakhon Chaisri District, Nakhon Pathom Province** [Thesis]. Bangkok (Thailand): Mahidol University; 2001.
3. Sjöberg A, Hallberg L, Högglund D, Hulthén L. Meal pattern, food choice, nutrient intake and lifestyle factors in The Göteborg Adolescence Study. **Eur J Clin Nutr** 2003; 57: 1569-78.
4. Kirk TR, Burkill S, Cursiter M. Dietary fat reduction achieved by increasing consumption of starchy food-an intervention study. **Eur J Clin Nutr** 1997; 51: 445-61.
5. McKevith B. Nutritional aspects of cereals. **Nutrition Bulletin** 2004; 29: 111-42.
6. Renner E, Hermes M, Stracke H. Bone mineral density of adolescents as affected by calcium intake through milk and milk products. **Int Dairy Journal** 1998; 8: 759-64.
7. Richardson DP. The grain, the wholegrain and nothing but the grain: The science behind wholegrain and the reduce risk of heart disease and cancer. **Nutrition Bulletin** 2000; 25: 353-60.
8. Steinmetz KS, Potter JD. Vegetables, fruit, and cancer prevention: A review. **J Am Diet Assoc.** 1996; 96: 127-39.
9. Videon TM, Manning CK. Influences on adolescent eating patterns: The importance of family meals. **J Adolesc Health** 2003; 32: 365-73.
10. Johnson B, Hackett AF. Eating habits of 11-14-year-old school children living in less affluent areas of Liverpool, UK. **J Hum Nutr Diet** 1997; 10: 135-44.
11. Reynolds KD, Baranowski T, Bishop DB, Farris RP, Binkley D, Nicklas TA, et al. Patterns in child and adolescent consumption of fruit and vegetables: Effects of gender and ethnicity across four sites. **J Am Coll Nutr** 1999; 18(3): 248-54.
12. Dennison BA, Rockwell HL, Baker SL. Fruit and Vegetable Intake in Young Children. **J Am Coll Nutr** 1998; 17: 371-78.
13. French SA, Story M, Neumark-Sztainer D, Fulkerson JA, Hannan P. Fast food restaurant use among adolescents: associations with nutrient intake, food choices and behavioral and psychosocial variables. **Int J Obes** 2001; 25: 1823-33.

14. Kennedy CM. Childhood nutrition. **Annu Rev Nurs Res** 1998; 16: 3-38.
15. Chugh R, Puri S. Affluent adolescent girls of Delhi: eating and weight concerns. **Br J Nutr** 2001; 86: 535-42.
16. Martin AR, Nieto JMM, Jimenez MAR, Ruiz JPN, Vazquez MCD, Fernandez YC, et al. Unhealthy eating behaviour in adolescents. **Eur J Epidemiol** 1999; 15: 643-48.
17. Ajzen I. The theory of planned behavior. **Organ Behav Hum Decis Process** 1991; 50:179-211.
18. Markus H. Self-schemata and processing information about the self. **J Pers Soc Psychol** 1977; 35: 63-78.
19. Armitage CJ, Conner M. Efficacy of the Theory of Planned Behaviour: A meta-analytic review. **Br J Soc Psychol** 2001; 40: 471-99.
20. Pongkiatchai R. **A study of nutrient intake of high school students in Bangkok using semi-quantitative food frequency questionnaire** [Thesis]. Bangkok (Thailand): Mahidol University; 1999.
21. Markus H, Hamill R, Sentis KP. Thinking fat: Self-schemas for body weight and the processing of weight relevant information. **J Appl Soc Psychol** 1987; 17(1): 50-71.
22. Stein KF. The Self-Schema Model: A theoretical approach to the self-concept in eating disorders. **Arch Psychiatr Nurs** 1996; 10: 96-109.
23. Oygard L, Rise J. Predicting the intention to eat healthier food among young adults. **Health Educ Res** 1996; 11: 453-61.
24. Armitage CJ, Conner M. Distinguishing perceptions of control from self-efficacy: Predicting consumption of a low-fat diet using the Theory of Planned Behavior. **J Appl Soc Psychol** 1999; 29: 72-90.
25. Kendzierski D, Costello MC. Healthy eating self-schema and nutrition behavior. **J Appl Soc Psychol** 2004; 34: 2437-51.
26. Estabrooks P, Courneya KS. Relationships among self-schema, intention, and exercise behavior. **J Sport Exerc Psychol** 1997; 19: 156-68.
27. Kendzierski D, Whitaker D. The role of self-schema in linking intentions with behavior. **Pers Soc Psychol Bull** 1997; 23: 139-47.
28. Sheeran P, Orbell S. Self-schema and the theory of planned behaviour. **Eur J Soc Psychol** 2000; 30: 533-50.
29. Ajzen I. Constructing a TpB questionnaire: Conceptual and methodological considerations. [Online]. [cited 2006 Jun 22]. Available from: URL: <http://www.people.umass.edu/aizen/pdf/tpb.measurement.pdf>
30. INMUCAL [computer program]. Version 4. Nakhon Pathom, Thailand: Institute of Nutrition, Mahidol University; 2002.
31. The United States Department of Agriculture, Center for Nutrition and Public Policy. [cited 2006] The Healthy Eating Index [Online]. Available from : URL: <http://www.cnpp.usda.gov/HealthyEatingIndex.htm>
32. Gummeson L, Jonsson I, Conner M. Predicting intentions and behavior of Swedish 10-16-year-olds at breakfast. **Food Quality and Preference** 1997; 8: 297-306.
33. Steinberg L, Morris AS. Adolescent development. **Annu Rev Psychol** 2001; 52: 83-110.
34. Baker CW, Little TD, Brownell KD. Predicting adolescent eating and activity behaviors: The role of social norms and personal agency. **Health Psychol** 2003; 22: 189-98.
35. Berg C, Jonsson I, Conner M. Understanding choice of milk and bread for breakfast among Swedish children aged 11-15 years: an application of the Theory of Planned Behaviour. **Appetite** 2000; 34: 5-19.

การทำนายพฤติกรรมการรับประทานอาหารเพื่อสุขภาพที่ดีของวัยรุ่น โดยใช้ทัศนคติ ความคาดหวังของสังคม ความตั้งใจ และอัตมโนทัศน์เชิงโครงสร้าง

พรรณรัตน์ แสงเพิ่ม, รุจา ภูไพบูลย์, ฟองคำ ดิลกสกุลชัย, ธวัชชัย วรพงศธร, Karen F. Stein

บทคัดย่อ: พฤติกรรมการรับประทานอาหารของวัยรุ่นมีความเกี่ยวข้องกับภาวะเสี่ยงต่อการเกิดโรคเรื้อรังในวัยผู้ใหญ่ การวิจัยครั้งนี้มีวัตถุประสงค์ที่จะทำนายพฤติกรรมการรับประทานอาหารเพื่อสุขภาพที่ดีของวัยรุ่นตอนต้นในประเทศไทย โดยใช้ทัศนคติ ความคาดหวังของสังคม ความตั้งใจ และอัตมโนทัศน์เชิงโครงสร้าง

กลุ่มตัวอย่างเป็นวัยรุ่นที่กำลังศึกษาในชั้นมัธยมศึกษาปีที่ 1 ถึง 3 จำนวน 191 คน จากโรงเรียนมัธยมศึกษาในเขตกรุงเทพมหานคร ตัวแปรทัศนคติ ความคาดหวังของสังคม ความตั้งใจ และอัตมโนทัศน์เชิงโครงสร้าง ประเมินโดยใช้แบบสอบถาม พฤติกรรมการรับประทานอาหารเพื่อสุขภาพที่ดี ประเมินโดยใช้วิธีการเขียนบันทึกอาหารเป็นเวลา 3 วัน สารอาหารที่วิเคราะห์ได้จากบันทึกอาหารของกลุ่มตัวอย่างแต่ละคนจะถูกนำมาเปรียบเทียบกับคำแนะนำปริมาณสารอาหารที่ควรได้รับประจำวันสำหรับคนไทย พ.ศ. 2546 และธงโภชนาการ เพื่อนำมาคำนวณค่าดัชนีการรับประทานอาหารเพื่อสุขภาพที่ดี

ผลการศึกษาพบว่า ความคาดหวังของสังคมเป็นตัวแปรเดียวที่สามารถทำนายความตั้งใจได้ในกลุ่มวัยรุ่นโดยรวม ($p < .05$) ทัศนคติสามารถทำนายความตั้งใจได้ในกลุ่มวัยรุ่นหญิง ในขณะที่อัตมโนทัศน์เชิงโครงสร้างสามารถทำนายพฤติกรรมได้ในกลุ่มวัยรุ่นชาย

สรุปได้ว่า พฤติกรรมการรับประทานอาหารเพื่อสุขภาพที่ดีของวัยรุ่นตอนต้นเพศหญิงและเพศชายได้รับอิทธิพลจากปัจจัยที่แตกต่างกัน ดังนั้นในการส่งเสริมพฤติกรรมการรับประทานอาหารเพื่อสุขภาพที่ดีในวัยรุ่นหญิงหรือชาย จึงควรใช้วิธีการที่แตกต่างกัน

วารสารวิจัยทางการแพทย์ 2008; 12(2) 95-106

คำสำคัญ: วัยรุ่น การรับประทานอาหารเพื่อสุขภาพที่ดี ทฤษฎีแบบแผนสุขภาพอัตมโนทัศน์เชิงโครงสร้าง

พรรณรัตน์ แสงเพิ่ม R.N. นักศึกษาปริญญาเอก คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล ประเทศไทย
รุจา ภูไพบูลย์ R.N., D.N.S., ศาสตราจารย์ ภาควิชาพยาบาลศาสตร์ คณะแพทยศาสตร์โรงพยาบาล
รามาธิบดี มหาวิทยาลัยมหิดล ประเทศไทย

ฟองคำ ดิลกสกุลชัย R.N., Ph.D. รองศาสตราจารย์ คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล ประเทศไทย
ธวัชชัย วรพงศธร Ph.D. รองศาสตราจารย์ ภาควิชาชีวสถิติ คณะสาธารณสุขศาสตร์ มหาวิทยาลัยมหิดล
ประเทศไทย

Karen F.Stein R.N., Ph.D. ศาสตราจารย์ โรงเรียนพยาบาล มหาวิทยาลัยมิชิแกน, สหรัฐอเมริกา