

The Effect of College Students' Confidence in Nutrition Knowledge on Health-Related Behavioral Intentions : The Moderating Effect of Gender

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영양지식 확신도가 건강관련행동의도에 끼치는 영향력 검증: 성별의 조절효과를 중심으로

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Abstract

The trend of increasing consumption of less nutritious foods makes the college years a critical period to enlighten young adults regarding healthy living, nutrition knowledge, and physical activity. This current study aims (a) to examine the influence of confidence in nutrition knowledge on college students' health-related behavioral intentions, and (b) to investigate the moderating effect of gender on relationship between confidence in nutrition knowledge and college students' health-related behavioral intentions. The results provide empirical evidence of college students' health behaviors showing that confidence in nutrition knowledge leads to an increase in behavioral intention to eat healthy food and to involve in physical activities. Also, the greater influence of confidence in nutrition knowledge on behavioral intention to eat healthy food is found among females students than male students. This study contributes to university foodservice literature and operators by providing useful information.

Key words: Confidence in nutrition knowledge, Intention to eat healthy food/physical activities

I. INTRODUCTION

Adults obesity has become a serious social problem in the United States. Numerous evidence shows Americans are overweight, and prevalence of obesity rate has been increased over the twenty years (Casazza K *et al.* 2013; Lusk JL & Ellison B 2013). College students also face this issue. College students, who are aged from 18 to 24, con-

sume less nutrition properties compared to other ages, and show poor eating habits (Kish J *et al.* 2005).

Many college students have poor eating behaviors and recently it becomes getting worse. Lots of fast-food restaurants near campus may have negative influences on college students' eating habits (Joung HW *et al.* 2011; Kim HS 2013; Kim HS *et al.* 2012). Most college students enjoy fast

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foods which contain high fat and sodium (Kish J *et al.* 2005). According to Freisling H *et al.* (2010), most students do not consume fruit daily basis and half of them do not consume vegetable once a day. Proper nutrition is necessary for maintaining health, solving health problems, and keeping good health status and well being (Joung HW *et al.* 2011).

Previous studies argued that nutrition knowledge is one of important variable which may affect health behaviors. Seok HJ (2003) found the positive relation between nutrition knowledge and college students' dietary attitude, and it supports that increased nutrition knowledge can improve college students' dietary attitudes. Hwang KM (2010) supported the positive relationship between nutrition knowledge (especially trans fat) and proper dietary habits. In addition, many researchers argued that nutrition knowledge is an importance factor which can lead health behaviors (Kim YS 2008; Melson GJ 1980). Even though numerous research evidences supported gender differences in health behaviors (Boehm S *et al.* 1993; Sherman DJ 1992; Newell-Withrow C 1986), there is a dearth of research examining the role of gender on the relationship between confidence in nutrition knowledge and college students' health behavioral intention. This current study raises questions whether nutrition knowledge is a significant predictor on health behavioral intention, and whether gender affects the relationship between nutrition knowledge and health behavioral intentions. Thus, the purposes of this current study are (a) to examine the influence of confidence in nutrition knowledge on college students' health-related behavioral intentions, and (b) to investigate the moderating effect of gender on relationship between confidence in nutrition knowledge and college stu-

dents' health-related behavioral intentions.

II. LITERATURE REVIEW

Confidence in nutrition knowledge

Confidence in nutrition knowledge can be defined level of confidence in respondents' nutrition knowledge, and previous study denoted as Nutrition Confidence (Roamn S & Iacobucci D 2009). Bruce AR and Nies JI (1994) noted significant and direct relationships overall between nutrition knowledge and attitudes. Nayga RM (2005) found that greater nutrition knowledge was associated with favorable attitudes toward nutrition education. While nutrition knowledge of health professionals continues to be of research interest, researchers also have been drawn to study the extent of nutrition knowledge among various members of the general public. Despite the increased interest in nutrition, studies of what public believed about nutrition indicate a lack of knowledge about healthful dietary guidelines (Sjoberg A *et al.* 2003). According to the previous studies, confidence has a critical influence on behaviors (Roman S & Iacobucci D 2009). We assume that confidence in nutrition knowledge has an effect on health-related behavioral intentions.

College students' eating behaviors

Only 26.3% of college students eat at least five or more servings of fruits and vegetables per day, and over 20% report eating three or more serving per day of foods typically high in fat content (Freisling H *et al.* 2010). Students' eating behaviors such as having breakfast affect students' academic performance (Benton D & Sargent J 1992; Berkey CS *et al.* 2003). The assessments of the impact of the School Breakfast Program have

shown consistent increases in students' test scores and reductions in absenteeism and psychosocial problems (Pollitt E 1995). Students who skip breakfast are also less likely to self-report about their academic performance (Berkey CS *et al.* 2003; Schoenthaler SJ *et al.* 2000). Negative eating behaviors of college students are overeating/undereating, over-consumption of high fat, high calorie, excessive intake of empty calorie, excessive intake of empty calories through alcohol consumption, skipping breakfast, or diets deficient in adequate nutritional value (Davy SR *et al.* 2006). These poor eating habits may be due to lack of money, time, access to cooking facilities, and other barriers that may make healthy choices more difficult (Boehm S *et al.* 1993). According to Ogden CL *et al.* (2007), 20.5% of college students have been classified as being overweight based on body-mass index calculations.

College students' physical activities

Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure (Paffenbarger RS *et al.* 2001). Exercise is a subset of physical activity; it is planned, structured, and is a repetitive bodily movement done to improve or maintain one or more components of physical fitness. Decreased activity levels coupled with excessive dietary intake results in an imbalance of the input vs. output of energy, which culminates in obesity and increased risk of chronic disease. Physical activity, which used to be part of everyday existence, has now been shifted to a leisure time activity (Paffenbarger RS *et al.* 2001). On the whole, college students have become more sedentary, and this decreased activity has resulted in increased disease. A change in "survival needs" has resulted

in inactive lifestyles for many college students (Granger C *et al.* 2007). Evidence supporting the contribution of an escalating mismatch between activity and caloric intake to the ongoing epidemics of obesity, hypertension, diabetes, and atherosclerosis cardiovascular disease (CVD) is substantial (O'Keefe JH & Cordain L 2004).

The role of gender in health behaviors

Previous research have shown gender differences in health behaviors. Females were more likely to practice positive health behaviors than males (Boehm S *et al.* 1993; Sherman DJ 1992; Newell-Withrow C 1986). In the study of Wardle J *et al.* (2004), they reported that gender differences in food choices therefore appear to partly attributable to women's greater weight control involvement and partly to their stronger beliefs in healthy eating. Researchers found that males are associated with higher level of risky behaviors and lower level of healthy and hygiene practices than females (Kandrack MA, *et al.* 1991; Wardle J & Steptoe A, 1991). Furthermore, around 30 health behavior research such as wearing seatbelts, smoking, visiting physician confirmed that males showed fewer healthy choices than females (Courtenay WH *et al.* 2002).

In the study by Davy SR, *et al.* (2006), gender differences on eating habits, and nutrition self-assessment and beliefs of college students were investigated. In that study, significantly higher percentages of woman than men reported gaining nutrition knowledge from family and magazines and/or newspapers. Significantly higher percentages of women than men agree that they had too much sugar in their diets; that it is important to limit the amount of fat consumed to lose weight; and that they needed to lose weight. Jones M and

Nies MA (1996) also noted, however, that females were, on average, less physically-active than males. Although numerous research evidence supports that the differences in health behaviors between males and females, a lack of research has examined the moderating effect of gender on the relationship between nutritional confidence and health-related behavioral intention.

The following research hypotheses were addressed based on the literature review.

Hypothesis 1: College students with a high level of confidence in their nutrition knowledge will have a high level of behavioral intention for healthy food.

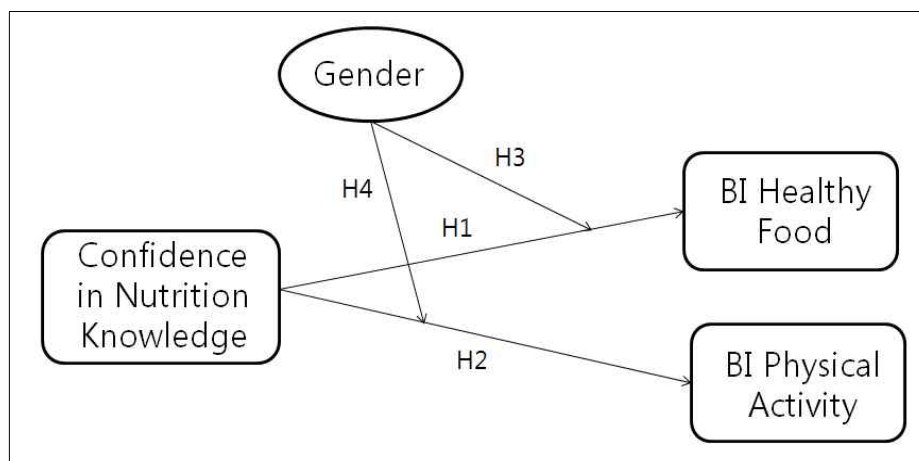
Hypothesis 2: College students with a high level of confidence in their nutrition knowledge will have a high level of behavioral intention for physical activities.

Hypothesis 3: Gender moderates the relationship between nutritional confidence and behavioral intention to eat healthy food.

Hypothesis 4: Gender moderates the relationship between nutritional confidence and behavioral intention to do physical activities.

III. METHODS

The survey instrument was rooted at the extensive literature review, and consisted of four parts. The first part of the study was designed to measure demographic information such as gender, age, and grade and respondents' eating behaviors and level of physical activities. In the second part, respondents rated the nutritional confidence on the 5-point Likert-type scale. This scale had three items and adapted from Burton S, Garretson JA and Velliquette AM (1999). This study included three items about the respondents' confidence in their nutrition knowledge, denoted as Nutrition Confidence. Respondents were asked to indicate to what degree they agreed with selected factors regarding food choice. For example, "I am knowledgeable about nutrition information". The third part measured behavioral intention to eat healthy foods and this scale has been adapted from Cronin JJ *et al.* (2000). This scale was consisted for three items using 5-point Likert scale. Finally, behavioral intention to do physical activities was consisted of three items based on 5-point Likert scale. (Cronin JJ *et al.* 2000).



<Fig. 1> The proposed model

A total 251 valid reponses were employed for analysis. Descriptive statistics were solicited in order to describe the respondents' socio-demographic characteristics, eating behaviors, and level of physical activities using frequencies and percentages. A measurement model was tested using Confirmatory Factor Analysis (CFA) by means of a "maximum likelihood" method. Three factors including confidence in nutrition knowledge, behavioral intention to eat healthy food, and behavioral intention to do physical activities were used as the latent variables. The multiple-item scales of constructs were subjected to a CFA to determine whether the manifest variables reflected the hypothesized latent variables. The adequacy of the items was assessed by composite reliability, convergent validity, and discriminant validity. Structural equation modeling (AMOS 18.0) was used in order to examine four hypotheses.

IV. RESULTS

1. Demographic characteristics

The socio-demographic characteristics of the respondents are shown in <Table 1>. The proportion

of the respondents for gender was similar: male (48.6%) and female (51.4%). Sixty eight % of the respondents were White and Asian (15.1%), Hispanic (12.4%), African-American (2.8%), and other (1.6%), respectively. The average age of respondents was 21.98 years old (SD = 3.783). The most frequently occurring grade group was sophomore (41.8%), followed by Junior (21.5%), senior (21.1%), graduate (11.2%) and freshman (4.4%).

2. Confirmatory factor analysis

Confirmatory factor analysis (CFA) indicated that the overall fit of measurement model was satisfactory (RMSEA = .07, CFI = .973, NFI = .952, IFI = .973, GFI = .928). Factor loadings (Table 3) revealed an acceptable level of reliability exceeding the cut-off point of 0.7 (Nunnally, 1978). The Cronbach's alpha used to measure the reliability of each construct: nutritional confidence (.832), behavioral intention to eat healthy eating (.829), and behavioral intention to do physical activities (.874). The average variance extracted (AVE) of constructs were ranged from .63 to .71. All constructs was exceeded 0.5, and it demonstrates that convergent validity was established. The compo-

<Table 1> Socio-demographic characteristics of the respondents

(n = 251)

Gender		Frequency	%	Ethnicity		Frequency	%
Male		122	48.6	White	171	68.1	
Female		129	51.4	Hispanic	31	12.4	
	Total	251	100	African-American	7	2.8	
				Asian	38	15.1	
				Others	4	1.6	
				Total	251	100	
Age Group				Grades			
Less than 20 years old		107	42.6	Freshman	11	4.4	
20 - 29 years old		110	43.8	Sophomore	105	41.8	
30 - 39 years old		20	8.0	Junior	54	21.5	
40 - 49 years old		11	4.4	Senior	53	21.1	
	Total	251	98.8	Graduate	28	11.2	
				Total	251	100	

<Table 2> Standardized parameter estimates and results of the hypothesis test

Paths	Hypothesized path	Standardized Coefficient Path	t-value	Results
Hypothesis 1	NC → BIE*	.479***	6.389	Supported
Hypothesis 2	NC → BIP*	.390***	5.338	Supported

(n=251)

*** $p < .001$

site reliabilities of constructs were ranged from .87 to .88. Finally, discriminant validity was assessed by comparing the AVE and the squared correlations between the two constructs of interest (Fornell and Larcker, 1981).

3. Hypotheses Testing

Hypothesis 1 suggested students' confidence in nutrition knowledge has a direct, positive impact on their behavioral intention to eat healthy food. As a results of testing Hypothesis 1 (Table 2), confidence in nutrition knowledge was found to have a significant relationship to participants' behavioral intentions to eat healthy food ($r = .479, p < .001$). Hypothesis 1 was supported by path analysis which showed a high level of confidence in nutrition knowledge were willing to eat healthy food.

Hypothesis 2 suggested students' confidence in nutrition knowledge has a direct, positive impact on their behavioral intention to do physical activities. As a results of testing Hypothesis 2, confidence in nutrition knowledge was found to have a significant relationship to participants' behavioral intentions to do physical activities ($r = .390, p < .001$). Hypothesis 2 was supported by path analysis which showed a high level of confidence in nutrition knowledge were willing to eat

do physical activities. The goodness-of-fit indices indicated that the proposed measurement model is in good agreement with the data well ($\chi^2 = 77.100, df = 25, RMSEA = .049, CFI = .987, NFI = .967, IFI = .988, GFI = .968$)

To comprehensively examine the moderating effect of gender, survey respondent were divided into male (N=122) and female (N=129). The structural invariance test aimed at examining whether the proposed structural model is perceived differently between the two groups. As <Table 3> shows, sufficient evidence supporting the moderating effect of gender on the behavioral intention to eat healthy food and intention to do physical activities was exemplified by the significant Chi-square [$\Delta\chi^2(2) = 15.102, p < .001$]. The goodness-of-fit indices indicated that the proposed structural model fits the data (full metric invariance: $\chi^2 = 104.709, df = 50, RMSEA = .055, CFI = .967, NFI = .929$; full path invariance: $\chi^2 = 119.811, df = 52, RMSEA = .055, CFI = .967, NFI = .929$).

The finding indicates that gender significantly moderate the path: confidence in nutrition knowledge and behavioral intention to eat healthy food [$\Delta\chi^2(1) = 12.759, p < .05$], supporting hypothesis 3. The findings indicate gender significantly moderates the path between confidence in nutritional

<Table 3> Testing for structural invariance across male and female students

	Chi-square	df	RMSEA	CFI	NFI
Full metric invariance	104.709	50	.055	.967	.929
Full path invariance	119.811	52	.055	.967	.929

The structural relationships are significantly different across the two groups

knowledge and behavioral intention to eat healthy food. Female students showed a higher level of intention to eat healthy foods than male students did. The moderating effect of gender was re-examined by independent samples t-test to check the mean difference between male and female in terms of behavioral intention to eat healthy food. t-test showed female students have higher level of intention to eat healthy food (male: 3.289 vs. female: 3.597, $p < .05$, $df=249$)

The result shows that gender does not significantly moderate the path: confidence in nutrition knowledge and behavioral intention to do physical activities [$\Delta\chi^2(1) = 2.014$ $p > .05$], not supporting hypothesis 4 (Table 3). The findings indicate gender does not significantly moderate the path between nutritional knowledge and behavioral intention to eat healthy food. Female students showed a higher level of intention to do physical activities than did male students. The moderating effect of gender was re-examined by independent samples t-test to check the mean difference between male and female in terms of behavioral intention to eat healthy food. T-test showed female students have higher level of intention to do physical activities (male: 3.817 vs. female: 3.873, $p > .05$).

V. DISCUSSION

This current study examined the influence of college students' confidence in nutrition knowledge on behavioral intention to eat healthy food and to

do physical activities. In addition, this current study investigated the moderating role of gender on the relationship between confidence in nutrition knowledge and behavioral intentions to eat healthy food and on the relationship between confidence in nutrition knowledge and behavioral intention to do physical activities.

The findings showed that more than half of the college students were eating fruit more than once per day, and about half of the respondents ate hamburger, hot dogs, or sausage more than once per day. Around thirty-four % of respondents exercise at least 20 minutes 3~4 time per week and more than half of the respondents did walk or bicycle for at least 30 minutes more than five times per week. The findings showed that confidence in nutrition knowledge has a significant relationship to participants' behavioral intentions to eat healthy food ($r = .479$, $p < .001$) and showed that confidence in nutrition knowledge have a significant relationship to participants' behavioral intentions to do physical activities ($r = .390$, $p < .001$). The results are consistent with the study showing that university-sponsored physical activities and health classes have the potential to influence students' exercise behaviors (Cardinal BJ *et al.* 2002). In addition, the results showed that gender moderates the relationship between confidence in nutrition knowledge and behavioral intention to eat healthy food.

This study has important implications. Despite the increased interest in nutrition, there is a lack

〈Table 4〉 Chi-square difference tests for paths

Hypothesis	Paths	Fit of the model with the path		Test of invariance $\Delta\chi^2$ -test	
		(baseline model) freely estimated	(nested model) fixed to be equal		
Hypothesis 3	NC → BIE	$\chi^2(48) = 83.893$	$\chi^2(49) = 96.652$	$\Delta\chi^2(1) - p < .05$	Supported
Hypothesis 4	NC → BIP	$\chi^2(48) = 83.893$	$\chi^2(49) = 85.907$	$\Delta\chi^2(1) - p > .05$	Not Supported

NC, nutritional confidence; BIE, behavioral intention to eat healthy food; BIP, behavioral intention to physical activities

of research concerning college students. This study emphasizes the importance of nutrition knowledge as a critical variable in health-related behavioral intentions. Furthermore, few research highlights the role of gender on the relationship between nutritional confidence and health-related behavioral intentions. Our finding indicates the importance of nutrition class at college. Nutrition class as a required subject at college is recommended because students' high degrees of confidence in nutrition knowledge show higher levels of intentions to eat healthy foods and to do physical activities. Also, the greater effect is expected among females students as the findings from the current study showed. In addition, university foodservice systems have changed as well with a higher use of buffets and satellite kitchens and less use of central plating. The educational background of employees has also changed resulting in an increase in number of skilled employees (cooks, catering assistants) and fewer unskilled employees in the kitchens. Increased focus on nutritional status of students has been observed from ward personnel with no connection to the kitchen. It is suggested that foodservice manager be responsible for the nutritional status of college students.

Although the results of this study suggested that confidence in nutrition knowledge had a significant effect on the behavioral intention to eat healthy food and do physical activities, this study has limitation. All the participants lived in Southwestern regions of the United states, so the results may not be representative of all college students. Thus, this study recommends continued re-examination of the issue using a larger sample size with more diverse respondents from various location in the U.S. to allow for generalizability to a larger population.

한글 초록

미국은 비만 등의 질병으로 인한 건강문제가 매우 심각한 실정이며, 미국 대학생들의 건강문제 역시 예외는 아니다. 본 연구는 대학생들의 건강에 영향을 끼치는 변인 탐색과 변인들간의 관계 규명을 통한 실증적 연구를 통해, 대학생 건강향상에 공헌을 하고자 한다. 본 연구에서는 대학생들의 식습관과 운동량에 대한 실증적 조사를 하였으며, 또한, 영양지식에 대한 확신도가 식습관과 운동여부에 끼치는 영향력을 검증하고, 더 나아가, 성별이 앞의 두 관계에 조절효과를 가지는지를 검증하였다. 미국 남서부에 위치한 대학교 재학생 251명의 설문지를 회수하여, 구조방정식 모형으로 결과를 분석 하였다. 그 결과 영양지식 확신도가 바람직한 식습관 의지와 운동 의지에 긍정적 영향을 끼침을 발견 하였다. 성별 비교 결과, 여학생이 남학생보다 영양지식 확신도가 바람직한 식습관에 끼치는 영향력이 더욱더 커짐을 검증하였다. 본 연구는 잘못된 건강 습관을 가지기 쉬운 대학생들의 경우 영양지식 확신도가 중요하다라는 사실을 발견함으로써, 대학운영관련자에게 영양교육의 중요성을 알리고, 또한 건강 관련 교양 수업이 대학생들의 건강을 위한 행동 의지에 도움을 줄 수 있음을 제안한다.

REFERENCES

- Benton D & Sargent J (1992). Breakfast, blood glucose and memory. *Biological Psychology* 33: 207-210.
- Berkey CS, Rockett HRH, Gillman MW, Field AE & Colditz GA (2003). Longitudinal study of skipping breakfast and weight change in adolescents. *International Journal of Obesity* 27:1258-1266.
- Boehm S, Selves EJ, Raleigh E, Ronis D, Butler PM & Jacobs M (1993). College students' per-

- ception of vulnerability/susceptibility and desire for health information. *Patient Education and Counseling* 21:77-87.
- Boehm S, Selves EJ, Raleigh E, Ronis D, Butler PM & Jacobs M (1993). College students' perception of vulnerability/susceptibility and desire for health information. *Patient Education and Counseling* 21:77-87.
- Bruce AR & Nies JI (1994). Nutrition: what hospitality students think and know. *Journal of Hospitality & Tourism Research* 18(1):121-138.
- Cardinal BJ, Jacques KM & Levy SS (2002). Evaluation of university course aimed at promoting exercise behavior. *Journal of sports medicine and physical fitness* 42:113-119.
- Casazza K, Fontaine KR., Astrup A, Birch LL, Brown AW, Brown MM, Durant N, Dutton G, Foster EM, Heymsfield SB, McIver K, Mehta T, Menachemi N, Newby PK, Pate R, Rolls BJ, Sen B, Smith DL, Thomas DM, & Allison DB (2013). Myths, presumptions, and facts about obesity. *New England Journal of Medicine*, 368:446 - 454.
- Courtenay WH, McCreary DR & Merighi JR (2002). Gender and ethnic differences in health beliefs and behaviors. *Journal of health psychology* 7:219-231.
- Cronin JJ, Brady MK, Tomas G & Hulta M (2000). Assessing the effect of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *Journal of Retailing* 76(2):193-218.
- Davy SR, Benes BA & Driskell JA (2006). Sex differences in dieting trends, eating habits, and nutrition beliefs of a group of midwestern college students. *Journal of the American Dietetic Association* 106(10):1673-1677.
- Fornell C & Larcker DF (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research* 318(1):9-50.
- Freisling H, Haas K & Elmadfa I (2010). Mass media nutrition information sources and associations with fruit and vegetable consumption among adolescents. *Public Health Nutrition* 13:269-275.
- Granger C, Senauer B & Runge CF (2007). An analysis of nutritional improvements and student food choices in a school lunch program. *Journal of Consumer Affairs* 41(2):265-284.
- Hwang KM (2010). A study on the correlation of nutrition labeling awareness, dietary habit and trans fat knowledge in the upper grade elementary students living in Incheo. Inha University thesis. Department of Home Economics Education.
- Jones M & Nies MA (1996). The relationship of perceived benefits of and barriers to reported exercise in older African American women. *Public Health Nursing* 13:151-158.
- Joung HW, Kim HS, Choi EK, Kang HO & Goh BK (2011). University foodservice in South Korea: A study of comparison between university-operated restaurant and external foodservice contractors. *Journal of Foodservice Business Research* 14:405-413.
- Kandrack MA, Grant KR & Segall A (1991). Gender differences in health related behaviour: some unanswered questions. *Social science & medicine* 32:579-590.
- Kim HS (2013). Study on relationship between satisfaction, loyalty, and subjective quality of life: Generation Y consumers in university foodservice. *Journal of the Korean Data Analysis Society* 15(1):489-500.

- Kim HS, Lee SM & Yuan JJ (2012). Assessing college students' satisfaction with university foodservice. *Journal of Foodservice Business Research* 15:39-48.
- Kim YS (2008). The effect of food behavior and nutrition knowledge on health condition and academic achievement in middle-school student in Gyeonggi province. Konkuk University thesis. Department of Nutrition Education Graduate School.
- Kish J, Leino EV & Silverman MM (2005). Aspects of suicidal behavior, depression, and treatment in college students: results from the spring 2000 national college health assessment survey. *Suicide and Life-Threat Behavior* 35:3-13.
- Lusk JL & Ellison B (2013). Who is to Blame for the Rise in Obesity?. *Appetite*. 68(1):14-20.
- Melson GJ (1980). The internal environment nutrition: Family and environment an ecosystem perspective. Bergess. P.C.
- Nayga RM (2005). Nutrition knowledge, gender, and food label use. *Journal of Consumer Affairs* 34(1):97-112.
- Newell-Withrow C (1986). Identifying health-seeking behaviors: A study of adolescents. *Adolescence* 21(83):641-658.
- Nunnally JC (1978). *Psychometric Theory*. New York, NY: McGraw-Hill.
- Ogden CL, Carroll MD, McDowell MA, & Flegal KM (2007). Obesity among adults in the United States--No statistically significant change since 2003-2004. Hyattsville; MD: National Center for Health Statistics.
- O'Keefe JH & Cordain L (2004). Cardiovascular disease resulting from a diet and lifestyle at odds with our Paleolithic genome: How to become a 21st century hunter-gatherer. *Mayo Clinic Procedures* 70:101-108.
- Paffenbarger RS, Blair SN & Lee I (2001). A history of physical activity, cardiovascular health and longevity: The scientific contributions of Jeremy N. Morris, DSc, DPH, FRCP. *International Journal of Epidemiology* 30:1184-1192.
- Pollitt E (1995). Does breakfast make a difference in school? *Journal of American Dietetics Association* 95(10):1134-1140.
- Roman S & Iacobucci D (2009). Antecedents and consequences of adaptive selling confidence and behavior: a dyadic analysis of salespeople and their customers. *Journal of Academy market Science* 38:363-382.
- Schoenthaler SJ, Bier ID, Young K, Nichols D & Janssens S (2000). The effect of vitamin-mineral supplementation on the intelligence of American schoolchildren: A randomized, double-blind placebo-controlled trial. *Journal of Alternative & Complementary Medicine* 6(1):19-29.
- Seok HJ (2004). Studies on nutritional knowledge, food habits and nutritional status of college students in Gyeonggi area. MyongJi University thesis. Department of Foods and Nutrition.
- Sherman DJ (1992). The neglected health care needs of street youth. *Public Health Reports* 107(4):434-440.
- Sjoberg A, Hallberg L, Hoglung D & Hulthen L (2003). Meal pattern, food choice, nutrient intake and lifestyle factors in the Goteborg adolescent study. *European Journal of Clinical Nutrition* 57:1569-1578.
- Wardle J, Haase AM, Steptoe A, Nillapun M, Jonwutiwes K & Bellisle F (2004). Gender differences in food choice: The contribution of health belief and dieting. *The Society of Behavioral Medicine*. 27(2):107-116.

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