PARENT-CHILD FAT INTAKE CORRELATION IN CHINA, EXPLANATION FROM SOCIAL COGNITIVE THEORY

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ABSTRACT

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Human development like physical growth, cognitive development, and related health status could be shaped by numerous influential determinants from family, school, and other institutional systems. Social cognitive theory proposed a model of triadic reciprocal determinism including behavior, cognition and other personal factors, and environmental influences (Bandura, 1989). This study first examined the correlation between parent-child fat intake, and then investigated the factors associated with observed correlation using a model derived from social cognitive theory. Data came from a household-based survey of 913 groups of father and daughters, 1240 groups of father and sons, 902 groups of mother and daughters, 1246 groups of mother and sons in nine provinces. Respondents reported all food consumption on a 24-hour basis for three consecutive days. Parents provided their dietary knowledge, food preference and activity preference as social cognitive covariates. Household income and parental education level were included in the model for socioeconomic controlling. The parent-child correlations were strong (0.87-0.88) for fat intake. The strength of cognitive factors that were associated with observed correlations varied in each gender group.

Key Words: parent-child fat intake correlation, social cognitive factors, socioeconomic status, child obesity, gender difference

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INTRODUCTION

Under its Reform and Opening Up policy, China allowed several western fast food companies like McDonalds and KFC to enter the market around 1987. Since then they have become very popular. Numerous families were attracted by the warm and fun atmosphere created by those restaurants. Meanwhile, more and more families cooked in a westernized way, which is handy but high in calorie and fat. With the rapid development of communication technology, people now prefer staying in front of computer and television to going outside. Thus, the prevalence of obesity in China has become a problem. “Obese family” has been very common in China: many parents and children are fat.

Children develop their dietary behavior that might track into their adulthood (Mikkila, Rasanen, Raitakari, Pietinen, & Viikari, 2005; Wang, Bentley, Zhai, &Popkin, 2002). It is therefore crucial to advocate healthy eating among young people to lower incidence of chronic diseases in later life, especially obesity, hypertension, heart disease etc. Social epidemiologists suggested public education towards parents on healthy behaviors to prevent children from adopting bad habits. Once people develop habitual ways of thinking and behavior, they most times would ignore the informative aspects of their environment (Bandura, 1986). It seems that parents ought to set a good model for their children in both thinking and behavior to effectively eradicate unhealthy habits. The objective of this study is to examine familial fat intake correlation in China and the role of social cognitive and socioeconomic factors in it based on a survey with large sample size.

CHAPTER 1

Familial Dietary Correlation

Early epidemiological studies reported familial aggregation of risk factors related to coronary heart diseases. Since it was widely known that parents would have a great influence on children's dietary intake, nutritionists organized several survey studies to investigate parent-child nutrient association. Several researchers (Laskarzewski, 1980; Perusse, 1988; Oliveria, 1992) found weak or moderate results concerning dietary correlation in American families. More recently, social epidemiologists in the United States (Beydoun, 2009), the Netherlands (Feunekes, 1997), and France (Vauthier, 1996) used large representative surveys, but they did not find strong correlations between parental and children's dietary intake. These recent studies used gender as the stratification factor to investigate gender difference in dietary correlation. Results varied in four gender groups, father-son, father-daughter, mother-son, and mother-daughter.

Overall, familial dietary correlation in United States and Europe is not as strong as common sense would expect and children's eating behaviors are impacted by multiple factors. In the United States, the family merely plays a partial role in their eating behavior (Wang, et al, 2011). Most students would have a least one meal with their classmates in school; thus peer influence would be equally important. Furthermore, children's desires to be independent start to increase radically when they grow older. Peer influence on eating behavior could even exceed impacts from family.

In China, most elementary and high schools do not provide students with lunch. Children often purchase carbohydrate snacks with limited money, and they usually do not

share the food with their classmates (Wang, Xuetai, 2006). Most teenagers and young adults still tend to be dependent on their parents. Due to different social environments, dietary correlation in Chinese families might be stronger than in American families.

Social Cognitive Theory

In social cognitive view, human functioning is explained by a model of triadic reciprocality in which behavior, cognitive and other personal factors, and environmental events all operate as interacting determinants of each other (Bandura, 1986). Similarly, children adopt eating behavior based on their food preference, parental education and control, and access to foods in familial environment. At different ages, children develop their eating cognition in diverse ways.

People can comprehend many events and generate new knowledge by symbolically manipulating the information derived from personal and vicarious experiences (Bandura, 1986). Furthermore, human thought furnishes a vast store of knowledge in the form of abstract representations of experiences (Bandura, 1986). From the time older infants have access to various foods, they begin to absorb many pieces of information. Young children might attempt to eat anything they thought is edible. They probably end-up with bad tastes and warning from their parents and older relatives. The influence of numerous trials could be partially determinative for their future behaviors: the unhappy experience will remain lasting effects or be forgotten by the next day. However, the gradual aggregation of information from endless trials and other people grants children the ability to understand how to eat and what to eat. Thus, early development of children's eating behavior is mainly the abstract representation of their experiences in foods. In this period of time, the external factors play a

pivotal role in the sources of information children would get for their abstract representation. For example, if parents are fond of fast food and mention fast food is not bad for health repetitively, children would form one piece of information in their thought: I need fast food, or fast food is okay.

After abilities granted by human thoughts become routinized through repeated execution, they are performed in recurring situations without requiring prior thought guides, unless something goes in the wrong direction (Bandura, 1986). As children grow older, they are no longer under strict control from their parents and have access to more kinds of foods. However, children at this time have developed a very mature abstract representation of their previous eating experiences. For example, they have eaten fast food meals numerous times. If one had to think before carrying out every routine activity, it would consume most of one's attention and create a monotonously dull inner life (Bandura, 1986). As children grow older, they start to develop their food preference. For example, they would be very upset if their request for fast food is refused.

Once people adopt habitual ways of thinking and behavior, they often pay little attention to the informative aspects of their environment that call for discerning responsiveness (Abelson, 1981; M. Bandura, Langer, & Chanowitz, 1984; Chanowitz & Langer, 1980). As children enter young adulthood, they may already prefer fast food to other kind of foods. Suggestions and warnings from their parents, classmates, and teachers might only have limited influence on their eating. Moreover, high consumption of fast food mainly triggers chronic diseases, which are revealed in their later life. Children could not get the self-vigilance promptly. It is therefore not strange that many obese children continue

to keep bad eating habits, even though they have been educated and even warned many times.

The cognitive regulators part in Bandura's social cognitive theory explains the development of children's eating behaviors explicitly. Bandura expanded his social cognitive theory into the area of health promotion. Health knowledge, incentive systems, self-regulatory capabilities and socio-structural supports all influence the development of child health-related habits (Bandura 1998). It is already known that abstract representation is from personal experiences which are consisted of thinking and behavior. In the perspective of health promotion, health knowledge is the abstract representation of how people think about healthy behaviors, and self-regulatory capabilities is the abstract representation of how people act based on their health knowledge. The objective of this study is to test whether "thinking and behavior" are equally influential in parent-child fat intake correlation.

CHAPTER 2

Hypotheses

Based on the literature, this study has three hypotheses. First, familial fat intake between parents and children is highly correlated in China. Second, aforementioned review indicated gender difference in parent-child dietary correlation, so this study hypothesizes that mothers' influence on child's fat intake is more important than fathers'. Finally, Bandura's social cognitive theory stated that both health knowledge and behavior influence the development of health-related habits, but it did not analyze which one is more important. This study hypothesizes that parental dietary behavior is more influential than parental dietary beliefs on their children's fat intake.

Data, Measures, and Statistical Methods

Data and Sample

The China Health and Nutrition Survey (CHNS), is an international collaborative project between the Carolina Population Center at the University of North Carolina at Chapel Hill and the National Institute of Nutrition and Food Safety at the Chinese Center for Disease Control and Prevention. The survey conducted in 2009 used a multistage, random cluster process to draw a sample of about 4400 households with a total of 26,000 individuals in nine provinces that vary substantially in geography, economic development, public resources, and health indicators. The nine provinces that run northeast to southwest are, Heilongjiang, Liaoning, Jiangsu, Shandong, Henan, Hubei, Hunan, Guizhou, and Guangxi.

All household members (6-90 years) provided individual data on dietary intake, body composition, blood pressure, health history, and health-related behaviors. The three

consecutive days during which detailed household food consumption data have been collected were randomly allocated from Monday to Sunday and are almost equally balanced across the seven days of the week for each sampling unit. Individual dietary intake for the same three consecutive days has been surveyed for all individuals in the household. Each individual reported all food consumed both away and at home on a 24-hour recall basis (China Health and Nutrition Survey, 2009).

This study used gender as the stratification factor to generate four subsamples labeled as father-daughter, father-son, mother-daughter, and mother-son for analysis. Final analyzed subsamples in this study included 913 groups of father and daughters, 1240 groups of father and sons, 902 groups of mother and daughters, 1246 groups of mother and sons living in the same household who provided detailed information about their eating behaviors.

Dependent Variable

The dependent variable in this study is children's fat intake (g/Kcal) consumption from aforementioned three-day 24-hour food recall. Fat intake was selected because of their importance in development of obesity. Child fat intake was log transformed for normal distribution assumption.

Other Covariates

To assess parental thinking and behavior in the social cognitive model, this study developed a grading system for parental dietary knowledge, and food and activity preference. Respondents in CHNS provided opinions on five questions concerning healthy eating such as choosing a diet with a lot of fresh fruits and vegetables is good for one's health. Parents were given 0 to 2 points on each question according to their correct understanding about diet

(right=2, neutral=1, wrong=0). Similarly, parents in CHNS also answered their preference to five representative foods in daily life, such as fast foods, salty snack foods, fruits, etc. Parents were given 0 to 2 points according to preferences to either healthy or unhealthy foods (dislike healthy food=0, neutral to healthy food=1, or like healthy food=2). Both variables were regarded as continuous variables in this study.

Studies in nutritional epidemiology indicated that it is crucial to control body weight and physical activity to analyze nutrient research. This study included Body Mass Index (BMI) of both parents and children as covariates. Parents in the survey provided their preference to three kinds of activities: walking and Tai Chi, Sports, and watching TV. Parents were graded from 0-3 in each question according to preferences to either good or bad activities (did not participate in good activity=0, dislike good activity=1, neutral to good activity=2, or like good activity=3). Appendix A and B present the detailed questions for dietary knowledge, and food and activity preference.

Other covariates of parents were smoking (how many cigarettes did you smoke per day), drinking (how often did you drink beer or any alcoholic beverage), television hours (how many minutes did you spend in watching TV per week), education level (years), marital status (1=married, 0=other), household income, residence (1=urban, 0=rural). In addition, children's age was included in the models.

Statistical Methods

Ordinary Least Squares (OLS) regression was run to predict fat intake of both parents and children. Covariates with insignificant correlation ($p>0.05$) in all four models were deleted. Another OLS regression was used to evaluate parent-child fat intake correlation in

China. Assumptions for OLS regression (correct specification, strict exogeneity, no linear dependence, spherical errors, and normality) were all examined before statistical analysis.

Results

Sample Descriptive Statistic

Table 3 Demographic Characteristics of Study Sample About Here

The basic demographic characteristics of the study sample are presented in Table 1. Overall, fathers and mothers were very close in age (55.9 to 55.1), fat intake (3.32 to 3.35), diet knowledge, diet preference, activity preference, television hours, residence (urban/rural with approximately 25 percent living in urban areas), education and income. Chinese men obviously smoke (3.5 to 1.3) and drink (0.8 to 0.3) more than Chinese women. Among children, Log fat intake and BMI did not vary much by gender (sons 1.09, daughter 1.05). But sons were approximately two years older than daughters. Overall, the mean age of children in CHNS was from 18.7 to 20.8, because many adult children in China still lived with their parents.

Parent-child Fat Intake Correlation

Table 4-8 Correlations About Here

Tables 2-6 report correlations of each covariate to fat intake for each of the parent and child subgroups. Results for four groups show that all the covariates are significantly correlated to at least one parental- child fat intake. Parent-child correlations in fat intake range from 0.865 for mother-daughter groups (Table 3) to 0.872 for father-son groups (Table 4), which means those models could explain 74.8-76.0% (R-squared) variation in children's fat intake. In terms of strength of correlations of fat intake and other covariates, four groups are very close. Compared to son's BMI, daughters BMI is much more correlated to both

mother's (0.073 to 0.045, Tables 3 and 2) and father's fat intake (0.058 to 0.027, Table 5 and 4). Overall, parent-child fat intake correlation is found to be strong (between 0.865 and 0.872, Table 6), and both father and mother play an equally important role in their children's daily fat consumption.

Parent-child Fat Intake Correlation: Overall Analysis

Table 9-12 Regression Coefficients About Here

Tables 7-10 report beta regression coefficients of each covariate to children's fat intake for the four subgroups. Overall, log coefficients of parental fat intake on child's fat intake are all significant (mother-son 0.330, Table 7; mother-daughter, 0.340, Table 8; father-son, 0.330, Table 9 and father-daughter, 0.380, Table 10). Since child fat intake was log transformed, we can calculate that as a mother consumes one more unit fat, fat intake of her son and her daughter will be predicted to increase by $e^{0.33}$, 139% and $e^{0.34}$, 141% (Tables 7 and 8). In father-son and father-daughter groups, the numbers are $e^{0.33}$, 139% and $e^{0.38}$, 146% (Tables 9 and 10). The number of covariates with significant coefficient is different across four groups: seven (marital status, smoking, drinking, television hours, and BMI of mothers, and age and BMI of sons) in mother-son groups (Table 7), six (diet knowledge, smoking, television hours, and BMI of mothers, and age and BMI of daughters) in mother-daughter groups (Table 8), one (activity preference of fathers) in father-son groups (Table 9), and four (diet knowledge, diet preference, smoking, and television hours of fathers) in father-daughter groups (Table 10).

It thus indicates potential gender differences. Girls are more sensitive to their parents' thinking and behavior, and mothers exert more influence on their children's fat consumption

than fathers. Regression coefficients of diet knowledge (0.012, 0.021 in Table 8, 10) and preference (-0.010, Table 10) are found to be significant in groups with daughters. When examining the influence of parental BMI, this study found that mothers' higher BMI is predicted to reduce their daughter's fat intake but increase their son's fat intake. Parental smoking has interesting impacts on children's fat intake. If parents smoke more cigarettes, daughters are less likely to have higher fat intake (-0.007, -0.003 in Table 8, 10). But the higher frequency of maternal smoking probably causes their son to consume more fat (0.005, Table 7). In terms of children's demographic characteristics, their BMI and age only have significant influence in the models with mothers. As children grow older, girls tend to consume more fat (0.006, Table 8), but boys attempt to reduce their fat intake (-0.003, Table 7). Even with higher BMI, girls are predicted to have higher fat intake (0.011, Table 8) On the contrary, when discerning their BMI is growing, boys tend to consume less fat (-0.009, Table 7).

When examining the influences of parental thinking and behavior, this study found the magnitude of behavior overshadows that of thinking according to the significance of beta regression coefficients. If parents tend to consume more fat, their children will have higher fat intake. Moreover, girls whose father has healthier food preference, consume less fat (-0.010 in Table 10). Better parental diet knowledge, however, triggers children's higher fat intake in two groups. For example, fathers with better diet knowledge are predicted to have daughters with more fat consumption (0.021, Table 10). Girls whose mother understands healthy diet better, are more likely to have higher fat intake (0.012, Table8). It is well known that television is a main reason for the prevalence of obesity. Compared with children with

parents spending more time in television, those with parents spending less time in television consume less fat. Other parental health-related behaviors such as smoking and drinking have insignificant influence on children's fat intake in most groups. In addition, parental age does not play an important role in children's fat intake.

Variables indicating potential health disparity are mostly tested to be insignificant. The influence of household income and parental education is predicted to be very small. It is also shown that whether parents live in urban or rural area makes no difference for their children's fat intake. When examining influence of parental marital status, this study found that sons with a married mother are more likely to consume fat.

Discussion

To my knowledge, this study is the first attempt to examine parent-child fat intake in China using a survey with large sample size. It is also the first evaluation of social cognitive theory in explaining children's fat intake in China.

This study has some main intriguing findings. First, fat-intake correlation in China is very strong. Parental fat intake plays a pivotal role in the development of children consumption of fat. Possibly, Chinese children are more physically and psychologically dependent on their parents. Parents who have healthy food preference are more likely to influence their children to consume lower fat. However, parental knowledge in healthy diet has an inverse impact on their children's fat intake. It is well known that "it is easier said than done." Social cognitive theory indicated that accumulation of abstract representation from other's thinking and behavior could result in routinized behavior. As for health promotion, Bandura further strengthened the importance of health knowledge and self-regulatory

capabilities. In terms of eating behavior, acting is predicted to be more influential than thinking. Thus parents in China are especially recommended to have a healthy dietary behavior instead of "only having a healthy dietary knowledge". This study indicates that children are more likely to be influenced by what their parents truly eat.

Second, fat-intake correlation in China is gender sensitive. Daughters are more likely to be influenced by extern factors. Possibly, daughters are more dependent on their parents and spend more time with their family. On the contrary, girls are less sensitive to their own conditions. As their BMI grows higher, daughters even consume higher fat. This study recommends parents to pay more attention to their daughter's dietary behaviors. In terms of maternal and paternal influences, mothers are more likely to discern the changes of age, BMI, etc. It is very understandable that females are normally more attentive.

Finally, healthy disparity in fat intake correlation is weak in China. Possibly, foods with higher fat are still expensive in Chinese markets. Moreover, people with lower education might keep traditional Chinese cook style, which is comparatively healthier than western fast food.

This study had several strengths. First, I used a survey with large sample size to process analysis on parent-child fat intake. Second, social cognitive theory provided an explicit image of the development of children's eating behaviors. Finally, this study included gender as a moderator and other multiple covariates to test potential differences and significance.

Despite its strengths, this study had its major limitations. First, China Nutrition and Health Survey only included nine of thirty-four provinces in China. Although it contains the

main areas in China that could indicate the general image, eating behaviors of most minorities could not be investigated. Second, selection of groups was based on the head of household (either father or mother). It is highly possible that this study neglected those children who lived with their grandparents or lived alone. And one parent might be linked to several children. In China, family planning greatly reduces the incidence of that condition, but this study did not do any analyses to adjust it. Third, I did not check potential interactive relations due to the great volume of data analyses. Finally, this study relied on nutrient calculation from 24-hour recall, which could not accurately indicate one's true food consumption. Possible recall bias and poor blinding could greatly lower the precision of nutrient calculation.

In conclusion, this study found strong correlations in parent-child fat intake in China. Parental diet-related knowledge was predicted to be less instructive in the development of children's fat intake than parental true behavior and food preference. The results also indicated great gender difference, which suggest parents to observe their daughter's dietary behavior more closely. Future studies could attempt to find interaction of parental thinking and behavior and pick up one gender group to process more detailed analysis.

APPENDICES

Appendix A

Table 1 Grading for Parental Diet Knowledge and Preference

Diet Knowledge	Disagree	Neutral	Agree
Choosing a diet with a lot of fresh fruits and vegetables is good for one's health	0	1	2
Eating a lot of sugar is good for one's health	2	1	0
Eating a variety of foods is good for one's health	0	1	2
Choosing a diet high in fat is good for one's health	2	1	0
Reducing the amount of fatty meat and animal fat in the diet is good for one's health	0	1	2
Diet Preference	Dislike	Neutral	Like
Fast food (KFC, pizza, hamburgers, etc.)	2	1	0
Salty snack foods (potato chips, pretzels, French fries, etc.)	2	1	0
Fruits	0	1	2
Vegetables	0	1	2
Soft drinks and sugared fruit drinks	2	1	0

Appendix B

Table 2 Grading for Parental Activity Preference

Diet Preference	Dislike very much	Dislike	Neutral	Like	Like very much	Did not Participate
Tai Chi and Walking	1	1	2	3	3	0
Sports (ping pong, badminton, tennis, soccer, basketball, and Volleyball)	1	1	2	3	3	0
watching TV	2	2	1	0	0	3

Table 3 Demographic Characteristics of Study Sample

	Male (father and son)	Female (mother and daughter)
Parental Characteristics		
Age (year)	55.9 (12.4)	55.1 (12.1)
Fat intake (g/kcal)	3.32 (1.31)	3.35 (1.32)
BMI (kg/$\mathbf{m^2}$)	22.2 (4.2)	21.1 (4.6)
Diet Knowledge	8.1 (2.0)	8.1 (2.0)
Food Preference	7.9 (1.9)	8.0 (1.9)
Activity Preference	7.3 (1.6)	7.3 (1.6)
Residence (1=urban, 0=rural)	0.24 (0.43)	0.25 (0.43)
Marital Status (1=married, 0=other)	0.94 (0.24)	0.88 (0.32)
Smoking (number of cigarettes)	3.5 (8.0)	1.33 (4.9)
Drinking (frequency of drinking)	0.8 (1.55)	0.33 (1.03)
Television (minute)	169 (198)	170 (199)
Income (Yuan)	33339 (41683)	32913(41288)
Education (year)	17.7 (8.8)	17.4 (9.0)
Children's Characteristics		
Log Fat Intake (g/kcal)	1.09 (0.48)	1.05 (0.53)
BMI (kg/$\mathbf{m^2}$)	17.0 (3.2)	16.7 (3.1)
Age (year)	20.8 (12.1)	18.7 (11.2)

Table 4 Correlations in Mother-son Subsample

	Mother fat intake	Log Son fat intake
Log Son fat intake	0.871*	
Mother BMI	0.049*	0.012
Mother diet knowledge	0.096*	0.116*
Mother food preference	0.034*	-0.030
Mother activity preference	0.034*	0.042
Mother marital status	-0.021*	-0.002
Mother smoking	0.027*	0.002
Mother drinking	0.018*	0.032*
Mother TV	0.044*	0.012
Mother residence	0.155*	0.114*
Mother income	0.087*	0.115*
Mother education	0.120*	0.051*
Son BMI	0.045*	-0.020*
Mother age	-0.008*	-0.020*
Son age	0.040*	0.016
Mother fat intake		0.871*

(*p<0.05)

Table 5 Correlations in Mother-daughter Subsample

	Mother fat intake	Log Daughter fat intake
Log Daughter fat intake	0.865*	
Mother BMI	0.059*	0.009
Mother diet knowledge	0.010*	0.143*
Mother food preference	0.038*	-0.030
Mother activity preference	0.030*	0.011
Mother marital status	-0.025*	-0.022
Mother smoking	0.031*	0.043*
Mother drinking	0.020*	0.055*
Mother TV	0.053*	0.044*
Mother residence	0.158*	0.114*
Mother income	0.091*	0.160*
Mother education	0.123*	0.077*
Daughter BMI	0.073*	-0.040*
Mother age	-0.001*	-0.021*
Daughter age	0.067*	0.057*
Mother fat intake		0.865*

(*p<0.05)

Table 6 Correlations in Father-son Subsample

	Father fat intake	Log Son fat intake
Log Son fat intake	0.872*	
Father BMI	0.056*	0.036*
Father diet knowledge	0.105*	0.112*
Father food preference	0.027*	-0.023
Father activity preference	0.051*	0.096*
Father marital status	-0.009*	-0.047*
Father smoking	0.012*	0.001
Father drinking	0.029*	0.011*
Father TV	0.036*	0.004
Father residence	0.150*	0.101*
Father income	0.100*	0.125*
Father education	0.123*	0.032*
Son BMI	0.027*	-0.016*
Father age	0.001*	0
Son age	0.045*	0.027
Father fat intake		0.872*

(*p<0.05)

Table 7 Correlations in Father-daughter Subsample

	Father fat intake	Log Daughter fat intake
Log Daughter fat intake	0.869*	
Father BMI	0.061*	0.024
Father diet knowledge	0.109*	0.133*
Father food preference	0.031*	-0.054
Father activity preference	0.046*	0.063
Father marital status	-0.011*	-0.030*
Father smoking	0.012*	0.010
Father drinking	0.033*	0.039*
Father TV	0.044*	0.015
Father residence	0.153*	0.115*
Father income	0.104*	0.175*
Father education	0.125*	0.044*
Daughter BMI	0.058*	-0.040*
Father age	0.017*	-0.011
Daughter age	0.063*	0.057*
Father fat intake		0.869*

(*p<0.05)

Table 8 Correlations in four subsamples

	Mother fat intake	Father fat intake
Log Daughter fat intake	0.865*	0.869*
Log Son fat intake	0.871*	0.872*

(*p<0.05)

Table 9 Regression Coefficients for variables predicting Son's Fat Intake in Mother-son Subsample

	Log ß	Standard Error
Mother Fat Intake	0.330*	0.006
Mother Diet Knowledge	0.004	0.003
Mother Diet Preference	-0.003	0.003
Mother Activity Preference	0.008	0.004
Mother Marital Status	0.078*	0.026
Mother Smoking	0.005*	0.002
Mother Drinking	-0.036*	0.012
Mother Television Hours	0.0001*	0.000
Mother Income	0.000	0.000
Mother Age	0.000	0.001
Mother Residence	0.009	0.017
Son Age	-0.003*	0.001
Mother BMI	0.010*	0.004
Son BMI	-0.009*	0.004
Mother Education	-0.000	0.001
$\mathbf{R^2}$	0.759	

(*p<0.05)

Table 10 Regression Coefficients in for variables predicting Daughter's Fat Intake

Mother-daughter Subsample

	Log ß	Standard Error
Mother Fat Intake	0.340*	0.007
Mother Diet Knowledge	0.012*	0.004
Mother Diet Preference	-0.004	0.004
Mother Activity Preference	0.011	0.006
Mother Marital Status	-0.007	0.034
Mother Smoking	-0.007*	0.003
Mother Drinking	-0.009	0.013
Mother Television Hours	0.002*	0.000
Mother Income	0.000	0.000
Mother Age	-0.002	0.002
Mother Residence	-0.009	0.023
Daughter Age	0.006*	0.002
Mother BMI	-0.010*	0.005
Daughter BMI	0.011*	0.005
Mother Education	0.000	0.001
$\mathbf{R^2}$	0.748	

(*p<0.05)

Table 11 Regression Coefficients for variables predicting Son's Fat Intake in Father-son Subsample

	Log ß	Standard Error
Father Fat Intake	0.330*	0.006
Father Diet Knowledge	0.000	0.003
Father Diet Preference	-0.004	0.003
Father Activity Preference	0.011*	0.004
Father Marital Status	0.003	0.030
Father Smoking	-0.001	0.001
Father Drinking	0.010	0.005
Father Television Hours	0.000	0.000
Father Income	0.000	0.000
Father Age	0.000	0.001
Father Residence	0.015	0.016
Son Age	-0.002	0.002
Father BMI	0.002	0.002
Son BMI	-0.001	0.002
Father Education	0.001	0.001
$\mathbf{R^2}$	0.760	

(*p<0.05)

Table 12 Regression Coefficients for variables predicting Daughter's Fat Intake in Father-daughter Subsample

	Log ß	Standard Error
Fat Intake	0.380*	0.008
Father Diet Knowledge	0.021*	0.005
Father Diet Preference	-0.010*	0.005
Father Activity Preference	0.001	0.006
Father Marital Status	-0.053	0.060
Father Smoking	-0.003*	0.001
Father Drinking	0.014	0.008
Father Television Hours	0.0002*	0.000
Father Income	0.000	0.000
Father Age	-0.002	0.002
Father Residence	-0.032	-0.032
Daughter Age	0.004	0.002
Father BMI	0.001	0.003
Daughter BMI	0.002	0.004
Father Education	0.001	0.002
$\mathbf{R^2}$	0.755	

(*p<0.05)

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